SR 14 and Dog Mountain Congestion and Safety Study

Comprehensive guidance for providing opportunities to improve safety and manage congestion to scenic, natural, cultural and recreational resources in Washington's Columbia River Gorge National Scenic Area

SR 14 AND DOG MOUNTAIN CONGESTION AND SAFETY STUDY

Contract No. DTFH7015D00002, Task Order No. 69056720F000058: WA DOT 14(4), Congestion and Safety Mitigation Plan WA DOT 14(3), Dog Mountain Trailhead Study

Prepared for: Western Federal Lands Highway Division



Prepared by: David Evans and Associates, Inc. 2100 South River Parkway, Suite 100 Portland, OR 97201

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EXECUTIVE SUMMARY

The Federal Highway Administration (FHWA) partnered with the United States Forest Service (USFS) and the Washington State Department of Transportation (WSDOT) to study congestion and safety along an 80-mile stretch of Washington State Route 14 (SR 14) and the Dog Mountain Trailhead.

Preserving the User Experience by Addressing Safety and Congestion

State Route (SR) 14, a two-lane rural and rolling highway, is the only access route to many of Washington's popular recreation areas in the Columbia River Gorge Scenic Area (CRGNSA). Among its many natural, cultural, and recreational resources, it is home to the Dog Mountain Trailhead, one of the Gorge's most popular hikes. Renowned for its dramatic spring wildflower displays, panoramic views and challenging physical workout, Dog Mountain is one of the CRGNSA's most visited and photographed locations, particularly on the Washington side.

The variety of natural and cultural resources abound in the corridor make it a treasure of the region. It is a special place to be and an important place to protect so it is not loved to death.

Need

An increased use of the trails and recreation sites along SR 14 has impacted user experiences, particularly on weekends and holidays in the spring and summer. As the region population continues to grow, the number of people who use SR 14 to access Gorge recreation sites and pass through the corridor place a strain on the CRGNSA transportation facilities.

The high vehicular demand into and through the Gorge creates traffic delays and safety concerns for both motorists and other users. Traffic volume and site data indicate trends for continued growth in user activity. To prevent further degradation of SR 14 and connecting accesses to recreation sites, strategies need to be developed to address crowding and congestion.

A Note on COVID-19

In March of 2020, as this study's scope was being finalized, COVID-19 was declared a pandemic by the World Health Organization.

At that time, the long-term shifts in travel behavior in the corridor were not known. Priorities of agencies and organizations appropriately shifted to address the immediate and critical needs associated with the pandemic. Data collection was delayed and plans for inperson meetings were shifted to a virtual setting. The CRGNSA, where much of the economy is driven by tourism, initially incurred substantial economic hits as businesses and recreation sites shut down to the public. However, foot traffic to the outdoor resources quickly rebounded as enjoying the outdoors was soon seen as the safest way to recreate and socialize outside the confines of one's own home.

Because of these unprecedented times, this study recognizes that long-term plan and implementation of some of the recommended projects and planning efforts may be influenced by the need for jurisdictions, agencies, and organizations to adjust to the everchanging post-pandemic world. COVID-19 has also shown the urgency and need for the recommendations outlined in this report. Recreation areas that can control access through reservations and permits have been able to create opportunities for access to the outdoors while also maintaining physical distancing guidelines. The transportation framework presented in this plan includes many similar tools needed to manage recreation and visitation levels.

Purpose

The intent of this study is to develop a comprehensive package of strategies to address the transportation and safety needs of those using SR 14 to access the CRGNSA. The study will help facilitate early coordination with local, state and federal agencies, the public, and other stakeholders; and to screen possible improvement options.

VISION

Since this Plan includes two unique study areas, vision statements were developed that clarify the overall mission for each component of the study.

SR 14 Vision

To promote safe access to high-use recreational areas in the Columbia River Gorge National Scenic Area through the identification of opportunities to address congestion and safety concerns while protecting scenic, natural, cultural, and recreational resources.



Dog Mountain Trailhead Vision

To manage congestion at, and promote safe access to, the Dog Mountain Trailhead through the identification of design alternatives that are consistent with the CRGNSA Management Plan.

GOALS

Following is a summary of the six goals established for the study. These goals were also used to shape and evaluate strategies and concepts.

Safety

Enhance safety for all transportation modes.

Congestion Management Reduce or mitigate congestion along the corridor.

Strategic Investment

Develop a fiscally sustainable plan for the corridor through responsible stewardship of financial resources. *Access* Maintain access to destinations within the corridor.

Future Provide a plan that considers expected changes in future use.

Resource Protection Protect the scenic, natural, cultural, and recreational features. Note: Any potential solution must meet NSA goals.

Strategies and Tools to Address Needs

Resource, recreation, congestion and safety issues face the corridor. The issues are interrelated and the strategies available to address them are also connected. There is no single solution to address all the needs, and the study recommends an integrated approach for concepts and strategies. Tools are used in coordination with one another to maximize their benefit or effectiveness. Results should be monitored, and strategies adjusted to achieve a more managed and safe experience.

Safety and Congestion Toolkit

This Toolkit can help the various agencies within the CRGNSA tackle congestion and safety issues with multiple tools that can be used individually or together and/or test using pilots. The toolkit includes recommended strategies to address common challenges identified in the study area and organized into the categories listed below.



Connecting Focus Areas and Applicable Recommendations

Given the length and complexity of the study corridor, information on the strategies has been organized into four levels of detail: (1) System, (2) SR 14 Segments, (3) Recreation Areas and (4) Dog Mountain Trailhead.

The toolkit contains strategies and tools that can be pursued to address needs at the various focus areas. Since the Dog Mountain Trailhead was funded through a separate FLAP grant to refine potential solutions to address known safety and congestion concerns, the project team identified potential locations for a relocated trailhead and parking lot northwest of the current SR 14adjacent location and recommended next steps for advancing the project into future phases.

Implementing Strategies Within the Framework of the CRGNSA

Implementation of tools and strategies requires continued collaboration to address challenges, seek solutions, and have project champions to usher projects forward. The project partners will work together to provide a coordinated approach in alignment with the framework of the CRGNSA Management Plan.

Management Plan

The Management Plan was created to ensure that the land in the CRGNSA is used consistently with the purposes and standards of the National Scenic Area Act. There are policy and regulations related to transportation facilities that are dictated by land use designations, landscape settings and recreation intensity classes. Any strategies identified for project development would need to meet the requirements of the Management Plan.

Commitment to Collaboration



The CRGNSA has multiple organizations operating within it, making management challenging. No single agency can address the many issues

that are a by-product of congestion within the CRGNSA. Specific strategies will require a champion to bring parties together to resolve shared issues and ensure compliance with the Management Plan.

There will need to be continued conversations to work through procedural, legislative, enforcement, capacity, funding, environmental review, and other high priority issues. Managing change for SR 14 requires partnering agencies to continue engaging the community and working together to implement projects, resolve issues as they arise, and further develop funding sources.

It is not the intent of this study to direct individual agency goals or their budgets but to establish a resource and encourage partnership that collaboratively works toward addressing their shared issues including budgetary constraints. In the future, partnering agencies may find efficiencies that could be gained by sharing resources.

CONTEXT

Introduction

The Federal Highway Administration (FHWA) partnered with the United States Forest Service (USFS) and the Washington State Department of Transportation (WSDOT) to conduct a congestion and safety study for Washington State Route 14 (SR 14) and the Dog Mountain Trailhead.

SR 14 serves the Washington side of the CRGNSA, connecting communities and recreational areas. An increased use of the trails and recreation sites along SR 14 has impacted user experiences, particularly on weekends and holidays between March and October, depending on which end of the CRGNSA. As the region population continues to grow, the number of people who use SR 14 to access Gorge recreation sites and pass through the corridor place a strain on the CRGNSA transportation facilities.

The high vehicular demand on the transportation system into and through the Gorge creates traffic delays and safety concerns for both motorists and other users, especially pedestrians and bicyclists utilizing the roadway to access recreational sites. Traffic volume and site data indicate trends for continued growth in user activity. To prevent further degradation of SR 14 and key CRGNSA access, strategies need to be developed to address crowding and congestion.

The intent of this study is to develop a comprehensive package of strategies to address the transportation and safety needs of those using SR 14 to access the CRGNSA. The study will help facilitate early coordination with local, state and federal agencies, the public, and other stakeholders; and to screen possible improvement options.

Federal Lands Access Program

In 2018, there were two applications to the Federal Lands Access Program (FLAP) that resulted in funding for this study. The FLAP program was established to improve transportation facilities that provide access to, are adjacent to, or are located within Federal lands. The program supplements State and local resources for transportation facilities with an emphasis on high-use recreation sites and economic generators.

Foundation for Planning and Management

Study Area

The study area (Figure 1) includes SR 14 within the CRGNSA and connecting access roads and parking lots, with emphasis on facilities that provide access to recreation sites. Within the study area, special focus was given to the Dog Mountain Trailhead and its existing parking lot. The components of the study area are summarized below.



SR 14

The study corridor is an 80-mile stretch of SR 14 beginning at mile post 18 near the eastern boundary of the city of Washougal in Clark County, and extending east through Skamania County to mile post 98 in Klickitat County, just west of the unincorporated community of Maryhill. Focus was given to sites along the corridor providing access to public lands (such as recreation areas).

State Route 14 connects the Portland and Vancouver metro area at its west end with the Washington Gorge communities of North Bonneville, Stevenson, Home Valley, White Salmon, Bingen, Lyle, Dallesport and Wishram. The corridor is part of the Lewis and Clark Trail Scenic Byway, following the north bank of the Columbia River and providing access to dozens of recreational sites. The corridor has historically carried substantial tourism and recreational traffic and is a key economic link for the rural communities in the Gorge.

Lewis and Clark Trail Scenic Byway

The central portion of this 572mile byway, which traces the route taken by Lewis and Clark's famous Corps of Discovery Expedition, runs through the CRGNSA. The byway follows the twists, turns, and hills of the Columbia River, offering glimpses of lush Oregon slopes and providing numerous roadside stops, including several historic markers.

DOG MOUNTAIN

The Dog Mountain and Augspurger Mountain Trail System (commonly referred to as Dog Mountain) is accessible from SR 14 at mile post 53.7 on the north side of the highway, approximately 10 miles east of the city of Stevenson (see Figure 2). The Dog Mountain focus area includes the existing gravel parking lot and adjacent USFS lands that could potentially serve as a site for trailhead and parking lot relocation.



Figure 2. Dog Mountain Focus Area

Goals and Objectives

The goals and objectives provide a framework for guiding the study and provide a basis for the development and refinement of potential strategies, projects, programs, and pilot projects that best meet the needs of the study. Goals provide broad direction for what the study hopes to achieve; corresponding objectives provide more detail on how to achieve the goal or articulate desired specific outcomes related to the goal. These goals and objectives are summarized in Table 1.

Since there are two unique study areas, vision statements were developed that clarify the overall mission for each component.

SR 14 VISION

To promote safe access to high-use recreational areas in the Columbia River Gorge National Scenic Area through the identification of opportunities to address congestion and safety concerns while protecting scenic, natural, cultural, and recreational resources.

DOG MOUNTAIN TRAILHEAD VISION

To manage congestion at, and promote safe access to, the Dog Mountain Trailhead through the identification of design alternatives that are consistent with the CRGNSA Management Plan.

G O A L S

SAFETY Enhance safety for all transportation modes.

CONGESTION MANAGEMENT

Reduce or mitigate congestion along the corridor.

STRATEGIC INVESTMENT

Develop a fiscally sustainable plan for the corridor through responsible stewardship of financial resources.

ACCESS

Maintain access to destinations within the corridor.

FUTURE

Provide a plan that considers expected changes in future use.

RESOURCE PROTECTION

Protect the scenic, natural, cultural, and recreational features.

Table 1. Goals and Objectives

Goals	Objectives
Safety Enhance safety for all transportation modes.	 a. Reduce conflicts among highway and recreational site users. b. Address existing safety issues at locations with a history of fatal and severe injury vehicle, bicycle- and/or pedestrian-related crashes. c. Support technology applications that improve safety. d. Improve the visibility of transportation users in constrained areas, such as on hills and blind curves. e. Improve pedestrian safety at trailheads.
Congestion Management Reduce or mitigate congestion along the corridor.	 a. Develop a program to systematically implement improvements for all modes that enhance mobility at designated high-priority locations. b. Reduce reliance on single-occupancy vehicle trips Improve travel reliability and efficiency of SR 14. c. Increase awareness of availability of park-and-ride opportunities. d. Identify opportunities to spread out visitation along the entire corridor.
Strategic Investment Develop a fiscally sustainable plan for the corridor through responsible stewardship of financial resources.	 a. Prioritize improvements with a higher return on investment. b. Pursue grants and collaboration with other agencies to efficiently fund transportation improvements and supporting programs. c. Preserve and maintain existing assets to extend their useful life.
Access Maintain access to destinations within the corridor.	 a. Preserve and maintain the existing transportation system in a state of good repair. b. Encourage intermodal transportation linkages within the highway corridor. c. Provide access to multiple modes and transportation options to the extent practicable through planning and design guidance and coordination. d. Provide clear and comprehensive information about transportation options programs, services, and modes. e. Enhance access to recreation sites for low-income and minority populations
Future Provide a plan that considers expected changes in future use.	 a. Accommodate existing and future capacity demands. b. Reduce maintenance needs. c. Provide connectivity to residents, and regional users accessing recreational lands along the corridor. d. Improve accessibility to better distribute recreational use.
Resource Protection Protect the scenic, natural, cultural, and recreational features. Note: Any potential solution must meet NSA goals.	 a. Ensure consistency with the Management Plan for the CRGNSA and state, regional and local planning rules, regulations, and standards. b. Avoid or minimize impacts to the scenic, natural and cultural resources. c. Coordinate proposed improvements with tribal governments to ensure that tribal treaty rights are protected.

Columbia River Gorge National Scenic Area Management Plan

The CRGNSA is the largest National Scenic Area in the United States. The Columbia River Gorge's preservation and growth is protected by the National Scenic Area Act, which was passed into law by Congress in 1986. Under the Act, the National Scenic Area Management Plan (CRGNSA Management Plan) was created to ensure that the land in the CRGNSA is used consistently with the purposes and standards of the National Scenic Area Act.

The Columbia River Gorge Commission approved the revised 2020 Management Plan for the CRGNSA on October 13, 2020, which will be transmitted to the USFS for concurrence. Following their review, the Gorge Commission will transmit the CRGNSA Management Plan to the counties in the National Scenic Area to incorporate into their respective county ordinances.

LAND USE

The Gorge Commission and counties within the CRGNSA grant land use approvals jointly according to uses outlined the CRGNSA Management Plan. The CRGNSA includes three distinct areas: General Management Areas, Special Management Areas, and Urban areas (see Figure 3). The 13 urban areas (9 in Washington and 4 in Oregon) are exempt from regulations that apply to the general and special management areas. The USFS is the principal landowner for special management areas, whose uses are more restricted than designated general management areas.

Land use varies throughout the study area, though is primarily classified as one of the following four land use designations:

- 1. Agriculture
- 2. Forest/Woodland
- 3. Open Space
- 4. Urban Area/Rural Center

Figure 4 shows the land use designations within the study area. Along the western segment of the study area, the primary land use designation is Forest/Woodland, managed by the USFS. Though the entire corridor sits within the CRGNSA, the western segment runs through Beacon Rock State Park as well. Nearer the center of the study area, around the cities of Stevenson and Carson, land use designations primarily include Urban Area/Rural Center and Commercial Forest classifications. East of the community of Lyle, land use designation becomes primarily Agriculture, with small towns along SR 14 classified as Rural Center and several allotments to the Bureau of Indian Affairs (BIA).

GENERAL MANAGEMENT AND SPECIAL MANAGEMENT AREAS



LAND USES IN THE COLUMBIA RIVER GORGE NATIONAL SCENIC AREA



POLICY AND REGULATIONS RELATED TO TRANSPORTATION FACILITIES

The CRGNSA Management Plan further designates policies and provisions related to development for four "recreation intensity classes" (RIC) in General Management Area and Special Management Area lands. The RIC dictates the allowable recreation uses. A RIC of 1 indicates the area is suitable for very low intensity recreation and has more stringent guidelines than a RIC of 4, which indicates the area is suitable for high intensity recreation. Related to the development of the SR 14 and Dog Mountain Congestion and Safety Study, the RIC of a recreation site plays an important role in defining the limits of development. Parking provisions for each recreation intensity class are described in Table 2.

	RIC 1 (Very Low Intensity)	RIC 2 (Low Intensity)	RIC 3 (Moderate Intensity)	RIC 4 (High Intensity)
General Management Area	 Parking for maximum of 10 vehicles Mass transit accommodations should be considered (e.g., bus parking) 	 Parking for maximum of 25 vehicles Mass transit accommodations should be considered (e.g., bus parking) 	 Parking for maximum of 75 vehicles Mass transit accommodation is required (e.g., bus parking) 	 Parking for maximum of 250 vehicles Mass transit accommodation is required (e.g., bus parking)
Special Management Area	Parking for maximum of 10 vehicles	Parking for maximum of 25 vehicles	 Parking for maximum of 50 vehicles (Parking for 75 vehicles may be provided if enhanced mitigation is approved for at least 10% of the site) Mass transit accommodation is required (e.g., bus parking) 	 Parking for maximum of 200 vehicles (Parking for 250 vehicles may be provided with enhanced mitigation is approved for at least 20% of the site) Mass transit accommodation is required (e.g., bus parking)

Table 2. Special Management Area and General Management Area Parking Provisions

Source: Draft Management Plan for the Columbia River Gorge National Scenic Area, September 2020

Other parking requirements in the CRGNSA include:

- Parking areas must be designed to fit existing topography to the extent possible.
- Parking areas over 50 spaces must be divided into discrete, landscaped parking islands.
- Landscape buffers are required, with a greater buffer for larger parking lots.
- The minimum width of interior landscaped buffers separating each area of 50 parking spaces or less shall be 20 feet.
- All parking areas shall be set back from property boundaries by at least 50 feet.
- Parking areas must be set back from the Columbia River and major tributaries by at least 100 feet.

Additional relevant transportation policies and provisions include:

- Alternate forms of transportation, such as transit, are strongly encouraged.
- New development and reconstruction of scenic routes must include provisions for bicycle lanes.

COORDINATION

The content prepared for this study was based on input from project partners, stakeholders and the public. Consultation and coordination among these groups were vitally important throughout the planning process.

Project Partners

The study was guided by a Core Project Team (CPT), which included representatives from FHWA, USFS, WSDOT and David Evans and Associates, Inc. (DEA). The CPT met regularly to discuss project needs and review findings.



Stakeholder Participation

The primary role of the stakeholder group was to provide feedback to the CPT. This was done by reviewing technical findings, generating information to inform the development of potential strategies, and helping to identify partnership/implementation opportunities. The stakeholder group met three times throughout the duration of the study and included representatives from the following agencies and organizations:

- Army Corps of Engineers
- Fish and Wildlife Service
- Washington State Parks
- Clark County
- Klickitat County
- Skamania County
- Port of Klickitat
- Port of Skamania
- Port of Skalinalia
 Port of Hood River

•January 2021

Project Kick-Off

of needs/issues

• Preliminary assessment

Stakeholder

Meeting #1

- Mid–Columbia Economic
- Development District
 U.S. Army Corps of Engineers
- Confederated Tribes of Warm Springs
 Yakama Nation
 Nez Perce Tribe
 Confederated Tribes of the
- Umatilla Indian Reservation Confederated Tribes of the Grand
- RondeCowlitz Tribe
- Cowlitz Tribe
 Siletz Tribe
- Siletz Tribe
- Clark County Sheriff
- Southwest Washington Regional Transportation Council

- Washington State Patrol
 Skamania County Sheriff
- Skamania County Sheriff
 Klickitat County Sheriff
- Oregon Department of Transportation
- Friends of the Columbia River Gorge
- C-Tran
- Bonneville Power
 Administration
- Columbia River Gorge
 Commission

Stakeholder Meeting #2

- September 2021
- Review draft strategies
- •Gather feedback on feasibility



14

Meeting #3

Public Involvement

Throughout the planning process, the public was provided opportunity to engage with the project team. There were three primary avenues for participation during the development of the study: online open houses, attendance at virtual community conversations and comments submitted by way of the project website and email to the project team.

POSTCARD At the onset of project, postcards were mailed to all property owners within the study corridor to introduce the planning process, share the project website and contact emails. SR 14 and Dog Mountain Trailhead **Congestion and Safety Plan** 2 How can we make sites in the Gorge safer to access? The Columbia River Gorge National Scenic Area attracts many visitors U.S. Department of Transportation WEBSITE due to its abundant recreational and other destinations. Federal Highway The project website served as a resource for project As more people use SR 14 to access places like Dog Mountain Trailhead, informatio the duration of the study and also served WSDOT congestion increases. to host the virtual public open houses. Help us identify opportunities to manage congestion and promote safe access to popular sites in the Gorge by visiting our online open house. SR 14 & Dog Mountain Study Map U.S. Department of Transportation Return ederal Highway Administration Please use this map to indicate your thoughts on the collection of strategies proposed Н at the recreation sites with recurring congestion and safety concerns. 141 NF 030 142 **Get involved** <u>Visit our virtual open house</u> to learn more about the strategies and take a brief survey available from October 11, 2021 through November 1, 2021.

 Participate in our Community Conversations to connect with the project team and share your feedback. We will host two drop-in sessions from 4pm – 6pm on Thursday, October 14, 2021 and Wednesday October 20, 2021 through Zoom. A brief project presentation will be made at 4pm and 5pm at each session.

COMMUNITY CONVERSATIONS

There were two opportunities for the public to virtually "drop in" and ask questions of the project team.

NEEDS AND ISSUES

Recreational Setting

The Columbia River Gorge is a valuable resource to residents and tourists of the Portland and Vancouver metropolitan areas and communities in the Gorge. The area has become a popular tourism destination that attracts both national and international visitors. The National Scenic Trail, known as the Pacific Crest Trail (PCT), runs from Mexico all the way north to Canada and crosses the Columbia River Gorge at the Bridge of the Gods, which is one of the many attractions throughout the area. On the Washington side, SR 14 provides access to recreational activities such as hiking, mountain biking, fishing, wind surfing, bird watching, picnicking, and sightseeing. The landscape along SR 14 and throughout the Gorge is dramatic and varying with mountains, fields, wildflowers, marshlands, wildlife refuges, and the Columbia River Gorge itself.

As the Columbia River Gorge continues to gain national and international recognition as a popular recreation and tourism destination, and as the surrounding metropolitan areas continue to grow, it is expected that the Gorge will continue to see an



Dog Mountain Trail Spring Wildflowers

increase in recreation and tourism visitors, activities, and services.

Recreation Sites

Within the study area along SR 14, there are various recreation activities. Though overnight camping areas exist along the corridor and overnight camping is a popular activity throughout the Gorge, the trailheads within the study area primarily accommodate day-use recreational activities, and may include paved parking, picnic areas, water, restrooms, and other day-use amenities.

Given the rural location of most of the trailheads, the primary mode of transportation is a personal vehicle, maintaining a need for adequate trailhead parking or accommodation of shuttle service vehicles. Parking area capacity and conditions vary depending on the trailhead location, ranging from gravel surfaced, shoulder parking with limited amenities, to an asphalt paved parking lot with covered picnic areas and abundant day-use amenities. Regardless of the capacity and conditions, most trailhead parking areas reach

maximum capacity on the weekend throughout the summer season, with an increasing number of days in which little to no parking may be available most of the day.

Table 3 summarizes the popular recreation sites accessible within the study area, access location along SR 14, the operating Agency, parking details and important land use information.

Site	SR 14 MP	County	Operated By	Fee/Parking	RIC ¹	Land Use	Parking Overflow ²
Steigerwald National Wildlife Refuge	18.2	Clark	USFWS	No fee/Paved parking area	3	GMA	No
Ozone Climbing	23.8	Skamania	Informal	No fee/Park on SR 14 shoulder	1/2	SMA	Yes
Cape Horn Lookout (Viewpoint)	25	Skamania	WSDOT	No fee/Park on SR 14 shoulder	1	SMA	Yes
Cape Horn Trailhead / Salmon Falls Park and Ride	26.4	Skamania	USFS / Skamania County	No fee/Paved parking area	2	GMA	Yes
St. Cloud	29.9	Skamania	USFS	Fee/Paved parking area	2	SMA	No
Franz Lake Overlook	31.5	Skamania	USFWS	No fee/Park on SR 14 shoulder	1	GMA	No
Sams Walker Day Use	32.9	Skamania	USFS	Fee/Gravel parking area	2	SMA	No
Doetsch Ranch Day Use Area	34.1	Skamania	WA State Parks	Fee/Paved parking area	4	SMA	No
Beacon Rock State Park (Kueffler Rd)	34.8	Skamania	WA State Parks	Fee/Gravel parking area	4	SMA	Yes
Beacon Rock Trailhead/Hamilton Mountain Access	34.9	Skamania	WA State Parks	Fee/Gravel and paved parking areas	3-4	SMA	Yes
Bonneville Discovery Trails	37.6	Skamania	Bonneville Trails Foundation	No fee/Paved parking areas	N/A	UA	No
Ft. Cascades Trailhead	38.6	Skamania	USACE	No fee/Paved parking area	N/A	UA	No
Bonneville Trailhead	39.8	Skamania	USFS	Fee/Paved parking area	N/A	UA	No
Pacific Crest Trail	41.5	Skamania	USFS	None	1	GMA	No
Bridge of the Gods Historical Marker	41.6	Skamania	USACE	No fee/Paved parking area	1	GMA	No
Home Valley Park/Campground	50.1	Skamania	Skamania County	Fee/Paved parking areas	4	SMA	No
Dog Mountain Trail	53.7	Skamania	USFS	Fee & Seasonal Permit/Gravel parking area	1/2/4	SMA	Yes
Dog Creek Falls	55	Skamania	USFS	No Fee/Gravel parking area	1/2	SMA	No

Table 3. Study Area Recreation Sites

Site	SR 14 MP	County	Operated By	Fee/Parking	RIC ¹	Land Use	Parking Overflow ²
Little White Salmon National Fish Hatchery	56.9	Skamania	USFWS	No fee/Paved parking area	1	GMA	No
Drano Lake Boat Ramp	57.3	Skamania	Skamania County	Fee/Paved parking areas	2/4	GMA	Yes
Swell City	61.1	Skamania	Private/ WSDOT	No fee/Paved parking area	4	GMA	Yes
Spring Creek Fish Hatchery State Park	61.4	Skamania	WA State Parks	Fee/Paved parking area	4	GMA	No
Coyote Wall Trailhead	69.7	Klickitat	USFS	No fee/Paved parking area	2	SMA	Yes
East Syncline Trail / Rowland Lake	70.9	Klickitat	USFS	No fee/Gravel shoulder	1/2	SMA	Yes
Catherine Creek (Old Hwy 8)	N/A	Klickitat	USFS	No fee/Gravel parking area	2	SMA	Yes
Chamberlain Lake Safety Rest Area	74	Klickitat	WSDOT	No fee/Paved parking area	1	GMA	No
Balfour-Klickitat Trailhead (Old Hwy 8)	N/A	Klickitat	USFS	No fee/Paved parking area	2	GMA	No
Klickitat Spit	75.7	Klickitat	Informal	No fee/Gravel shoulder	2	GMA	Yes
Lyle Trailhead	75.9	Klickitat	USFS	No fee/Paved parking area	N/A	UA	No
Lyle Cherry Orchard Trailhead	77.2	Klickitat	Friends of the Columbia River Gorge	No fee/Gravel parking area	1	GMA	No
Doug's Beach State Park	78.6	Klickitat	WA State Parks	Fee/Gravel parking area	4	GMA	No
Columbia Hills Historical State Park	85.1	Klickitat	WA State Parks	Fee/Paved and gravel parking areas	4	GMA	No
Horsethief Butte Trailhead	86.4	Klickitat	WA State Parks	Fee/Paved parking area	2	GMA	No
Crawford Oaks Trailhead	87.2	Klickitat	WA State Parks	Fee/Paved parking area	2	GMA	No
Avery Recreation (State Park) Boat Launch	89.6	Klickitat	USACE	No fee/Gravel parking area	BIA	GMA	No

Acronyms: USFWS = United States Fish and Wildlife; USFS = United States Forest Service; WSDOT = Washington Department of Transportation; USACE = United States Army Corps of Engineers; SMA = Special Management Area; GMA = General Management Area; UA = Urban Area; BIA = Bureau of Indian Affairs Notes:

1. RIC is identified for the parking area; the RIC of the recreational area may be different.

2. Indicates recurring parking lot overflow resulting in parking on shoulder of adjacent county roads or SR 14.

Recurring Congestion

Of the recreation sites summarized in Table 3, several experience recurring instances of parking overflow that result in visitors parking on the shoulder of the adjacent county road or along SR 14. These locations are listed below and described in further detail on the following pages:

- Cape Horn Viewpoint
- Cape Horn Trailhead / Salmon Falls Park and Ride
- Beacon Rock State Park
- Dog Mountain Trailhead
- Drano Lake Boat Ramp
- Swell City
- Coyote Wall Trailhead (Courtney Road and SR 14) / East Syncline (Old Hwy 8 and SR 14)
- Catherine Creek Trailhead

There are two locations listed in Table 3 with concerns regarding overflow parking onto the shoulder of SR 14 that are not detailed further: Ozone Climbing and Klickitat Spit. These two locations are not currently associated with a formally sanctioned recreation site, although they are recognized as a heavily utilized resource by the recreation community in the CRGNSA.

CAPE HORN VIEWPOINT



Cape Horn Viewpoint Parking



Vicinity Map

Amenities

- **hi** Restrooms
- Information Kiosk
- Water Station T.
- **Day-Use Picnic Area**

Key Findings

- Width varies 10 15 ft with no barriers from eastbound SR 14 traffic
- Guardrail is the only barrier between shoulder and cliff edge
- Within WSDOT right-of-way
- No advanced signage to indicate vehicles entering/leaving highway
- Area surrounded by steep grades and limited sight distance curves

Location:	SR 14: MP 25	Parking	Type: Paved Shoulder
Peak Use:	Year-round	Space Type	# Spaces
	(days with visibility)	Striped	0
AADT:	2019: 5,175 veh/day	Unstriped	8
	2040: 9,975 ven/day	ADA	0
Fee/Permit:	No Fee		
Jurisdiction:	WSDOT		

CAPE HORN TRAILHEAD

Key Findings

- Parking is shared with Salmon Falls Park and Ride
- Trail is extremely popular year-round
- Parking lot typically fills around mid-morning on weekends, additional vehicles park on the shoulder of Salmon Falls Rd and Canyon Creek Rd

Type: Paved lot

Spaces

25

6

2

• Busiest between 8 am - 3 pm

Aler.	Au	A
P.		

Cape Horn Trailhead / Salmon Falls Park & Ride Parking



Vicinity Map

An	nenities	
ŧlŧ	Restrooms	~
3	Information Kiosk	~
Ē.	Water Station	
Ŧ	Day-Use Picnic Area	

		2 March 1997
Location:	SR 14: MP 26.4	Parking
		Space Type
Peak Use:	Spring/Summer/Fall	Striped
	2019 [.] 5 175 veh/dav	Unstriped
AADT:	2040: 9,975 veh/day	ADA
Fee/Permit:	No Fee	
Jurisdiction:	USFS (Trail), Skamania Co. (Lot)	

BEACON ROCK STATE PARK



DOG MOUNTAIN TRAILHEAD

Key Findings

- Lot reaches maximum capacity by 10 am on weekends in May and June
- No near-by parking alternatives
- Vehicular circulation does not meet modern standards
- Vehicles park along SR 14 and pedestrians walk along highway
- Uncontrolled access to lot with limited sight distance to east
- Current measures are overwhelmed, and problem continues
- Potential HazMat limits ability to improve existing lot.

Location:	SR 14: MP 53.7	Parking	Type: Gravel lot
Peak Use:	Spring	Space Type	e # Spaces
	2019: 3,925 veh/day	Striped	70
AADT	2040: 7,150 veh/day	Unstriped	3-5
Fee/Permit:	Day use or annual USFS pass, additional permit required in	ADA	2
Jurisdiction:	USFS		



Dog Mountain Trailhead Parking



Vicinity Map

An	nenities	
ŧlŧ	Restrooms	~
3	Information Kiosk	~
Ē.	Water Station	~
Ŧ	Day-Use Picnic Area	1

DRANO LAKE BOAT RAMP



SWELL CITY

Key Findings

- Popular windsurfing location
- 2 privately owned launch areas and one WA launch area closer to Spring Creek State Park
- Windy days and weekends fill parking quickly
- Additional gravel area opposite Spring Creek Hatchery Rd provides overflow parking but requires pedestrians to cross the highway

Location: SR 14: MP 61.1-61.4		Parking	Type: Gravel lot
		Space Type	# Spaces
Peak Use:	Windy days / weekends	Striped	0
	AADT: 2019: 3,700 veh/day 2040: 5,100 veh/day	Unstriped	20-30
AADT:		ADA	0
Fee/Permit:	Daily or annual pass		
Jurisdiction:	Private (Swell City)		



Swell City Parking



Vicinity Map

Amenities					
ŧlŧ	Restrooms	~			
	Information Kiosk				
Ē.	Water Station				
开	Day-Use Picnic Area	~			

NEEDS AND ISSUES

COYOTE WALL TRAILHEAD / EAST SYNCLINE



Coyote Wall Parking



East Syncline Gravel Area

Coyote Wall Amenities

- **Restrooms**
- Information Kiosk
- 🔁 Water Station
- A Day-Use Picnic Area

Key Findings

- Popular mountain biking and hiking location
- RIC Class 2 limits parking at Coyote Wall to 25 vehicles
- Overflow parking fills the shoulder of Courtney Rd and causes pedestrians to cross the roadway
- Congestion creates difficulty for freight and vehicle movement on Courtney Rd
- GPS can lead visitors to shoulder of SR 14 between Coyote Wall and East Syncline
- Intersections of Courtney Rd and Old Hwy 8 at SR 14 flagged for safety concern

Location:	SR 14: MP 69.7	Coyote Wall	Type: Paved lot	
Peak Use:	Spring	Parking		
AADT:	2019: 4.900 veh/day	Space Type # Spaces		
	2040: 8,725 veh/day	Striped	25	
Fee/Permit:	None	Unstriped	0	
Jurisdiction:	LISES	ADA	1	
	0313			

Key Findings

- Peak spring wildflower viewing
- Includes network of multi-use trails for biking, hiking, and equestrian uses
- Peak season overflow onto Old Hwy 8 and hinder through traffic as well as degrade visiting experience
- Through traffic travels at high speeds on Old Hwy 8
- Lacking clarity of pedestrian wayfinding
- RIC Class 2 limits parking formalized parking to 25 vehicles

Location:	SR 14: MP 70.9	Parking	Type: Gravel lot
		Space Type	# Spaces
Peak Use:	Spring	Striped Unstriped	0
AADT:	County road data not	Unstriped	20-25
	available	ADA	0
Fee/Permit:	None		
Jurisdiction:	USFS (trailhead), Klickitat Co. (Old Hwy 8)		

CATHERINE CREEK



Catherine Creek Parking



Vicinity Map

Amenities				
ŧlŧ	Restrooms			
3	Information Kiosk	~		
Ē.	Water Station			
Ŧ	Day-Use Picnic Area			

Transportation Conditions

The information in this section summarizes the key information from the Existing Conditions Report (Appendix A) which identifies roadway conditions and areas of concern for the study corridor based on a desktop planning-level examination of the corridor based on online databases, field observations, historical traffic data, vehicle crash history, aerial imagery, and geographic information system data.

Challenges of the SR 14 Corridor

Within the study area, SR 14 is functionally classified as a rural principal arterial by WSDOT and is part of the National Highway System (NHS). These designations suggest that an important objective of the corridor is to connect rural communities and efficiently move traffic over long distances. While it serves as a critical state highway, connecting Eastern and Western Washington, it also operates as a "main street" through several Gorge communities and primary access to important recreational, cultural and natural resources.

The dual purpose as both a major highway and local main street creates the need to serve both regional and local trips in the corridor. While residents rely on the corridor for daily errands and to commute to and from work, it must also accommodate regional auto and freight trips passing through the CRGNSA, as well as recreational travel by various modes. In addition to the numerous users, the corridor has unique geometric and topographical characteristics that pose challenges to congestion and safety.

PHYSICAL FEATURES AND CHARACTERISTICS OF SR 14

State Route 14 traverses five different topographical areas. Most of the corridor is abutted by rock escarpments on the north side, and embankments to the Columbia River or railroad tracks on the south side. Between Washougal and North Bonneville, the route is elevated above the Columbia River, passing through rolling and mountainous terrain. From North Bonneville to Stevenson, SR 14 descends to the same elevation as the Columbia River. Between Stevenson and Home Valley, the route is again elevated above the river, traversing primarily through forest land. From Home Valley to Dallesport, the route again descends along the river. And finally, between Dallesport to the eastern edge of the CRGNSA, the route ascends onto a plateau overlooking the river, traversing primarily grasslands.



POSTED SPEEDS

Posted speeds vary along SR 14. Outside of urban areas, posted speed ranges from 50 to 60 mph, which is where most of the accesses to recreation sites are located. As SR 14 travels through various communities, the speed reductions vary from 25 mph to 40 mph.

Increasing Congestion

SR 14

Along SR 14 in the study area, existing annual average daily traffic (AADT) varies from approximately 2,000-12,000 vehicles per day. The highest traffic volumes consistently occur where the Hood River Bridge meets SR 14 in White Salmon. The bridge is one of the main connections in the region between Washington and Oregon.

On the west end of the study corridor, the most congested conditions are likely to occur in the late afternoon or evening on a weekend (Friday – Sunday) between May and September, particularly in June. At the east end of the study corridor, the

A Note on COVID-19 and Data

In March of 2020, as this study's scope was being finalized, COVID-19 was declared a pandemic by the World Health Organization. Traffic volumes were severely impacted in the months that followed and many public recreation sites were temporarily shut down to the public. The project team had to rely on historic data from WSDOT for the SR 14 Corridor, and delayed data collection at recreation sites until 2021.

The long-term impacts of COVID-19 on travel/visitor patterns is not yet known. For the purposes of this study, forecasted traffic volumes are based on historical data with a general assumption that interest in outdoor resources in the CRGNSA will continue to increase.

most congested conditions are likely to occur in the early to mid-afternoon on summer weekends (Friday – Sunday) between July and August.

Heavy Vehicle Traffic

In addition to serving communities and the resources in the CRGNSA, SR 14 is part of Washington's Freight and Good Transportation System (FGTS). Due to the narrow, single lane in each direction, oversized/overweight restrictions apply to the corridor throughout the study area, requiring pilot cars for vehicles over 10 feet wide in most segments. Truck traffic averages approximately 15-percent of the daily traffic along SR 14 within the study corridor. Any potential strategies proposed on SR 14 will need to consider the anticipated continued movement of goods via freight through the corridor.

Projected Traffic Volumes

Projected transportation conditions were analyzed to estimate how traffic patterns and characteristics may change compared to existing conditions. The analysis was based on linear trends developed from WSDOT's historic AADT data. On average, SR 14 traffic volumes are estimated to increase by 60 percent by the year 2040. Figure 5 illustrates the increase relative to the most recent complete five-year historical traffic volumes. The highest increase is expected to occur in the White Salmon and Bingen areas. SR 14 would expect to see a consistent background growth for the length of the corridor, with higher growth in urban areas and between neighboring urban areas.



Figure 5. SR 14 Forecasted Year 2040 Annual Average Daily Traffic (AADT)

Seasonal Travel

Given that SR 14 is the gateway to many tourist activities, with local and non-local visitors, the corridor sees significant seasonal variation. Though transit options do exist, they are limited, resulting in the primary mode of access being the single-occupancy vehicle. Therefore, traffic volumes closely follow the tourism seasonality within the study area.

As previously mentioned, the landscape consists of mountains, fields, wildflowers, marshlands, wildlife refuges, and the Columbia River Gorge itself; and recreational activities include hiking, mountain biking, fishing, wind surfing, bird watching, picnicking, and sightseeing, all of which are outdoor activities. As a result, the peak season along SR 14, which serves all users of the CRGNSA, is tied to the months with favorable weather (late spring, summer, and early fall).

It should be noted that the peak traffic along SR 14 doesn't always align perfectly with peaking at the recreational resources throughout the Gorge. Each recreation site has its own unique features that draw visitors at various times of the year, as summarized earlier in this chapter. For recreation, the peak in the eastern part of the study area is spring, mainly due to the endless wildflowers in bloom and active bird watching. Along the western part of the study area, spring and summer experience peak activity due to the various sporting activities and ideal outdoor weather.

Throughout the entire study area, the low season for both SR 14 corridor traffic and recreation sites tends to be winter, primarily January and February, due to the inclement weather, including heavy rains, high winds, and muddy hiking trails.

Multimodal Access

TRANSIT

There are several independent public transportation service providers within the Columbia River Gorge area. Each provider is a member of *Gorge Translink*, an alliance of rural transportation providers, human service organizations and public planning agencies. The *Gorge Translink* objective is to enhance connectivity and develop a seamless network of transportation services within the Mid-Columbia River Gorge area while linking services to the metropolitan cities of Portland, Oregon and Vancouver, Washington.

Figure 6 maps the five transportation providers form the *Gorge TransLink* alliance: Mt Adams Transportation Service (Klickitat County), Skamania County Transit, Columbia Area Transit (Hood River County), the Link (Wasco County), and Sherman County Community Transit. Skamania County Transit also provides shuttle service between the Skamania County Fairground gravel parking lot and the Dog Mountain Trailhead on Saturays and Sundays when permits are required by the USFS.



Figure 6. Gorge Translink Routes

BICYCLE

There are no bicycle facilities that provide non-highway connections between communities in the study area; SR 14 is the only continuous connection and may only appeal to avid cyclers. There are safety concerns, particularly for cyclists riding on SR 14 outside of the urban areas where there are limited or no shoulders and high auto speeds. SR 14 also has several unlit tunnels where cyclists are forced to share the road with vehicles in areas with limited visibility due to lack of illumination. These conditions make cycling between communities in the CRGNSA prohibitive for many.

As mentioned previously, some recreation opportunities provide mountain bike trails, however the users of these trails use personal vehicles to get to the recreation site. Some recreational road cyclists do a loop of the eastern side of the CRGNSA, traveling on SR 14 between the Hood River Bridge and the Dalles Bridge.

Map Source: Gorge Translink.

Bicycle travel along the SR 14 corridor requires sharing the road with vehicles. Bicycles may use shoulders where available, but the shoulders are narrow and are often used for overflow or illegal parking. Guardrail and rock walls parallel the highway in some areas, further restricting shoulder use for bicycles and tight curves limit sight distance.

PEDESTRIAN

Pedestrian use within the corridor is limited to urban areas and within or near recreation sites. The rural segment of SR 14 most likely to experience pedestrian traffic is where the Pacific Crest Trail crosses the Bridge of the Gods and connects into the trail on USFS lands. Between the Bridge of the Gods and the trail, pedestrians must travel along the shoulder of SR 14 for approximately 500 feet. Pedestrians are also prevalent at recreation sites where the trailheads or recreational resources are adjacent to SR 14. Pedestrians walking from parked vehicles to trailheads share shoulders and roadway where space is limited, sometimes crossing SR 14 in hazardous areas with limited sight distance and high vehicular speeds.

Safety

A review of the most recent five-years of available crash data (January 1st, 2015 to December 31st, 2019) was reviewed to identify potential trends or safety concerns within the study corridor. Crash data was obtained from the WSDOT Crash Data and Reporting Branch and filtered to include crashes within a 500 ft radius of SR 14 between mile posts 18 and 98.¹

Corridor Trends

A total of 768 reported crashes occurred in the study area with approximately 92% occurred on SR 14, and 8% on an adjacent street.

NUMBER OF CRASHES BY SEVERITY AND YEAR

Of the 768 reported crashes, 65% (498) resulted in no apparent injury/property damage only, 15% (115) resulted in a suspected minor injury, 13% (103) in a possible injury, 3% (22) in a suspected serious injury, 2% (17) were unknown, and 1.7% (13) resulted in a fatality. Figure 7 summarizes the crash frequency by severity and year.

Figure 8 shows the crash densities along the corridor. As shown, concentrations of crashes tend to be within city limits, around sharp curves, or near trailheads and other stopping points along the highway. These crash patterns are consistent with a single-lane state highway and indicate no unusual crash patterns. When looking at the Dog Mountain focus area in Figure 9, there was one fatality east of the Dog Mountain Trailhead parking lot and a three adjacent to the access.

¹ Disclaimer: Under 23 U.S. Code § 148 and 23 U.S. Code § 409, safety data, reports, surveys, schedules, lists compiled or collected for the purpose of identifying, evaluating, or planning the safety enhancement of potential crash sites, hazardous roadway conditions, or railway-highway crossings are not subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damages arising from any occurrence at a location mentioned or addressed in such reports, surveys, schedules, lists, or data.



Figure 7. Crash Frequency by Severity and Year

Figure 8. SR 14 Crash Density



Figure 9. Dog Mountain Crash Density and Severity



FATALITIES

Thirteen fatalities occurred within the study area from January 1st, 2015 to December 31st, 2019, none of which occurred within 500 ft of a trailhead. Figure 10 summarizes the crash type for crashes that resulted in a fatality. Approximately 38% of fatal crashes were a result of a collision with a fixed object such as a guardrail, tree, bank, or ledge, in which all crash reports documented that the vehicle was going straight ahead, not navigating a turn. Figure 10: Collision Type of Fatal Crashes



Each fatality occurred in a unique location

along the corridor, indicating no geographical hot spots for fatalities. Eleven (85%) fatal crashes occurred in clear or partly cloudy conditions with dry pavement. Ten (77%) fatal crashes occurred in the daylight, one occurred at dusk, and the other two in the dark without streetlights. One of the fatalities that occurred in the dark without streetlights included a pedestrian.

CRASH FREQUENCY BY CRASH TYPE

Figure 11 summarizes crash frequency by the most prevalent crash type in the corridor. Collisions with a guardrail were the most common throughout the study corridor, followed by rear-end collisions. These crash types are consistent with a scenic, winding highway with many cross streets, turnouts, access points, and trailheads, especially during the peak tourism season in which thousands of visitors from out of state visit, many of whom may not be familiar with the corridor.

Figure 11. Crash Frequency by Crash Type



CRASH FREQUENCY BY CRASH CAUSE

There are 33 documented crash causes recorded in the crash dataset. In this section, the data is summarized by number of vehicle-crashes, rather than number of crashes, since many crashes involved more than one vehicle and therefore, more than one primary contributing factor – one from each driver. Figure 12 summarizes crash frequency (number of vehicles involved in crashes) by crash cause for the most prevalent causes (causes that resulted in at least 20 vehicle-crashes).

The most common contributing factor to crashes throughout the corridor was exceeding reasonable safe speed (not in excess of posted speed limit), followed by inattention. Over 70 vehicle-crashes involved alcohol.



Figure 12. Crash Frequency by Crash Cause

Network Screening

The Highway Safety Manual (HSM) Part B describes the critical crash rate method as a means of identifying locations that warrant further investigation. The critical crash rate is specific to the study area and considers average crash rates at comparable sites, traffic volume, and a confidence interval.

Critical intersection crash rates were calculated for the study intersections with sufficient reference populations. Intersection crash rates are calculated based on number of crashes per Million Entering Vehicles (MEV) for the analysis period (in this case, 5 years). Table 4 summarizes the study intersections that exceeded the critical crash rate for its reference population.

Critical segment crash rates were also calculated for the study area. A segment crash rate is calculated based on the total number of vehicles traveling on the road segment during the specified period. This is called vehicle miles of travel (VMT). VMT is usually expressed as Million Vehicle Miles (MVM). Table 5 summarizes segments that exceed the critical crash rate.

Access to SR 14	5-Year Crash Total	Intersection Crash Rate (crashes/MEV)	Intersection Critical Crash Rate
Access Serves Recreation Use			
Bridge of the Gods	8	0.56	0.30
Coyote Wall (Courtney Rd)	4	0.45	0.36
Syncline Trail (Catherine Creek) (Old Hwy 8)	5	0.57	0.36
Access Serves General Public		7 7	
SE Evergreen Blvd	5	0.43	0.32
Belle Center Rd	4	0.41	0.34
Cook-Underwood Rd	4	0.61	0.41
SR 141	7	0.49	0.29
6th St	3	0.34	0.34
US 197	7	1.53	0.48

Table 4. SR 14 Intersections Exceeding Critical Crash Rate (2015-2019)

Sources: WSDOT Crash Data (2015-2019); David Evans and Associates, Inc.

Segment Description	Beg. MP	End MP	5-Year Crash Total	Segment Crash Rate (crashes/MVM)	Segment Critical Crash Rate
West end of CRGNSA	18.00	23.42	66	1.24	1.08
Cape Horn	23.42	26.38	54	1.89	1.16
Doetsch Ranch Rd to West Bonneville	34.08	37.04	37	1.49	1.19
Wishram	44.13	44.65	11	1.43	1.09
East end of CRGNSA	94.38	98.07	18	1.34	1.31

Sources: WSDOT Crash Data (2015-2019); David Evans and Associates, Inc.

Natural Resources

The information contained in the Existing Conditions Report (Appendix A) and summarized in this section provides a planning-level overview of environmental resources and identifies potential constraints and opportunities for the SR 14 and Dog Mountain Congestion and Safety Plans. The scan is not a detailed environmental investigation. This screening exercise is a scoping-level effort that includes information available through desktop studies and does not include site information verified through a site visit. If improvement options are forwarded from the study into project development, an analysis for compliance with the National Environmental Policy Act (NEPA) and other applicable federal and state regulations will be completed as part of the project development process. Information provided in this report may be forwarded into the NEPA process at that time.

The CRGNSA Management Plan contains specific protections, including avoidance buffers and mitigation measures, for natural resources. These protections are most restrictive in areas designated SMA and in some cases are slightly less restrictive in areas designated GMA, where some level of human development is allowed. In either case, proposed developments in the CRGNSA are required to inventory natural resources and prepare plans to protect, manage, and/or mitigate impacts to them in consultation with the appropriate state and federal agencies.

Resources with specific preservation directives in the CRGNSA Management Plan include the following:

- Wetlands, lakes, ponds
- Streams and riparian habitats
- Priority habitats and sensitive wildlife sites
- Rare plants and natural areas
- In the SMA, forest resources through the review of forest practices

STRATEGIES

This chapter includes tools and strategies to address one or more of the safety and congestion issues identified in the study corridor at various focus areas. A full range of options were developed based on the needs and issues identified through the existing conditions analysis and anticipated future demand within the CRGNSA, as well as input from public and stakeholder outreach.

This chapter summarizes the various areas of concern, provides a toolkit for addressing typical safety and congestion concerns and summarizes their application throughout the corridor.

Focus Areas

Given the length and complexity of the study corridor, information on the strategies has been organized into four levels of detail: (1) System, (2) SR 14 Segments, (3) Recreation Areas and (4) Dog Mountain Trailhead. The focus areas are described below, as well as how tools, strategies and specific projects may be applicable to improve conditions.

System

The corridor-wide discussion presents management strategies that could enhance the SR 14 corridor from a system approach. These strategies are organized by the following categories and are described in further detail in the Congestion and Safety Toolkit (Table 6):

- Transit and Shuttle Services
- Technology systems
- Demand Management and Enforcement
- Public Information Campaigns

SR 14 Segments

The SR 14 segments (Figure 13) are based primarily on geographic and landscape characteristics. The analysis of the segments focuses specifically ways to address safety on the highway; the large, access to complex recreation areas found in the segments are addressed separately. The tools and strategies applicable to SR 14 segments are organized by the following categories and described in further detail in the Congestion and Safety Toolkit (Table 6):

- Infrastructure Improvements
- Access Management
- Signing and Striping
- Landslide and Rockfall Prevention



Recreation Areas

As previously discussed in this report, several recreation areas experience recurring instances of parking overflow that result in visitors parking on the shoulder of the adjacent county road or along SR 14. Tools and strategies are considered from the Congestion and Safety toolkit and refined to address the site-specific concerns.

Dog Mountain Trailhead

Consistent with the FLAP application, the study reviewed pre-NEPA options to modify the existing parking site and/or provide a new trailhead and parking lot to the west to understand the fatal flaws and where mitigation would be required.

Congestion and Safety Toolkit

This section summarizes the tools and strategies recommended for implementation throughout the SR 14 corridor and within individual corridor segments and recreation sites. The toolkit (Table 6) connects strategies to existing and potential challenges facing the corridor.

Table 6. Congestion and Safety Toolkit

Category	Tool/Strategy	Description	Issue(s) Addressed	Applicable Focus Area
Access Management	Access consolidation	Create consolidated access point to parking area through aesthetically appropriate barrier	Reduce traffic "conflict points"Improve driver expectation	Recreation AreasSR 14 SegmentsDog Mountain
	Shoulder barrier	Install guardrail/ aesthetically appropriate barrier to block access to shoulder	 Prohibit parking in shoulder of roadway Channelize traffic to preferred location 	Recreation AreasSR 14 SegmentsDog Mountain
	Traffic circulation	Indicate the preferred direction of travel and/or parking	Improve efficiency of traffic flowReduce conflict points	Recreation Areas
	Gated access	Install gate at entrance of parking lot or access road to limit access depending on desired outcome (e.g., indicate parking is at capacity, provide for transit only)	 Prohibit illegal parking . 	Recreation AreasDog Mountain
Demand Management and Enforcement	Implement permit/user fee	Establish fees for high-use sites without existing permit or parking fees.	 Encourage turnover May reduce parking demand by encouraging ridesharing, use of transit and/or discouraging impulse trips 	Recreation Areas
	Reservation system	Establish or expand a reservation permit system during peak season(s)/day(s)	• Disperse arrival and departure times throughout the day	Recreation AreasDog Mountain
	Increased enforcement	Increase enforcement of illegal parking or non-payment	 Reduce sightline or physical obstructions on the roadway caused by illegally parked vehicles 	 Recreation Areas SR 14 Segments System Dog Mountain
	Timed parking	Assign time limits to a few parking stalls to encourage turnover.	Encourage turnover	Recreation AreasDog Mountain
	Parking Management Association	Establish a nonprofit, member-controlled organization that provides parking resource management for the CRGNSA.	 Consistent messaging/parking management within the CRGNSA Improve visitor expectation 	• System
	Traffic Monitoring, Data Collection, and Analysis	Annual data collection to track congestion or safety issues.	 Prioritize improvements Targeted solutions	• System

Category	Tool/Strategy	Description	Issue(s) Addressed	Applicable Focus Area
Infrastructure Improvements	Turn lanes	Provide dedicated turn lane into access point.	 Reduce speed differentials/conflict points on main roads Turning-related and rear end collisions 	 Recreation Areas SR 14 Segments
	Shoulder widening	Widen shoulder of roadway.	 Provide additional separation between vehicle traffic and bicyclists and/or pedestrians Reduce fixed-object collisions 	• SR 14 Segments
	Landslide and rockfall prevention	Implement landslide and rockfall mitigation measures.	• Improve safety of SR 14 corridor	• SR 14 Segments
	Traffic control changes	Evaluate different intersection control options (e.g., yield signs, stop signs, roundabouts, traffic signals)	Improve intersection safetyImprove traffic flow	 Recreation Areas SR 14 Segments
Public Information Campaigns	Visitor Information Center	Provide a one-stop location where visitors can park, board shuttles, determine where parking is available, pay for parking/reserve a parking spot, and get information on how to access destinations throughout the CRGNSA.	 Promote less congested times and locations to spread demand Encourage various transportation modes 	• System
	Traveler information literature	Provide information at established visitor destinations about congestion management, lesser-known hikes for and alternate travel modes.	 Promote less congested times and locations to spread demand Encourage various transportation modes 	• System
Technology Systems	Real-time parking information	Use close-circuit cameras or video sensors to monitor visitor demand management information.	 Reduce unnecessary vehicular trips. Allow users to make informed route, mode or destination choices based on conditions 	Recreation AreasSystemDog Mountain
	Variable Message Signs	Continue and expand use of variable message signs in urban areas in the CRGNSA.	 Allow users to make informed route, mode or destination choices based on conditions 	• System
	Speed limit reduction	Consider establishing new speed zone with reduced speed limit (permanent) through recurring congestion areas	Reduce vehicular speeds	• SR 14 Segments

Category	Tool/Strategy	Description	Issue(s) Addressed	Applicable Focus Area
Technology systems (continued)	Seasonal congestion ahead signs (PCMS)	Provide temporary, portable message signs during peak seasons with informational messages	 Increase awareness of upcoming traffic congestion or pedestrian activity 	 Recreation Areas SR 14 Segments
	Seasonal (portable) speed radar sign	Provide temporary, portable speed radar signs during peak seasonal congestion	Reduce vehicular speeds	Recreation AreasSR 14 Segments
	Trail Apps	Create trip sharing smartphone application to share user information (e.g., TREAD Map App)	 Promote less congested times and locations to spread demand 	• System
Signing and Striping	Static "Congestion Ahead" or slow vehicle warning signs	Provide advanced warning signs to indicate upcoming congestion or areas of slow vehicles.	 Reduce rear end collisions Improve driver expectancy	 Recreation Areas SR 14 Segments
	Rumble strips	Install rumble strips between travel lane and road shoulder or roadway pull-out.	 Reduce fixed object/road departure collisions Delineate between through traffic and high-use pedestrian activity in shoulder 	Recreation AreasSR 14 SegmentsDog Mountain
	No Parking Signs	Install no parking signs to indicate illegal parking zones.	 Prohibit parking in certain locations Reduce pedestrians walking alongside vehicular traffic 	 Recreation Areas SR 14 Segments Dog Mountain
	"Local Access Only" sign	Install signage to discourage through traffic	Discourage through traffic	Recreation Areas
	No Passing Zone	Stripe roadway as no passing zone	 Reduce potential conflict points or high speeds in recreation areas 	• SR 14 Segments
	Advanced warning sign with street name	Provide advanced warning signs to indicate name of upcoming access road/ destination.	Reduce rear end collisionsImprove driver expectancy	 Recreation Areas SR 14 Segments
	Left turning ahead sign	Provide advanced warning signs to indicate upcoming left turn.	Reduce rear end collisionsImprove driver expectancy	Recreation AreasSR 14 Segments
	Parking delineation on gravel	Delineate parking spaces in gravel parking lot with removable treatment.	 Encourage efficient use of available parking area 	Recreation Areas
	Pedestrian activity signage	Provide enhanced signage to indicate areas of increased pedestrian activity.	Increase awareness of pedestrian activityImprove driver expectancy	Recreation AreasSR 14 Segments

Category	Tool/Strategy	Description	Issue(s) Addressed	Applicable Focus Area
Signing and Striping (continued)	Pedestrian wayfinding signage	Provide wayfinding signage for pedestrians at recreation sites.	Encourage pedestrian channelizationTraffic calming	Recreation Areas
Traffic Calming	Provide buffered pedestrian path	Install	 Encourage pedestrian channelization Reduce conflict points between vehicles and pedestrians 	Recreation Areas
71	Speed cushion	Install a speed cushion	Reduce vehicular speeds	Recreation Areas
	Speed table	Install a speed table	 Reduce vehicular speeds Can be designed to serve as a pedestrian crossing 	Recreation Areas
	Pedestrian crossing	Provide a designate pedestrian crossing	 Encourage pedestrian channelization Reduce vehicular speeds Increase driver awareness of pedestrians 	Recreation Areas
Transit and Shuttle Services	Transit amenities	Provide amenities at transit stops (shelters, benches, bus stop signs)	 Encourage transit use Provide dedicated location for pedestrians to gather while waiting for transit 	Recreation AreasSystemDog Mountain
	Transit pull-outs	Identify locations for new or enhanced transit pull-outs along SR 14.	 Provide delineation between through traffic and transit stop Reduce conflict points between highway and transit/pedestrian traffic 	Recreation AreasSystem
	Seasonal transit shuttle	Establish seasonal transit routes to service peak demand: East of White Salmon (March-April), West of White Salmon (April - June).	Encourage transit useReduce vehicular demand	Recreation AreasSystem
	Establish CRGNSA "loop" shuttles	Establish a shuttle loop to connect Washington and Oregon: Dalles/Hood River Hood River/Bridge of the Gods)	Encourage transit useReduce vehicular demand	• System
	Connect with Oregon transit systems	Coordinate with Columbia Gorge Express to extend service to Washington	Encourage transit useReduce vehicular demand	• System

Category	Tool/Strategy	Description	Issue(s) Addressed	Applicable Focus Area
Transit and Shuttle Services (continued)	Park and ride lots	Provide Park and Ride Lots to reduce single vehicle parking congestion at high- use sites	Encourage transit useReduce vehicular demand	• System
	Public/private partnership	Work with local recreation businesses to create a weekend shuttle to serve recreation-specific sites	Encourage transit useReduce vehicular demand	SystemRecreation Areas
	Service enhancements	Work with transit agencies to establish a frequent, convenient and reliable transit schedule to Washington's busiest sites	Encourage transit useReduce vehicular demand	SystemRecreation Areas
	Transit incentives	Provide a reason to use transit instead of driving self: Pass reduction rates for locals, low-income, students	Encourage transit useReduce vehicular demand	SystemRecreation Areas
	Port of Portland/PDX Seasonal Gorge Connection	Appeal to ecotourism by connecting Gorge transit to Portland International Airport during the Spring and/or Summer	Encourage transit useReduce vehicular demand	• System
	Weekend Shuttle	Establish weekend shuttle to high-use recreation sites	Encourage transit useReduce vehicular demand	SystemRecreation Areas

Recreation Areas

Site specific strategy packages were developed for formal recreation sites with recurring congestion and safety concerns. The goal is to incrementally address recurring instances of congestion that create unsafe conditions for visitors and through traffic. Strategies from the Toolkit were further refined for their specific applicability at recreation areas and described in further detail for each site on the following pages.

•	-	
Issue	Strategy	Implementation Considerations
Horizontal curves/sight	Congested area/slow vehicles warning signs	Warning advisory sign with advisory speed more effective than variable speed limits.
distance with congestion	Variable speed limit/speed limit reduction	Variable speed limit not desirable in rural areas per CRGNSA Scenic Guidelines.
	Rumble strips	Rumble strips need to consider potential impacts to available space for bicycle traffic in shoulder.
Congestion from westbound	Prohibit westbound left-turn (signage)	Consider providing a designated left-turn downstream for vehicles wanting to make a U-turn.
vehicles turning into shoulder	One-way parking signage	Signs would need to be designed and placed consistent with CRGNSA Scenic Guidelines.
Road/shoulder width	Replace with wider structures (1997 plan)	When this project becomes a WSDOT priority, the viewpoint will need to be considered as part of the design refinement.

Cape Horn Viewpoint

Note: WSDOT jurisdiction

Cape Horn Trailhead

Issue	Strategy	Implementation Considerations
Parking overflow	Real-time parking availability	 Cameras potentially provide visitors with access to images via a website. Cameras would require infrastructure for power (battery, solar or hardwire/fiber) and communications (wireless, cellular, hardwire/fiber, local communication tower) Camera installation and location must be sensitive to the natural surroundings and scenic standards in the CRGNSA Management Plan. Sensors would require similar infrastructure as cameras and likely an additional maintenance cost.
	Implement permit system for Park & Ride users/Fee for trail	 Recommend coordination between USFS and Skamania County. Regular enforcement would be required to ensure compliance. Requiring permits would entail ongoing system management and support. Policy changes may be needed to collect revenue and establish permit system.

Issue	Strategy	Implementation Considerations
	Shuttle system originating in Clark County	 Will likely require coordination with C-Tran. Would entail ongoing system management and support.
Accessibility	Opportunities to expand accessibility and/or provide parking:	Current Cape Horn Trailhead parking is shared with Salmon Falls Park and Ride under Skamania County jurisdiction with a RIC 2 (maximum 25 parking spaces). Cannot expand parking in current location. Truck traffic anticipated to increase along Salmon Falls Road.
	A: Canyon Creek/Mt Pleasant Parcel - parking	 RIC Class varies between 2 and 3. Consider potential for parking at this site to attract additional trail/recreation users. Traffic study should be conducted to quantify potential impacts to local road system.
	B: Collins Parcel - accessibility	 Land straddles boundary of CRGNSA Design should consider features/treatments for accessibility and mobility needs. Consider potential for improvements at this site to attract additional trail/recreation users. Traffic study should be conducted to quantify potential impacts to local road system.
Parked vehicles blocking traffic and driveways	No parking zones on Salmon Falls Rd and Canyon Creek Rd	 Regular enforcement would be required to ensure compliance. Consider zone placement that discourages displacement of the illegal parking to another location.
	Local access only signage for Canyon Creek Rd (pilot study)	 Consider a pilot study using temporary barriers. Maintain adequate right of way for local delivery truck traffic. Will need to comply with Skamania County road standards. Encourage advanced outreach to local property owners along Canyon Creek Rd.

Note: Skamania County (parking lot) and USFS (trail) jurisdiction

Beacon Rock Trailhead

Washington State Parks completed the *Beacon Rock Entrance Road Realignment* planning process in 2019 to identify a preferred concept to renovate the main park entrance at Beacon Rock State Park². This study supports the strategies identified in the Preferred Concept as summarized below:

- 1. Roundabout at Kueffler Rd/SR 14
- 2. 4-way intersection at Little Rd/SR 14
- 3. Improved Hamilton Mountain Rd/SR 14 intersection
- 4. Two-way Hamilton Mountain Rd w/ five-foot path

² <u>https://parks.state.wa.us/1142/Beacon-Rock-Entrance-Road-Realignment</u>

- 5. New parking lot west of existing parking lot
- 6. New Visitor Center & Restroom at new parking lot
- 7. Grade-separated pedestrian undercrossing
- 8. Trail to new parking lot
- 9. New information kiosk
- 10. Bioretention stormwater areas
- 11. Auxiliary parking north of Kueffler Rd/SR 14
- 12. Short-term and accessible parking at the east end (retrofit existing parking)
- 13. Replace culverts for fish passage north of Kueffler Rd/SR 14
- 14. Retaining wall
- 15. Separated sidewalk from SR 14 on the north side of SR 14
- 16. Park entry sign on SR 14

The first phase of improving safety along SR 14 involves submitting a predesign report to the Office of Financial Management to determine if the project proposal meets key criteria to be included in a capital budget request to the Washington State Legislature. If the proposal is included in the capital budget request, the next steps are to apply for legislative funding for design and permitting, followed by funding for construction. These steps may be accomplished in phases. The entire funding process, from concept to construction, would occur over several state budget cycles.

Drano Lake Boat Ramp

Issue	Strategy	Implementation Considerations
Parking overflow	Real-time parking availability	 Cameras potentially provide visitors with access to images via a website. Cameras would require infrastructure for power (battery, solar or hardwire/fiber) and communications (wireless, cellular, hardwire/fiber, local communication tower). Camera installation and location must be sensitive to the natural surroundings and scenic standards in the CRGNSA Management Plan. Sensors would require similar infrastructure as cameras and likely an additional maintenance cost.
	Implement reservation system during peak fishing season(s)	 Coordinate reservation system with existing Skamania County Boat Launch Permit system (Ordinance No. 2018-02). An online reservation system would need to be set up.
Inability to expand in current location	Provide limited spaces for single vehicle parking (with fee) to discourage parking in SR 14 shoulder	 During peak season, parking overflow on SR 14 could still exist. Single vehicle parking could create exclusivity for a portion of parking stalls and could create frustration if reserved stalls are empty and no other boat trailer stalls can be found.

Issue	Strategy	Implementation Considerations
Vehicles parked on SR 14	Seasonal congestion ahead signs (PCMS)	 Display temporary information about upcoming change in traffic conditions/increased congestion. Signs would need to be designed and placed consistent with CRGNSA Scenic Guidelines. PCMS placement will need to be coordinated with the appropriate road authority.
	Rumble strips	Rumble strips need to consider potential impacts to available space for bicycle traffic in shoulder.
	No passing zone through parking area	Should coordinate with Washington State Patrol.
	Extend no parking zone	 Regular enforcement would be required to ensure compliance. Consider zone placement that discourages displacement of the illegal parking to another, potentially more dangerous, location.
	Increased enforcement during peak season(s)	 Traffic restrictions policies and enforcement penalties should be clearly explained to visitors; new traffic restrictions can be piloted to test whether they have the desired impacts before becoming permanent. Often requires increased staff resources on-site.

Note: Skamania County (parking lot) and WSDOT (SR 14) jurisdiction

Swell City to Spring Creek State Park

Issue	Strategy	Implementation Considerations
Uncontrolled access (private property)	Provide one-way circulation with curb/barrier	 Coordination at Swell City between private landowner and WSDOT Consider design mimicking Doug's Beach access management Signs would need to be designed and placed consistent with CRGNSA Scenic Guidelines. Need to consider potential impacts of curb/barrier to available space for bicycle traffic in shoulder.
	Provide more formalized parking delineation	Would need to be designed and placed consistent with CRGNSA Scenic Guidelines.
Vehicles parked on SR 14	Congestion ahead signs	 Signage could be permanent or temporary. Display temporary information about upcoming change in traffic conditions/increased congestion. Signs would need to be designed and placed consistent with CRGNSA Scenic Guidelines. PCMS placement will need to be coordinated with the appropriate road authority.
	Rumble strips	Rumble strips need to consider potential impacts to available space for bicycle traffic in shoulder.
	Provide buffered pedestrian path between gravel lots	 Path would likely be on private land. Consider pairing with pedestrian wayfinding signage (would need to be designed and placed consistent with CRGNSA Scenic Guidelines).

Issue	Strategy	Implementation Considerations
Pedestrians crossing SR 14 near Spring Creek Hatchery Rd	Install gate or barrier to prohibit parking north of SR 14 (private property)	 Gate/barrier would be on private land. Consider how limiting this parking could displace the illegal parking to another, potentially more dangerous, location. Could keep gates in raised position during low demand periods when restrictions may be lifted (e.g., nights, off-season).

Note: Private (Swell City), WSDOT (SR 14 shoulder) and Washington State Parks (Spring Creek) jurisdiction

Coyote Wall

Issue	Strategy	Implementation Considerations
Parking overflow	Real-time parking availability	 Cameras potentially provide visitors with access to images via a website. Cameras would require infrastructure for power (battery, solar or hardwire/fiber) and communications (wireless, cellular, hardwire/fiber, local communication tower) Camera installation and location must be sensitive to the natural surroundings and scenic standards in the CRGNSA Management Plan. Sensors would require similar infrastructure as cameras and likely an additional maintenance cost.
	Implement usage fee	 USFS requires certain amenities in place before instituting day-use fee. New policies and enforcement penalties should be clearly explained to visitors. Often requires increased staff resources on-site for enforcement/on-going maintenance.
	Mountain bike/shuttle system originating in White Salmon/Hood River	 Explore a public-private partnership for providing shuttle service for recreationalists. A concern is that the service could result in the additional use of trails possibly negatively impacting the recreational experience or causing more off trail impacts than currently exist.
Vehicles parked on Courtney Rd	No Parking zones on Courtney Rd	 Regular enforcement would be required to ensure compliance. Consider zone placement that discourages displacement of the illegal parking to another, potentially more dangerous, location.
	No Parking and tow symbol signs near SR 14	 Regular enforcement would be required to ensure compliance. Consider zone placement that discourages displacement of the illegal parking to another, potentially more dangerous, location.
SR 14/Courtney Rd Intersection Safety	Advanced intersection warning sign with street name	Compliance with WSDOT standards.
,	Eastbound left turning vehicles ahead sign	Compliance with WSDOT standards.

Catherine Creek

Issue	Strategy	Implementation Considerations
Parking overflow	Real-time parking availability	 Cameras potentially provide visitors with access to images via a website. Cameras would require infrastructure for power (battery, solar or hardwire/fiber) and communications (wireless, cellular, hardwire/fiber, local communication tower) Camera installation and location must be sensitive to the natural surroundings and scenic standards in the CRGNSA Management Plan. Sensors would require similar infrastructure as cameras and likely an additional maintenance cost.
	Implement usage fee	 Could require an intergovernmental agreement (IGA) between Klickitat County and USFS due to land ownership. Could explore mechanism to ensure fees collected go to improving local site. USFS requires certain amenities in place before instituting day-use fee. New policies and enforcement penalties should be clearly explained to visitors. Often requires increased staff resources on-site for enforcement/on-going maintenance.
	Channelize and provide angle parking	 Coordination between USFS and Klickitat County to ensure compliance with roadway standards and CRGNSA Scenic Guidelines Consider design mimicking Doug's Beach access management Need to consider potential impacts of curb/barrier to available space for emergency vehicle access.
	Transit shuttle (seasonal - originating in White Salmon/Hood River)	 Will likely require coordination with <i>Gorge</i> <i>TransLink</i> alliance. Would entail ongoing system management and support.
Old Hwy 8 Safety	Traffic calming measures (speed table/hump, speed radar signs, pavement demarking delineation)	 Coordination with Klickitat County to ensure compliance with roadway standards and CRGNSA Scenic Guidelines Design considerations for emergency vehicle and snowplow access.
	Provide designated crossing of Old Hwy 8 to connect trail systems	• Coordination between USFS and Klickitat County to ensure compliance with roadway standards and CRGNSA Scenic Guidelines
	Provide pedestrian wayfinding signage	 Coordination between USFS and Klickitat County to ensure compliance with roadway standards and CRGNSA Scenic Guidelines.
	Consider accessible trail conn- ection to universal access trails	 Coordination between USFS, Friends of the Columbia River Gorge and Klickitat County to ensure compliance with roadway standards and CRGNSA Scenic Guidelines.

Dog Mountain Trailhead

The Dog Mountain Trailhead was funded through a separate FLAP grant to refine potential solutions to address known safety and congestion concerns. The project team identified potential locations for a relocated trailhead and parking lot northwest of the current SR 14-adjacent location and recommended next steps for advancing the project into future phases.

Due to the additional details and complexities, the concept refinement process is documented in further detail in the Dog Mountain Concept Refinement Report (Appendix B) and the findings are summarized in the following section. The primary purpose of this Concept Refinement Report is to provide agencies responsible for the development and implementation of the project the information needed to refine project scope and support subsequent NEPA analysis by providing an account of project purpose and need and a rational basis for the reasonable range of concepts.

Concept Development

Five locations for the Dog Mountain trailhead relocation were originally identified by the Consultant team through information available in the FLAP application and reviewing existing topography. The five conceptual locations (Figure 14) were distributed to the appropriate staff from the project partners (USFS, WSDOT and FHAWA) for preliminary feedback.

The intent was to screen out any concepts unlikely to be implemented due to "red flags", such as whether it makes progress toward addressing the project purpose or if the agencies have other jurisdictional concerns.

PROJECT PURPOSE

- Minimize/eliminate hazardous conditions along SR 14 as it relates to accessing the Dog Mountain Trailhead.
- Discourage parking on SR 14
- Support the land management strategies of USFS
- Maintain the trail experience of the Dog Mountain Trail

The feedback aided the project team in determining whether that deviation was substantial enough to remove the concept from further consideration or warrant refinement before more detailed analyses are completed. The results of the preliminary screening is summarized below:

- 1. Grant Lake Further refinement needed.
- 2. Mountain Glade West Remove from further consideration; unmitigable natural resources concerns.
- 3. Mountain Glade East Remove from further consideration; unmitigable natural resources concerns.
- 4. Maintenance Yard Remove from further consideration; does not adequately satisfy project goals.
- 5. Existing Further refinement needed.





Concept Refinement

USFS INTERDISCIPLINARY TEAM SITE VISIT

As a follow-up to the concerns expressed during the preliminary screening, the Consultant team organized a site visit on Tuesday July 27, 2021 with USFS natural resource and recreation staff to further vet potential site locations in the area west and north of Grant Lake.

REFINED CONCEPTUAL PARKING RELOCATION SITES

The Consultant team considered the feedback from the preliminary screening and USFS interdisciplinary team site visit to refine potential conceptual parking relocation sites near Grant Lake.

The relocated Dog Mountain parking lot will need a to accommodate year-round recreational users (e.g. hikers). To meet the needs of the current and projected usage, the parking lot should account for the following features:

- Parking capacity for 50-75 vehicles to maintain desired user experiences at Dog Mountain and avoid site overcrowding.
- Capability of accommodating transit shuttle.
- Amenities: Transit shelter, interpretive sign(s), and vault toilet(s)

Conceptual Layouts

The Consultant team prepared two unique conceptual layouts to illustrate possible configurations near Grant Lake. The layouts are meant to serve as a launching point for future reconnaissance and design refinement.

Both layouts provide the maximum 75 parking stalls allowed under the CRGNSA Management Plan standards for RIC 3, assuming enhanced mitigation. Both layouts also assume vault toilets and space is provided to accommodate a shuttle bus. The distinguishing features of each are summarized below.

Concept 1: NW Grant Lake Sprawl

This concept is depicted in Figure 15. The distinguishing feature of this concept is that its northern lot minimizes the distance between the parking lot and the existing trail system.





The preliminary rough order of magnitude cost estimate for Concept 1 ranges from \$1.8 million to \$2 million, depending on design features, and includes a 40% contingency for construction costs (2021 dollars). If design, project management and construction engineering design support is needed, the estimate increases to a total of approximately \$2.4 to \$2.6 million.

Concept 2: NW Grant Lake Compact

This concept is depicted in Figure 16. The distinguishing feature of this concept is that the distance between the north and south lots is minimized to reduce the overall footprint and limited the extents of new road pavement.

The preliminary rough order of magnitude cost estimate for Concept 2 ranges from \$1.5 million to \$1.7 million, depending on design features, and includes a 40% contingency for construction costs (2021 dollars). If design, project management and construction engineering design support is needed, the estimate increases to a total of approximately \$2 million to \$2.2 million.





Natural Resource Impacts

The conceptual drawings were developed based on information available through desktop studies and two site visits. If concepts are moved forward into project development, an analysis for compliance with NEPA and other applicable federal and state regulations will be completed as part of the project development process.

Biological Considerations

There is a Memorandum of Understanding (MOU) USFS and Washington Department of Fish and Wildlife (WDFW) in this area regarding sensitive species. Any parking lot/trailhead designs will need to take the MOU into account and require coordination with all relevant management programs.

Visual Considerations

Scenic quality is a fundamental element of recreation experiences and this is especially true within the CRGNSA. The CRGNSA Management Plan has defined Key Viewing Areas (KVAs) as "those portions of important public roads, parks, or other vantage points within the Scenic Area from which the public views Scenic Area landscapes." Identified KVAs of relevance to the Dog Mountain Trailhead Focus Area include:

- Washington State Route 14
- Dog Mountain Trail
- Highway I-84

A refined design with proposed grading activities and more details about the construction activities, as well as a proper site visit to the location to determine more accurate field conditions, would need to be competed to conduct a proper "leaf off" analysis, as those activities and changes may be visible from SR 14, even if the parking lot itself is not visible (tree removal, grading slopes, etc).

ACCESS SAFETY IMPROVEMENT OPPORTUNITIES

Existing Dog Mountain Trailhead

As described in the Problem Statement, projected growth is likely to continue its upward trend and managing congestion at the current Dog Mountain Trailhead parking lot under the existing configuration and system will continue to be a challenge. Previous efforts to improve and enhance the existing parking lot were limited by complexities with the underlying land ownership and preliminary results from an environmental study. The trailhead, while "grandfathered" in under the CRGNSA Management Plan, would not meet scenic quality standards or recreation site intensity class standards.

The next phase in project development will require further discussions with USFS and project partners to determine the appropriate mitigations for the existing trailhead parking lot, regardless of whether the parking lot is relocated. Some strategies for consideration are summarized below in Table 7.

Strategy	Description	Considerations
Real-time parking availability	 Use close-circuit cameras to monitor visitor demand management information. The cameras could monitor traffic congestion and parking lot capacity. WSDOT can also use cameras to view weather and road conditions that affect travel speeds, potentially resulting in slowing. Sensors to monitor parking utilization 	 Cameras potentially provide visitors with access to images via a website. Cameras would require infrastructure for power (battery, solar or hardwire/fiber) and communications (wireless, cellular, hardwire/fiber, local communication tower) Camera installation and location must be sensitive to the natural surroundings and scenic standards in the CRGNSA Management Plan. Sensors would require similar infrastructure as cameras and likely an additional maintenance cost.

Table 7. Strategies for Consideration at Existing Dog Mountain Trailhead

Strategy	Description	Considerations
Expand peak season reservation system	Expand peak season reservation system throughout spring and summer	 Regular enforcement would be required to ensure compliance. Requiring permits would entail ongoing system management and support.
Extend No Parking sign to east	Extend no parking/tow away zone signage into shoulder area of SR 14 approximately 300 feet east of the Dog Mountain Trailhead.	 Risk of restricting parking is visitors may find a less safe way to park.
Guardrail to block access to shoulder	Install guardrail along north shoulder of SR 14 both east and west of the Dog Mountain trailhead to prohibit vehicles from parking in shoulder.	 Design exception may be necessary. Guardrail could be considered as a buffered pedestrian trail to access trailhead. Design would need to be consistent with CRGNSA Scenic Guidelines.
Congested ahead/slow vehicles warning signs	Use portable changeable message signs to advise visitors of congestion, delays, or parking conditions during seasonal congestion.	 Dynamic and variable message signs would allow visitors to make more informed decisions. Signs can display only a limited amount of information. Signs would need to be designed and placed consistent with CRGNSA Scenic Guidelines.
Shuttle expansion	 Provide additional or larger shuttle vehicles Reduce the time between bus arrivals (headways) Add more routes or stops 	 Could decrease congestion if drivers choose to switch travel modes. Need to identify additional funding for increased capital and operating costs. Transit vehicle size may be limited by existing parking lot geometry.
Restore parking lot to natural conditions	Abandon existing parking lot and trailhead and restore to natural conditions	 Would require relocated parking lot be operational. Could be a form of mitigation for the relocated parking lot. Design would need to deter visitors from attempting to access the existing trail from the abandoned trailhead location.
Repurpose existing parking lot	 Repurpose existing parking lot to transit only Repurpose existing parking lot to pay-to-park 	 Access to parking lot would need to be managed controlled, potentially by an automatic gate and/or pay station. No-car/pay-to-park access options are only successful in reducing congestion when visitors know about and use these systems; extensive marketing of alternative mode options recommended.
Single Access Point	 Create consolidated access point to existing parking lot through aesthetically appropriate barrier Access point should be located at west end to achieve adequate sight distance. 	 Could consider wall that mimics historical rock wall in CRGNSA, earth berm, or aesthetic barrier. Would need to be designed and placed consistent with CRGNSA Scenic Guidelines.

Strategy	Description	Considerations
Implement Preferred Alternative from 2007 Study	 Stripe and pave the parking area with 59 spaces, including 3 accessible spaces Add landscaped berms to create a buffer and clear zone between the parking area and SR-14 and to create a single access point Improve drainage and provide swales for treating stormwater runoff from the parking area Providing a paved plaza with seating areas at the trailhead Add a sidewalk and low wall along the north edge of the parking area Provide a new interpretive sign and improved approach signage on SR 14. 	 Will require Phase II hazmat assessment (geophysical survey). Should also test site soil and groundwater to document residual conditions related to historic land use.

Next Steps: Studies and Site Investigations Needed

To develop the Project and move into the NEPA analysis phase, the next step in developing this project would be to develop a set of Conceptual Level (30 percent) Plans to clearly identify the footprint of this project and identify the boundaries of the environmental studies needed for the project. This work would include:

- A Traffic Study to determine proposed circulation patterns and the forecasted volume at the intersection of SR 14 and the proposed trailhead access road to confirm turn lane warrants.
- Field Survey of proposed project footprint.
- Horizontal and Vertical Alignment and Typical Section of new access road, parking lot, and highway intersection.
- Type, Size and Location Report for structures on project.
- A preliminary Geotechnical Report.
- Refined Construction Cost Estimate based on 30% Design.
- Environmental Site Investigations and Identified Permitting Needs (to be completed by the USFS?)
- Delineation of wetlands that could be affected by the project
- Survey and assessment of significant trees within the project footprint
- Work session between the appropriate land management agencies and design team to refine concept location based on additional studies and mitigation needs.

KEY ISSUES TO BE RESOLVED

During the next phase of the project there are several decisions that need to be made. Some of these include:

- Fate of existing parking lot needs further evaluation.
- Design criteria must be established prior to beginning design.

IMPLEMENTATION

Flexible Response

To address the complex recreation and transportation needs within the CRGNSA, the corridor requires a framework of flexible and adaptive management to address issues. There are no one-size-fits-all or single strategies that can achieve the goals of this study. Often many of the strategies are interconnected and implementing multiple approaches increases the likelihood of success.

For example, transit ridership may be higher for those programs that are designed as part of a recreation experience and have supporting marketing campaigns



and other incentives to encourage use. Infrastructure enhancements make transit operations more functional, improving reliability and making transit a more attractive alternative for potential riders. The use of adaptive management gives agencies the ability to evaluate and modify strategies in response to actual findings for specific sites and resources.

As the strategies and projects presented in this report are refined, formalized and implemented, land managers and enforcement agencies must regularly evaluate their effectiveness to meet management objectives. Evaluating and adjusting approaches should occur on a regular basis as user behaviors shift, new opportunities are made available, and other issues arise.

Cooperation

Partnering agencies must continue to collaborate to create attractive grant funding applications, leverage resources, and create an operating plan that works both along the SR 14 corridor and throughout the CRGNSA.

Managing change requires partnering agencies to continue engaging the community and working together to implement projects and strategies, to resolve issues as they arise, and to further develop funding sources. One study promotes long term agency collaboration through coordination with the Columbia River Gorge Committee and partnering agency representatives.

Funding

The Strategies Chapter describes strategies and recommendations and provides important information regarding considerations for implementation. This section discusses the potential funding opportunities and where agencies might collaborate.

Funding Needs

Examples of major corridor projects include:

- Dog Mountain Trailhead Parking Relocation or Rehabilitation
- Transit service expansion
- Off-highway parking
- Wayfinding and signage
- Geometric enhancements

All these projects need both capital construction funding and long-term operations and maintenance funding. Funding can be leveraged by correlating multiple projects. Additional projects, such the Regional Transit Strategy, which although not directly located in the corridor, has significant impact on the ability to implement corridor transit recommendations.

Potential Funding Mechanisms

FEDERAL FUNDING SOURCES

Federal Lands Access Program

The Federal Lands Access Program (FLAP) was established in 23 U.S.C. 204 to improve transportation facilities that provide access to, are adjacent to, or are located within Federal lands. The program supplements State and local resources for public roads, transit systems, and other transportation facilities, with an emphasis on high-use recreation sites and economic generators. The program is designed to provide flexibility for a wide range of transportation projects. The program is funded by contract authority from the Highway Trust Fund and subject to obligation limitation. Funds will be allocated among the States using a statutory formula based on road mileage, number of bridges, land area, and visitation.

Western Federal Lands issues a Request for Proposals every two years and agencies may request \$100,000 or more in funding. A minimum local match of 13.5 percent is required, although a higher local match amount typically results in a higher-ranked application. The Federal Land Management Agency (FLMA) must support and sign the application.

Federal Lands Transportation Program

The Federal Lands Transportation Program (FLTP) was established in 23 USC 203 to improve the transportation infrastructure owned and maintained by the following FLMAs: National Park Service (NPS), Bureau of Land Management (BLM), Bureau of Reclamation (BOR), USFWS, USFS, Corps, and independent Federal agencies with land and natural resource management responsibilities.

The FLMAs have considerable responsibility and latitude for managing their program within the FLTP. The FHWA, however, is ultimately responsible for ensuring the program is administered according to the statutory and implementing regulations for title 23 USC. This includes conformity to highway planning, design, construction, maintenance, and safety standards. The use of FLTP funds does not affect the overall responsibility for construction, maintenance, and operations of the facilities. That responsibility continues to lie with the owner of the facility.

Federal Lands Recreation Enhancement Act

The Federal Lands Recreation Enhancement Act authorizes five agencies to charge and collect recreation fees on federal recreational lands and waters. The five agencies are the BOR, BLM, USFWS, NPS, and the USFS. The agencies retain the collected fees primarily for on-site improvements.

The FLREA authorizes agencies to charge different kinds of fees at recreation sites, outlines criteria for establishing fees, and prohibits fees for certain activities or services. The USFS can charge "standard amenity fees" in areas or circumstances where a certain level of services or facilities are available.

FLREA also authorizes all five agencies to charge an "expanded amenity fee" for specialized facilities and services, and special recreation permit fees for specialized uses, such as group activities.

Great American Outdoors Act / Land and Water Conservation Fund

The Great American Outdoors Act was signed into law in 2020 and is intended to fund up to \$1.9 billion annually (for five years from energy development) the National Parks and Public Land Legacy Restoration Fund to provide needed for critical facilities maintenance and infrastructure in our national parks, forests, wildlife refuges, recreation areas and American Indian schools. The Great American Outdoors Act will also use royalties from offshore oil and natural gas to permanently fund the Land and Water Conservation Fund (LWCF) to a level of

\$900 million a year to invest in conservation and recreation opportunities throughout the country. The LWCF program is divided into the "State Side" which provides grants to State and local governments, and the "Federal Side" which is used to acquire lands, waters, and interests therein necessary to achieve the natural, cultural, wildlife, and recreation management objectives of federal land management agencies.

Nationally Significant Federal Lands and Tribal Projects

The Nationally Significant Federal Lands and Tribal Projects (NSFLTP) program provides federal funding for the construction, reconstruction or rehabilitation of transportation projects providing access to or located on Federal or Tribal lands. Under the NSFLTP, the Federal share of a project can be up to 90 percent and can be used to improve the condition of a critical transportation facility. Large-scale projects with estimated construction costs of \$50 million or more are given priority consideration for selection, but the program accepts projects with estimated construction costs of at least \$25 million.

Emergency Relief and Federally Owned Roads

The ERFO Program was established to assist federal agencies with the repair or reconstruction of tribal transportation facilities, federal lands transportation facilities, and other federally owned roads that are open to public travel, which are found to have suffered serious damage by a natural disaster over a wide area or by a catastrophic failure. The intent of the ERFO program is to pay the unusually heavy expenses for the repair and reconstruction of eligible facilities. The ERFO program is not intended to cover all repair costs but rather supplement FLMA repair programs.

Better Utilization of Investments to Leverage Development

The BUILD Transportation Discretionary Grant program provides a unique opportunity for the US Department of Transportation (USDOT) to invest in road, rail, transit and port projects that promise to achieve national objectives. The BUILD program enables USDOT to examine projects on their merits to help ensure that taxpayers are getting the highest value for every dollar invested. The eligibility requirements of BUILD allow project sponsors at the State and local levels to obtain funding for multi- modal, multi-jurisdictional projects that are more difficult to support through traditional USDOT programs.

Surface Transportation Program

The Surface Transportation Program (STP) continues to be the most flexible of all the highway programs and provides the most financial support to local agencies. Projects eligible for STP funding include highway and bridge construction and repair; transit capital projects; bicycle, and pedestrian and recreational trails. ODOT allocates STP funds to Metropolitan Planning Organizations and County Lead Agencies for prioritizing and selecting projects that align with their regional priorities involving all entities eligible to participate in a public process.

STATE FUNDING SOURCES

State revenue comes from numerous taxes, fees, permits, tolls, and other revenues. Washington's fuel taxes (gasoline, diesel, biodiesel, etc.) comprise the largest share of all transportation revenue. Licenses, permits and fee revenues comprise the second largest share of all transportation revenues. This revenue is related to motor vehicle registrations, weight fees, license plate replacement fees, title fees, and dealer permits. The remaining consists of ferry fares, toll revenue, driver related, and other transportation related revenue.

STATE FUEL TAX

The Washington state fuel tax is the single biggest source of transportation revenue for state and local governments. Currently the state fuel tax is set by the legislature at 49.4 cents per gallon and generates approximately \$3 billion per biennium.

HIGHWAY CONSTRUCTION BONDS

Highway Construction Bonds are an important source of funding for transportation capital projects in Washington authorized in chapter 47.10 RCW16. Debt service is the periodic payment of principal, interest, insurance, and covenants on a bond. Transportation bonds are typically issued as 25 or 30-year debt. Bonds are backed by future fuel tax, license, permits and fee revenue and/or tolls and the revenue must be collected for the entire 25 or 30 years debt period. The Washington State Treasurer is also authorized to refinance original issues of bonds if conditions warrant this type of transaction. Refunding prior bond issues can reduce total debt service requirements and achieve budgetary savings over the remaining term of the bond.

PRIVATE FUNDING SOURCES AND ALTERNATIVES

Parking Management

Opportunities for parking management; including a coordinated, CRGNSA-wide paid parking system with season passes that consider discounts for locals and disadvantaged communities; should be a high priority for the Corridor Management Team. This includes options for potential revenue generation through paid parking and reservations. Parking management provides an effective tool for managing the corridor. Its ability to connect with technology and provide real-time information may be beneficial above and beyond potential revenue generation.

It is recommended that a more detailed parking be developed in management strategy coordination with the proposed travel framework. Because it is more difficult to add fees years after new improvements are made, paid parking should be considered as new and expanded parking areas are developed. Additionally, the impacts of only charging for some parking areas and not all should be evaluated as people will typically park at unpaid locations first.

Because there are several variables to consider, further analysis is needed to explore the topic. The exploration of revenue options should consider how implementation of these options on the SR 14 corridor could impact other areas around the Gorge. Agencies should consider that fee structures can encourage or reward those who take alternative transportation to recreation sites, thereby reducing the vehicle miles traveled (VMT) and improving the environment. Equitable access should also be a critical component of the proposed program. Free or low-cost transit access is another way to offer equitable access when parking at the site or areas closest to the recreation site may be priced higher than transit.

Conversations regarding revenue streams are never easy but are necessary to the success of implementing new strategies and providing a safe quality visitor experience. The SR 14 corridor is a special part of the Gorge. It can offer economic benefits for the local communities and to the region. Both the indirect and direct values created by visitors enjoying this corridor must be considered.

Pay for Success

The Pay for Success (PFS) model is a new way of financing public services to help agencies target limited dollars to achieve a positive, measurable outcome. Under the Pay for Success model, a government agency commits funds to pay for a specific outcome that is achieved within a given timeframe. The financial capital to cover the operating costs of achieving the outcome is provided by independent investors. In return for accepting the risks of funding the project, the investors may expect a return on their investment if the project is successful. Payment of the committed funds by the government is contingent on the validated agency achievement of results. In this way, the PFS model shifts the burden of investment risk from the government to private investors, effectively creating a social investment market where the government only pays for results.

Fee Collection Modifications – Revenue from Recreation, Permits, Events, Etc.

User fees, or revenue from recreation facilities, may go back to the general fund or to the agency. rarely Further, agencies operate cross jurisdictions to share resources in management of recreational facilities. To break the barriers and work collaboratively to address challenges of shared facilities like parking, path systems, and transit, agencies need to shift to a partnership approach. This arrangement should foster collaborative operations and maintenance budgeting, sharing of revenue and expenses, sharing resources, and monitoring of capacity and operating challenges.

Partners must explore opportunities to keep revenue within the corridor for infrastructure preservation and annual operating. This requires agencies jointly seeking/committing to equitable rate structures for all visitors, understanding how a specific facility's fees impact the system and moves demand, and developing a corridor wide approach to fees for shared resources and facilities. It is recognized that using funds across jurisdictions will at a minimum require legal agreements and may require legislative changes.

Although it is not a simple process, it is attainable within a partnership program. For example, California State Parks has examples of entering joint agreements where a portion of a fee goes to State Parks and a portion goes to transit operations.

The agreement should require the partnering agencies to study all current and proposed fee structures to determine the best corridor wide funding approach for providing an excellent visitor travel experience, maintaining capacity at individual facilities, protecting natural and cultural resources, and covering the operating and maintenance costs of a shared corridor transportation system (i.e., parking, path, transit). This may include new fees and structural changes, such as congestion pricing or reservation pricing, within the corridor and must consider an equitable approach for all visitors.

Road Districts

These are areas created by a petition of affected landowners, which allow for the issuance of bonds for financing local transportation projects.

Private Donations

The private donation of money, property, or services to mitigate identified development impacts is the most common type of private transportation funding. Private donations are very effective in areas where financial conditions do not permit a local government to implement a transportation improvement itself.