SR 14 AND DOG MOUNTAIN CONGESTION AND SAFETY STUDY

Comprehensive guidance to improve safety and manage congestion in Washington's Columbia River Gorge National Scenic Area

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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

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DAVID EVANS AND ASSOCIATES INC

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

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Acknowledgments

The development of this SR 14 and Dog Mountain Congestion and Safety Study has been the collective effort of the following people:

Core Project Team:

Seth English-Young, Senior Transportation Planner, Western Federal Lands Highway Division
Lorelei Haukness, Recreation Planner, United States Forest Service
Stan Hinatsu, Recreation Staff Officer, United States Forest Service
Laurie Lebowsky-Young, Planning Director, Washington State Department of Transportation

Consultant Team:

David Evans and Associates, Inc.
Angela Rogge, PE, Project Manager
Dian Mao, PE, Transportation Engineer
Tom McKerlick, PE, Transportation Engineer
Reece Murata, PE, Roadway Engineer
Andrew Mortensen, Sr. Transportation Planner,
Kat Holtan, Transportation Planner
Jason Medema, Environmental Specialist/Planner
Melissa Foltz, GIS Graphics
Ron Larson, PE, Quality Assurance/Control Specialist
Aldo González, Graphic Design
Christine Immroth, Technical Editor
Nita Bruhn, Project Coordinator

EnviroIssues
Public Involvement Specialists

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Abbreviations and Acronyms

AADT	Annual Average Daily Traffic
ABA	Architectural Barriers Act
ADA	Americans with Disabilities Act
ATP	Washington State Active Transportation Plan
BIA	Bureau of Indian Affairs
BNSF	BNSF Railway
CAT	Columbia Area Transit
CPT	Core Project Team
CRGNSA	Columbia River Gorge National Scenic Area
DEA	David Evans and Associates, Inc.
FHWA	Federal Highway Administration
FLAP	Federal Lands Access Program
FTA	Federal Transit Administration
GMA	General Management Area
Gorge	Columbia River Gorge National Scenic Area
HSP	Washington State Highway System Plan
KVA	Key Viewing Area
MOU	Memorandum of Understanding
MP	Mile Post
MPH	Miles Per Hour
MPO	Metropolitan Planning Organization
N/A	Not Applicable
NEPA	National Environmental Policy Act
PCMS	Portable Changeable Message Signs
PTP	2016 Washington State Public Transportation Plan
RIC	Recreation Intensity Class
RTP	Regional Transportation Plan
RTPO	Regional Transportation Planning Organization
SMA	Special Management Area
SR	State Route
STIP	Statewide Transportation Improvement Program
TIP	Transportation Improvement Program
UA	Urban Area
USACE	United States Army Corps of Engineers
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
VMS	Variable Message Signs
WSDOT	Washington State Department of Transportation
WTP 2040	Washington Transportation Plan 2040 and Beyond

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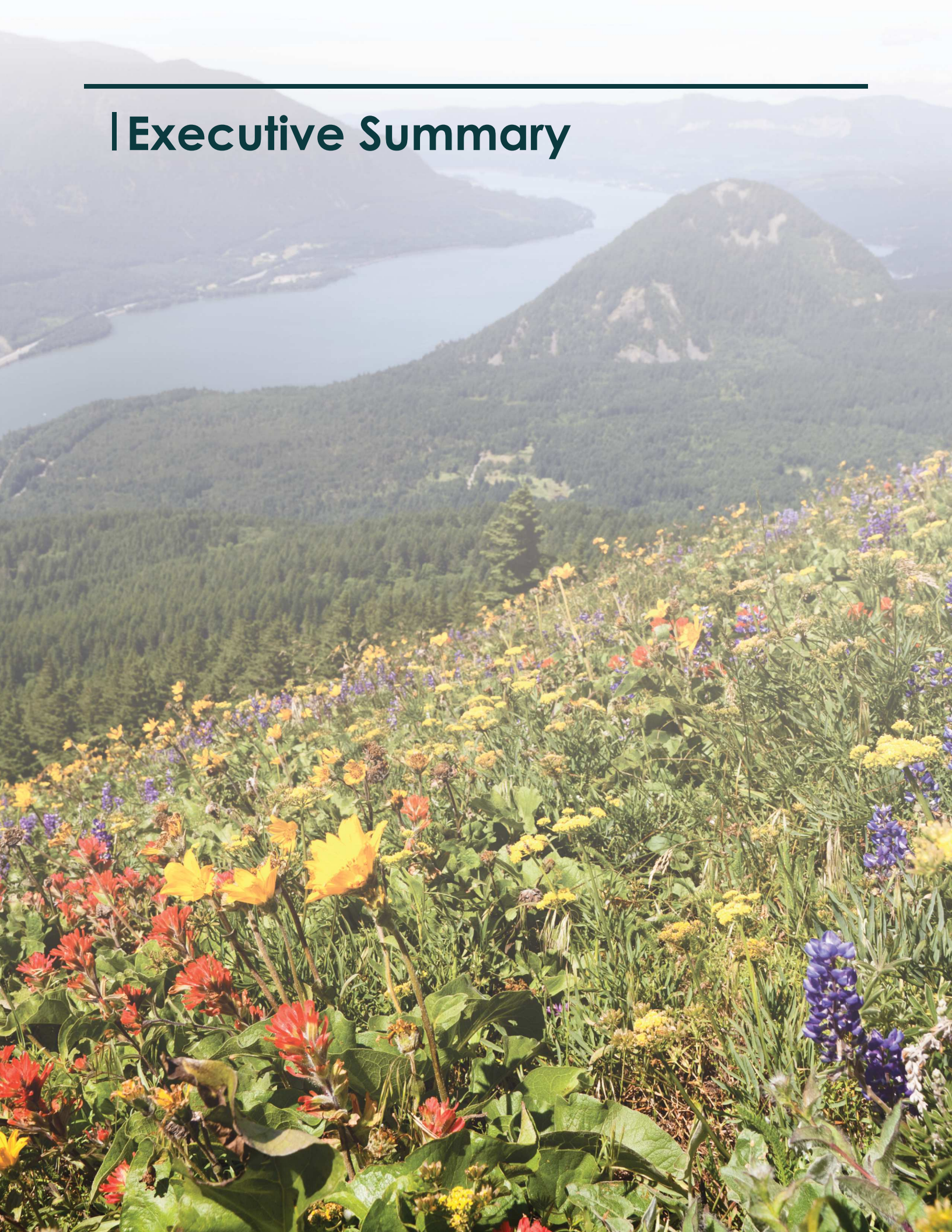
Executive Summary



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Executive Summary

Introduction

For the SR 14 and Dog Mountain Congestion and Safety Study, the Federal Highway Administration (FHWA) partnered with the United States Forest Service (USFS) and the Washington State Department of Transportation (WSDOT) (together, the "project partners") to study congestion and safety in two parts: (1) recreation access sites along an 80-mile stretch of Washington State Route (SR) 14 and (2) a detailed examination of options to relocate the Dog Mountain Trailhead.

SR 14, a two-lane rural and rolling highway, is the primary access route to many of Washington's popular recreation areas within the Columbia River Gorge National Scenic Area (CRGNSA). SR 14 is a scenic corridor rich in natural, cultural, and recreational resources, and provides access to the Dog Mountain Trail and a number of other popular recreation sites. The CRGNSA was created to protect scenic, natural, cultural, and recreational resources in the Gorge. There is growing interest to address increasing demand for recreation access. The challenge is to identify solutions that help protect resources in the Gorge, consistent with the guidelines established in the CRGNSA Management Plan.

The Introduction chapter of this study report fully defines the study area and the study purpose and need (which are summarized below), as well as vision statements for each of the two study parts, and a series of goals and objectives used to guide development of improvement strategies to help achieve the study purpose.

Purpose

The purpose of the study is to develop a comprehensive package of strategies that can be implemented to address the transportation and safety needs of those using SR 14 to access recreations sites within the CRGNSA.

Need

The increased use of the trails and recreation sites along SR 14 (and throughout the Gorge) has impacted user experiences, particularly on weekends and holidays in the spring and summer. As the region's population continues to grow, the number of people who use SR 14 for transport, travel, and access to recreation sites in the Gorge has increased and placed a strain on transportation facilities in the CRGNSA. 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, congestion, and related safety issues.

Study Area

The study area (Figure E-1) includes the SR 14 corridor within the CRGNSA, from Washougal to Maryhill, and the connecting access roads and parking lots, with emphasis on facilities that provide access to recreation sites. Within the study area, the study gives special focus to the Dog Mountain Trailhead and its existing parking lot.

Figure E-1: SR 14 Corridor and Study Area

Policy and Planning Context

The Policy and Planning Context chapter of this study report outlines the CRGNSA Management Plan administered by USFS, individual counties and the Columbia River Gorge Commission for lands and access facilities within the Gorge. The chapter also provides an overview of the Washington State Transportation Plan and its supporting multimodal plans.

CRGNSA Management Plan

The CRGNSA Management Plan was created to ensure that the land within the CRGNSA is used consistently in accordance with the purposes and standards of the Columbia River Gorge National Scenic Area Act. Land use designations, landscape settings, and recreation intensity classes in the CRGNSA Management Plan dictate the policies and regulations related to transportation facilities, including the size of parking lots serving individual recreation sites. Strategies identified in the study to address needed improvements must address the requirements of the Management Plan.

Washington State Transportation Plan

The Washington Transportation Plan 2040 and Beyond (WTP 2040) was prepared by WSDOT and adopted by the Washington State Transportation Commission. WTP 2040 incorporates statewide policy goals and objectives based on agency and public input. WSDOT develops and administers multiple long-range modal, safety, infrastructure, and community engagement plans supporting the goals of WTP 2040. WTP 2040 and its supporting plans guide administrative management and planning oversight on SR 14 and other state highways within the study area.

Coordination

The study was led by the project partners that comprise the Core Project Team (CPT), which includes representatives from FHWA, USFS, and WSDOT. The CPT met regularly to guide the study needs, inform the development of potential improvement strategies, and identify implementation opportunities.

A stakeholder group was formed to inform the study. The stakeholder group, which included representatives from more than two dozen stakeholders from various federal agencies, counties and cities, tribal nations, and private advocacy groups, met three times throughout the duration of the study. Several stakeholders reviewed and provided direct comments on the draft study report and findings.

Sample of online open house outreach material: Public input was instrumental to the study, informing the needs assessment and improvement strategies to address safety and congestion issues in the SR 14 corridor.

The study recognizes the Columbia River Gorge has been home to Indian people since "time immemorial". In addition to including tribes in the stakeholder group, the project partners consulted with tribes on a government-to-government basis. These tribes included the Confederated Tribes of the Warm Springs, and Yakama Nation, Nez Perce Tribe, the Confederated Tribes of Umatilla Indian Reservation, the Confederated Tribes of the Grand Ronde, the Cowlitz Tribe and the Siletz Tribe.

The public was provided opportunities to engage with the CPT throughout the planning process. 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 study's project website and email to the CPT. Appendix C includes a full summary of the public involvement process and outcomes.

Needs Assessment

Day use hiking and sightseeing are highly popular activities that are centered at various trailheads throughout the Gorge. Trailhead facilities often include picnic areas, restrooms, and other amenities. Parking facilities are either paved or graveled at these sites. There are also overnight camping areas that are more popular during the summer months.

The Needs Assessment chapter summarizes the study process and findings in the evaluation of access and parking facilities at 35 recreation sites within the study area. Parking capacity and utility conditions vary depending on the season and the trailhead location. Regardless of their capacity and conditions, most trailhead parking areas reach maximum capacity on the weekend throughout the summer season, and there are an increasing number of days when little to no parking is available for most of the day. The study identified eight formalized recreation sites that have recurring congestion and visitor parking overflow, shown in Figure E-2 below.

The Needs Assessment chapter also summarizes the transportation conditions along SR 14 within the study area, including peak summer traffic conditions and vehicle crash history in the corridor. The study examined all modes of access to recreation sites, including private vehicle, public transportation, and pedestrian and bicycle access. A more detailed examination of existing transportation and land use conditions is provided in Appendix A to this study.

Figure E-2: Recreation Sites with Recurring Congestion

Safety and Congestion Toolkit

The study developed a Safety and Congestion Toolkit (Toolkit) for application throughout the study area, with tools and strategies to address transportation safety and congestion. These tools and strategies were developed based on the full examination of existing conditions and future traffic demand as summarized in the Needs Assessment, with input from the public, project partners, and stakeholders, as noted previously under "Coordination."

The Toolkit is organized under eight categories, describing the tools and strategies that are applicable in various focus areas of the study area. Application of the Toolkit follows an adaptive management approach that emphasizes strategies and solutions with the least resource impact, followed by strategies with greater impact, as needed.

The Safety and Congestion Toolkit chapter summarizes the tools and strategies recommended for implementation within three focus areas: (1) System Level, (2) specific SR 14 Segments, and (3) Recreation Sites. Applied Toolkit findings are summarized for the eight recreation sites in the study area that experience recurring instances of parking overflow that result in visitors parking on the shoulder of the adjacent county road

Safety and Congestion Toolkit Strategies for the SR 14 and Dog Mountain Study Areas

or along SR 14. Applied Toolkit findings are also summarized in the Dog Mountain Trailhead Relocation chapter.

For each site, the lead agency (with jurisdiction) is identified for conducting further site study and project development. Lead agencies will partner with local organizations such as Friends of the Columbia River Gorge to help guide develop plans for accessible, barrier-free options and to help make sure that accessible accommodations are accounted for in the design of parking lots and visitor access facilities.

Dog Mountain Trailhead Relocation

The Dog Mountain Concept Refinement Report (Appendix B) is a separately funded project that identifies solutions to address known safety and congestion concerns at the existing Dog Mountain Trailhead, located immediately north of SR 14. Findings of the Dog Mountain Concept Refinement Report are summarized in a separate chapter of this study.

The purpose of the Concept Refinement Report is to provide the project planning partners (FHWA, USFS, and WSDOT) the information needed to refine the project scope and support subsequent National Environmental Policy Act (NEPA) analysis, the project purpose and need statement, and a rational basis for a reasonable range of options considered and evaluated.

The concept refinement identified five optional sites to relocate or improve the Dog Mountain Trailhead and its associated parking lot. The CPT completed a screening process of the options while considering the study's purpose and need, which resulted in recommending relocating the Dog Mountain Trailhead west of its current location and further study of the area near Grant Lake as a potential site for the new parking lot and trailhead access.

Unique conceptual layouts were developed to illustrate two possible trailhead and parking configurations near Grant Lake. These two concepts will undergo further analysis for compliance with NEPA and other federal and state regulations, including development of conceptual-level plans (30 percent design) to clearly identify the footprint of the project and identify the boundaries of the environmental studies that follow. Natural resource, biological, and visual impacts will all be considered to more accurately determine the type and extent of necessary special design treatments in the relocation of the Dog Mountain Trailhead and parking lot.

Defining Purpose and Need:

- Minimize or remove hazardous conditions along SR 14 as they relate to accessing the Dog Mountain Trailhead
- Discourage parking on SR 14
- Support the land management strategies of USFS
- Maintain the trail user experience of the Dog Mountain Trail

Figure E-3: Dog Mountain Trailhead Relocation Initial Conceptual Locations

#	Parking Lot Options	Screening Outcome: Further Refinement	Remove from Further Consideration	Finding
1	Grant Lake	✔		
2	Mountain Glade West		✕	Unmitigable natural resource impact
3	Mountain Glade East		✕	Unmitigable natural resource impact
4	Maintenance Yard		✕	Does not meet study purpose and need
5	Existing		✕	Does not meet study purpose and need

Implementation

A framework of flexible and adaptive management is required to address the complex recreation and transportation needs within the CRGNSA and along SR 14. Several of the strategies from the Safety and Congestion Toolkit are complementary and interconnected. Their successful implementation in the form of future safety and congestion mitigation projects will require continued coordination between the project partners.

The process to secure funding for potential projects on SR 14 or other state highways in the study area differs from that for projects exclusively on federal lands. The Implementation chapter summarizes a logical process to confirm and secure funding for priority state highway projects originating from the SR 14 and Dog Mountain Congestion and Safety Study. Potential projects on federal lands external to state highway rights-of-way may be funded directly through federal grants on a merit basis and may require a formal application process.

A combination of a federal grant and state funding programs are a resource to fund SR 14 safety and access improvements.

Summary

The SR 14 and Dog Mountain Congestion and Safety Study is an early step to address the increasing demand for recreation access. The initial assessment of the strategies and solutions identified in the study are believed to be consistent with the CRGNSA Management Plan. Project implementation would require a formal review to ensure consistency with the CRGNSA guidelines to and allow for the continued protection of natural, cultural, and scenic resources of the Gorge.

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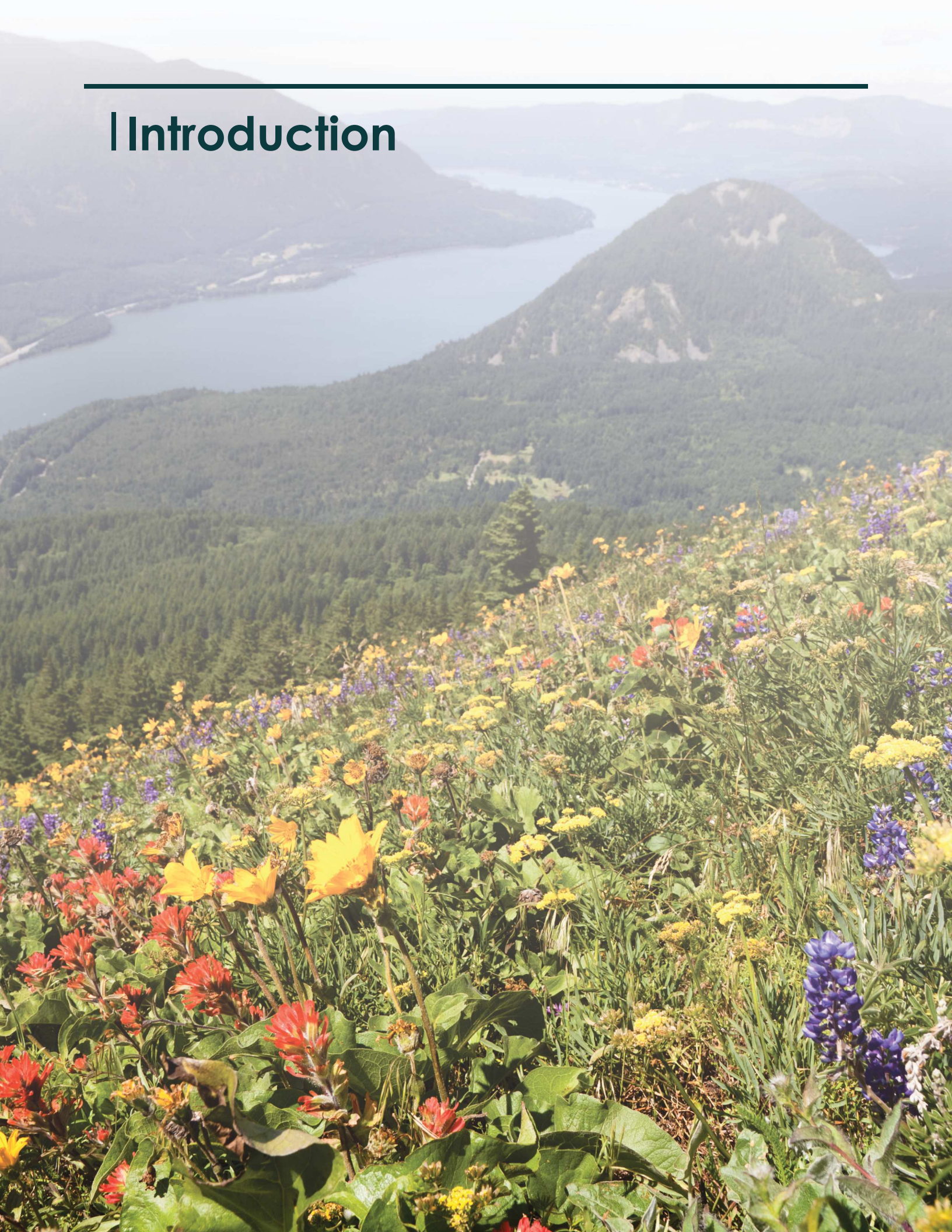
Introduction



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Introduction

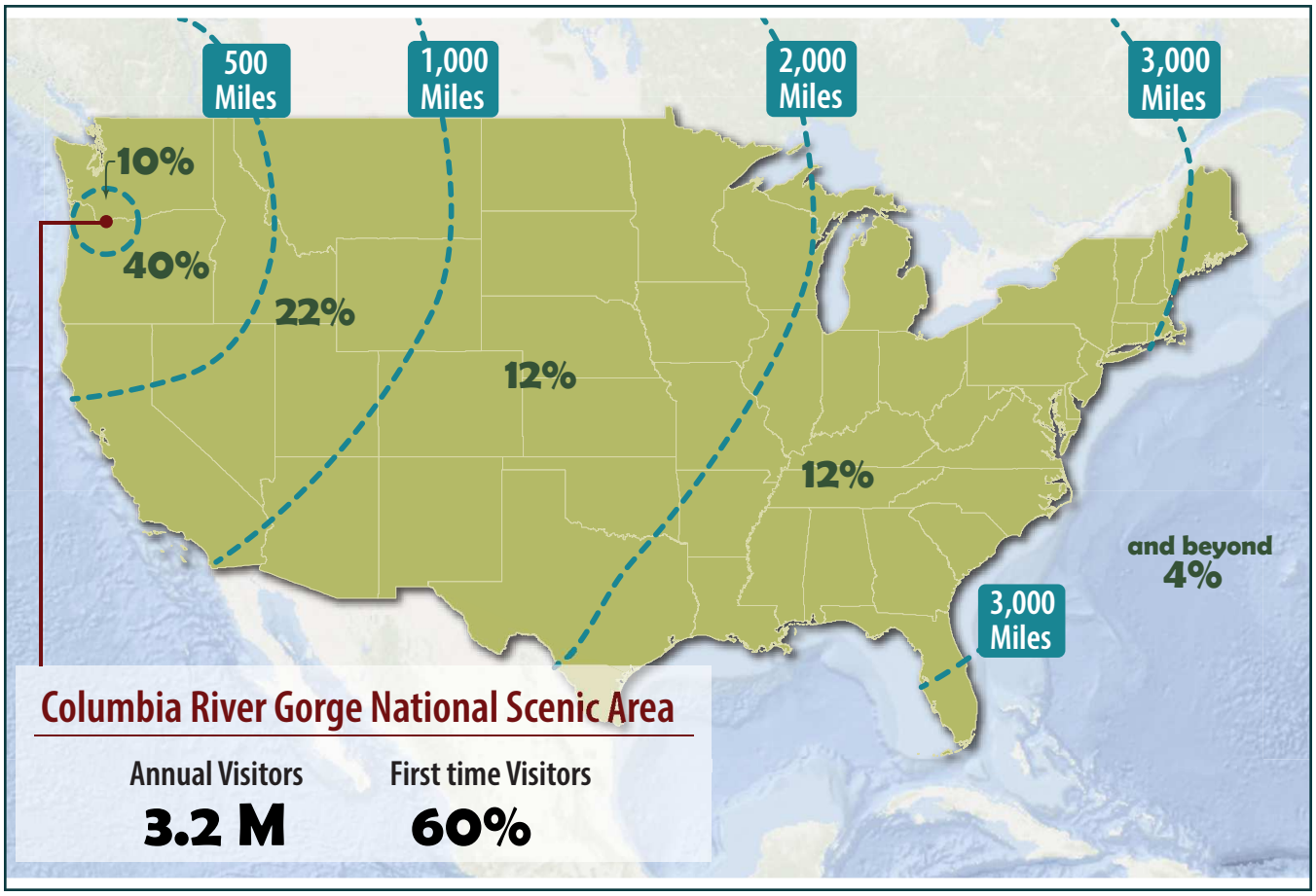
The Federal Highway Administration (FHWA) partnered with the United States Forest Service (USFS) and the Washington State Department of Transportation (WSDOT) (together, the "project partners") to study congestion and safety along an 80-mile stretch of Washington State Route (SR) 14 and the Dog Mountain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

The study was guided by a Core Project Team (CPT), which included representatives from FHWA, USFS, WSDOT, and the consultant David Evans and Associates, Inc. (DEA).

Popularity of the Columbia River Gorge National Scenic Area

In 2018, over 3.2 million visits were made to one or more destinations within the Columbia River Gorge National Scenic Area (CRGNSA or "Gorge")[1]. Over half of the visitors surveyed live within Pacific Northwest, many of which frequent the Gorge more than once a year. The remaining 50% of the Gorge visitors travel from other US states and abroad. The effects of the Gorge's great popularity are manifested in traffic congestion and safety issues at many recreation, and scenic destinations.

Figure 1: CRGNSA Visitors in 2018



[1] A site visit is the entry of one person onto a National Forest site or area to participate in recreation activities for an unspecified period of time.

Study Purpose and Need

SR 14, a two-lane rural and rolling highway, is the primary access route to many of Washington's popular recreation areas in the Gorge. SR 14 is a scenic corridor rich in natural, cultural, and recreational resources, and provides access to the Dog Mountain Trail, one of the most popular hikes in the CRGNSA. 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 CRGNSA's Washington side of the Gorge.

The CRGNSA was created to protect the scenic, natural, cultural, and recreational resources of this amazing area. There is increased interest to address increasing demand for recreation access while identifying solutions that are consistent with guidelines established in the CRGNSA Management Plan, that allow for the continued protection of natural, cultural, and scenic resources.

Purpose

The purpose of the study is to develop a comprehensive package of strategies that can be implemented 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 the screening of possible improvement options.

Need

The increased use of the trails and recreation sites along SR 14 (and throughout the Gorge) has impacted user experiences, particularly on weekends and holidays in the spring and summer. As the region's population continues to grow, the number of people who use SR 14 for transport, travel, and to access recreation sites in the Gorge has increased and placed a strain on transportation facilities in the CRGNSA.

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, congestion and the related safety issues.

A Note on COVID-19

In March of 2020, as the scope of this study was being finalized, COVID-19 was declared a pandemic by the World Health Organization. At that time, it was not known what the long-term changes in travel behavior in the corridor would be. Priorities of agencies and organizations appropriately shifted to address the immediate and critical needs associated with the pandemic. Data collection for this study was delayed and planned in-person meetings were changed 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 closed to the public. However, recreational use quickly rebounded, because enjoying the outdoors was embraced as a safe activity and opportunity to socialize outside the confines of one's own home.

Because of these unprecedented times, this study recognizes that long-term planning and implementation of some of the recommended projects and efforts may be influenced by the need for jurisdictions, agencies, and organizations to adjust to the ever-changing post-pandemic world. COVID-19 has also shown the urgency and need for the recommendations outlined in this report. The transportation framework presented in this study includes many similar tools needed to manage recreation and visitation levels.

View from Dog Mountain During Wildflower Season

Vision

Because the study comprises two unique and distinct components (SR 14 and the Dog Mountain Trailhead), 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.

Goals and Objectives

Six goals are established for the study and are used to guide development of strategies and concepts to achieving the study purpose.

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: Potential solutions must meet CRGNSA guidelines established in the Management Plan.

View from Cape Horn

Measurable objectives are defined for each goal and provide the basis for evaluating potential strategies, programs, and projects that best meet the study Purpose and Need. 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. Table 1 summarizes the study's goals and objectives.

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 and 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 travel modes that enhance mobility at designated high-priority locations. b. Reduce reliance on single-occupancy vehicle trips. c. Improve travel reliability and efficiency of SR 14. d. Increase awareness of availability of park and ride opportunities. e. 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 relative higher return on investment. b. Pursue grants and collaboration with other agencies to 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 messaging about transportation options programs, services, and modes. e. Enhance access to recreation sites for transportation disadvantaged 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.	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. Maintain the rustic character and scenic integrity of the SR 14 corridor. d. Coordinate proposed improvements with tribal governments to ensure that tribal treaty rights are protected.

Note: Any potential solution must meet National Scenic Area goals.

Study Area

The study area (Figure 2) includes the SR 14 corridor within the CRGNSA, from Washougal to Maryhill, and the connecting access roads and parking lots, with emphasis on facilities that provide access to recreation sites. Within the study area, the study gives special focus to the Dog Mountain Trailhead and its existing parking lot. The two main components of the study area are summarized below.

Figure 2: SR 14 Corridor and Study Area

SR 14

The study corridor is an 80-mile stretch of SR 14 beginning at mile post (MP) 18 near the eastern boundary of the city of Washougal in Clark County and extending east through Skamania County to MP 98 in Klickitat County, just west of the unincorporated community of Maryhill. This segment of SR 14 is a designated scenic corridor and Key Viewing Area under the CRGNSA Management Plan. The study gives particular focus to sites along the corridor that provide access to public lands (such as recreational areas).

SR 14 connects the Portland, Oregon/Vancouver, Washington metropolitan area at the western end of the Gorge with the Washington communities along SR 14 of North Bonneville, Stevenson, Home Valley, White Salmon, Bingen, Lyle, Dallesport, and Wishram. The SR 14 corridor in this area is part of the Lewis and Clark Trail Scenic Byway, which follows the north bank of the Columbia River and provides access to dozens of recreation sites. The corridor has historically carried substantial tourism and recreational traffic and is a key economic link for the rural communities in the Gorge on the Washington side.

Lewis and Clark Trail Scenic Byway

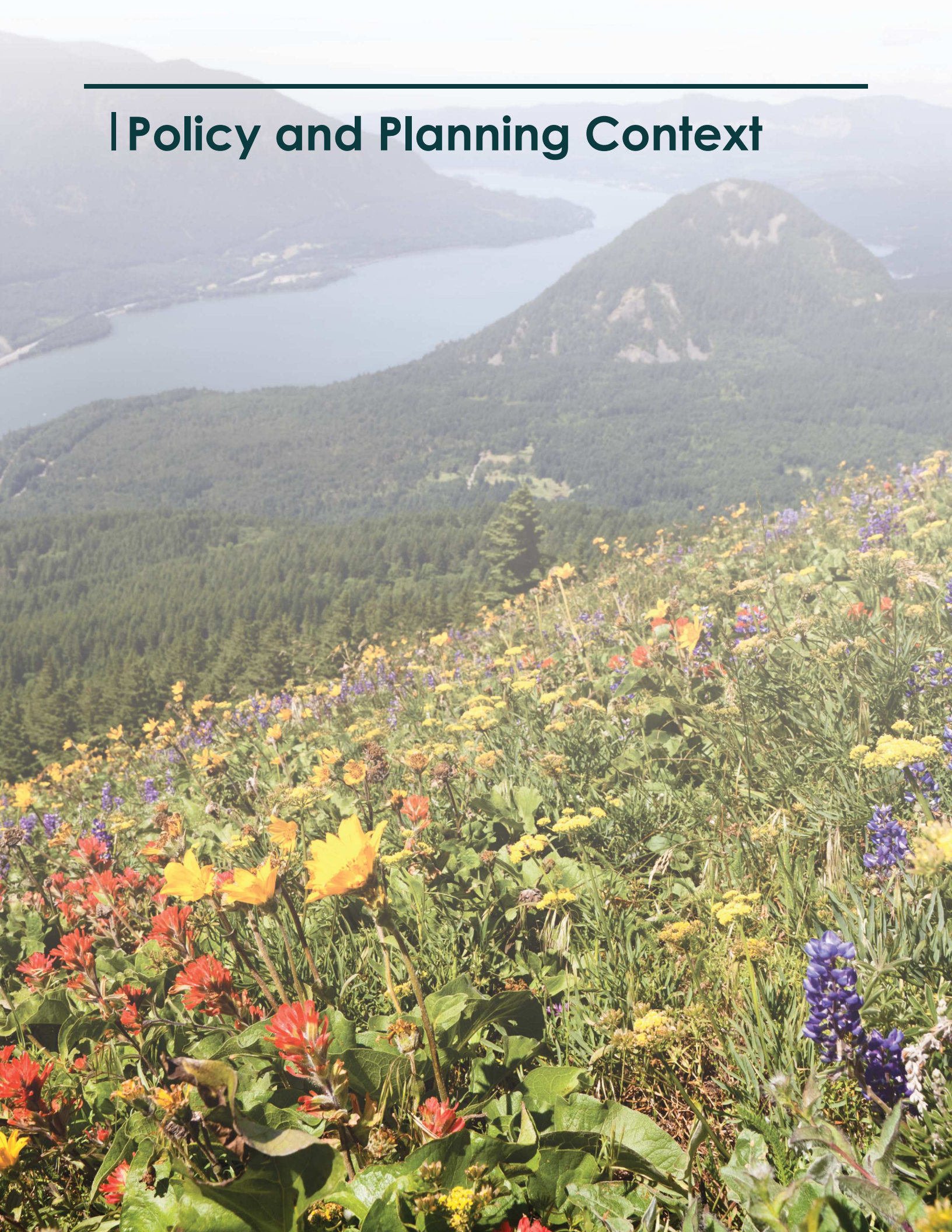
The central portion of this 572-mile byway, which traces the route taken by Lewis and Clark, runs through the CRGNSA. The byway follows the twists, turns, and hills of the Columbia River, offering glimpses of lush Oregon slopes and providing numerous roadside stops, including several historical markers.

Dog Mountain

The Dog Mountain and Augspurger Mountain Trail System (commonly referred to as the Dog Mountain trail system) is accessible from SR 14 at MP 53.7 on the north side of the highway, approximately 10 miles east of the city of Stevenson (see Figure 3). The Dog Mountain component of the study area includes the existing gravel parking lot and adjacent USFS lands that could potentially serve as a site for trailhead and parking lot relocation. Dog Mountain is also a designated Key Viewing Area identified in the CRGNSA Management Plan.

Figure 3: Dog Mountain Trailhead Parking Lot

Policy and Planning Context



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Policy and Planning Context

Columbia River Gorge National Scenic Area Management Plan

The CRGNSA is the largest National Scenic Area in the United States. The National Scenic Area Act, which was passed into law by Congress in 1986 was passed to ensure that the scenic, natural, cultural, and recreation resources within the CRGNSA would be protected. Under the act, the National Scenic Area Management Plan (CRGNSA Management Plan) was created in 1991 to ensure that the land within the CRGNSA is used in accordance with the purposes and standards of the National Scenic Area Act.

The CRGNSA Management Plan was revised in 2020 and the five implementing counties have incorporated the revised Management Plan into their county ordinances. Both the revised Management Plan and the revised county land use ordinances have received concurrence from the Secretary of Agriculture.

General and Special Management Areas

The Columbia River Gorge Commission and the counties within the CRGNSA grant land use approvals jointly according to uses outlined in the CRGNSA Management Plan. The CRGNSA includes three distinct areas: General Management Areas, Special Management Areas, and Urban Areas (see Figure 4). The 13 Urban Areas (nine in Washington and four 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, wherein uses are generally more restricted than in the designated General Management Areas.

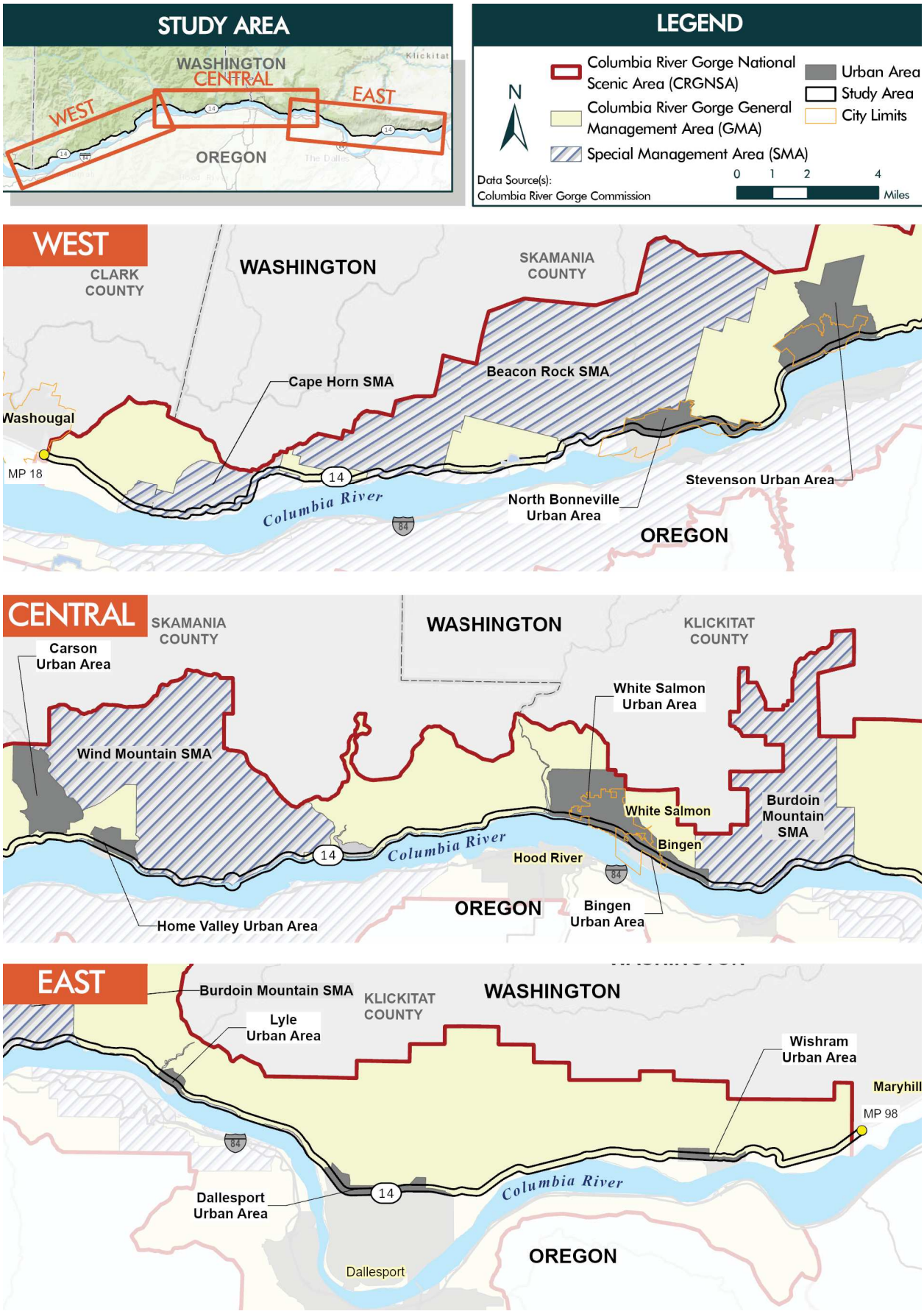
Land use varies throughout the study area, though it is primarily classified as one of the following four land use designations:

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

Along the western segment of the study area, the primary land use designation is Forest/Woodland and is managed by USFS. Though the entire study area 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, where small towns along SR 14 are classified as Rural Center and several undesignated allotments are classified as Bureau of Indian Affairs (BIA) land.

Coyote Wall

Figure 4: CRGNSA General Management Area, Special Management Area, and Urban Area Designations



Guidelines Relating to Transportation Facilities

Recreation Intensity Classes

The CRGNSA Management Plan provides guidelines related to development for four "recreation intensity classes" (RICs) in General Management Area and Special Management Area lands. The RIC dictates the allowable recreation development and uses. A RIC of 1 indicates that 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. With respect to this study specifically, the RIC of a recreation site plays an important role in defining the limits of development. Table 2 describes the parking provisions for each RIC.

Scenery Guidelines

The Management Plan also provides specific guidance related to the protection of scenic quality on lands seen from key viewing areas (KVAs), the maintenance of existing landscape settings, the establishment of scenic travel corridors, and signage. Scenic guidelines are intended to emphasize the protection and enhancement of Gorge landscapes as seen from KVAs, protect scenic travel corridors (including SR14) by maintaining their rustic character, and minimize visual impacts of development and signage. Popular recreation sites within the study area are often visible from multiple KVAs. The scenic standards for proposed development will be dependent on both the Landscape Setting and the Land Use Designation. Strategies involving development will be evaluated for consistency with Management Plan guidelines.

Other parking requirements in the CRGNSA include:

- Parking areas must be designed to fit existing topography to the extent possible.
- Parking areas of more than 50 spaces must be divided into discrete parking areas, separated by 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 must be at least 20 feet.
- All parking areas must be set back from property boundaries and right-of-way lines by at least 50 feet.
- Parking areas must be set back from the Columbia River and major tributaries by at least 100 feet. The required buffer varies based on land use designation and whether the body of water is fish bearing.

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.
- New development and reconstruction of parking areas must include provisions for bicycle parking.

Table 2: Parking Provisions for Special and General Management Areas within the CRGNSA

Recreational Intensity Class	❶ Very Low Intensity	❷ Low Intensity	❸ Moderate Intensity	❹ 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 accommodations should be considered (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 if enhanced mitigation is approved for at least 20% of the site) • Mass transit accommodation is required (e.g., bus parking)

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

Washington State Policy and Plan Oversight

WSDOT State Highway and Active Transportation Plan Guidance

Every four years the Washington Transportation Commission is required to prepare or update a comprehensive and balanced statewide transportation policy plan, currently reflected in the **Washington Transportation Plan 2040 and Beyond** (WTP 2040). The Washington State Transportation Commission and Washington State Department of Transportation (WSDOT) developed goals and objectives based on agency and public input. WTP 2040 includes recommendations to increase revenues dedicated to transportation system safety education and enforcement activities, increases in reliable multimodal travel for people and goods in communities across the state, and encouraging the design and development of communities that make walking and biking more viable for more people and increase opportunities for active travel for all ages.

Statewide Transportation Policy Goals

- **Economic Vitality -** Promote and develop transportation systems that stimulate, support, and enhance the movement of people and goods to ensure a prosperous economy.
- **Preservation -** Maintain, preserve and extend the life and utility of prior investments in transportation systems and services.
- **Safety -** Provide for and improve the safety and security of transportation customers and the transportation system.
- **Mobility -** Improve the predictable movement of goods and people throughout Washington State, including congestion relief and improved freight mobility.
- **Environment and Health -** Enhance Washington's quality of life through transportation investments that promote energy conservation, enhance healthy communities and protect the environment.
- **Stewardship -** Continuously improve the quality, effectiveness and efficiency of the transportation system.

WTP 2040

WSDOT develops and administers multiple long range modal, safety, infrastructure and community engagement plans supporting the goals of WTP 2040. Plans most relevant to the SR 14 and Dog Mountain Congestion and Safety Study are noted here.

2007-2026 Washington State Highway System Plan (HSP)	Element of WTP 2040 that addresses current and forecasted highway needs, administers policy on highway functional classification and access management. The HSP identifies all needs consistent with the WTP as set by the Legislature, and is constrained to available revenue projections. The HSP is updated every two years includes constrained lists of identified congested highway segment needs, specific prioritized strategies for addressing them, and performance measurements to determine the effectiveness of these strategies. The current HSP update is expected to be completed and adopted by the Washington State Transportation Commission in 2022.
Strategic Highway Safety Plan (2019 Target Zero)	2019 Target Zero supplements the HSP with a focus on safety, and includes recommendations to reduce highway speeds in select areas through design and speed limits, addressing highway crossings, and providing infrastructure that reduces the likelihood of a crash occurring and the severity of a crash if one does occur.
2020 Washington State Active Transportation Plan (ATP)	The ATP assesses the statewide needs of active transportation users: people who walk, run, use a mobility assistive device such as a wheelchair, cycle, or use scooters or skateboards. The ATP focuses on multimodal network connectivity and describes effects of infrastructure decisions on safety and mobility. The ATP provides criteria for prioritizing and evaluating investments, and recommends strategies for each of its five goals of connectivity, safety, opportunity, participation, and partnerships.
2016 Washington State Public Transportation Plan (PTP)	The PTP places particular priority on the need to increase the person-carrying capacity of key Washington transportation corridors to decrease congestion, support special needs transportation, connect communities with transit and expand local options for transit funding authority. To better connect Washington communities, the PTP supports the integration of local and state human services transportation plans, regional and local transportation and comprehensive plans, and regional and local transit plans in order to increase mobility options within an integrated and accessible system.

State Highway Design

The design of potential intersection or highway segment projects along SR 14 as implementation from the SR 14 and Dog Mountain Congestion and Safety Study will follow the 2021 Washington Design Manual. The Design Manual provides policies, procedures, and methods for developing and documenting the design of improvements to the state highway transportation network. The Design Manual emphasizes practical design as a means to produce environmentally conscious, sustainable, context-based designs that achieve the purpose and need for the lowest cost. Practical design considers the needs of all users, fostering livable communities and modally integrated transportation systems used safely by all, including motorists, freight haulers, transit, pedestrians, and bicyclists.

Ongoing Transportation Plans Affecting SR 14 and the Gorge

There are several regional transportation plans that guide multimodal transportation systems development along SR 14 in the study corridor.

Regional Multimodal Plans

The Skamania and Klickitat Regional Transportation Plans (RTP, 2018) provide for multimodal strategies and solutions to meet regional travel demand and to develop a balanced regional transportation system over a 20-year planning period in each county. SR 14 is identified as a highway of statewide significance in both RTPs and projects specific to SR 14 are identified and then programmed in the local Transportation Improvement Program (TIP) for funding and eventual construction. In Klickitat County, several sidewalk improvement projects are identified along SR 14 in Bingen and Lyle. In Skamania County, SR 14 is identified for shoulder widening county-wide to improve motorist and bicycle safety. The RTPs are supported by the Washington Department of Transportation and participating local, county and regional agencies. Updates to both RTPS are underway and should be completed in 2023, incorporating community outreach and intergovernmental coordination processes that impact broader intercity travel along SR 14 that are beyond the more focused purpose of the SR 14/Dog Mountain Congestion and Safety Study.

The SR 14 Corridor Management Plan (1997), a joint planning effort between WSDOT and the Southwest Washington Regional Planning Council, identifies a series of policies and projects guiding mobility, safety and management projects and their funding on SR 14 throughout Skamania and Klickitat counties. Portions of the Plan have been implemented by WSDOT over time. The Plan continues to inform both the Skamania and Klickitat County RTPs. Findings of the SR 14/Dog Mountain Congestion and Safety Study do not alter the SR 14 Corridor Management Plan, but rather implements its broader policy objectives.

Bi-State Public Transportation Planning

The Gorge Regional Transit Strategy is currently being developed in coordination between transit agencies in Hood River, Wasco and Sherman counties in Oregon and Skamania and Klickitat counties in Washington. The first phase of the Strategy was completed in 2021, culminating with confirmed vision and goals that stress need for high quality services for residents and visitors in the Gorge, environmental stewardship and financial sustainability for expanded and coordinated public transportation services.

The second phase of study will be completed in 2023 and seeks plans and marketing strategies to integrate transit providers as a bi-state, regional system where riders can travel the Gorge with a common bus pass is a necessary. The ultimate objectives of the Transit Strategy will help the region achieve its goals to reducing car emissions, lessen traffic on I-84 and SR 14, reducing parking in the small towns of the Gorge, and providing easier access to transit for the public.

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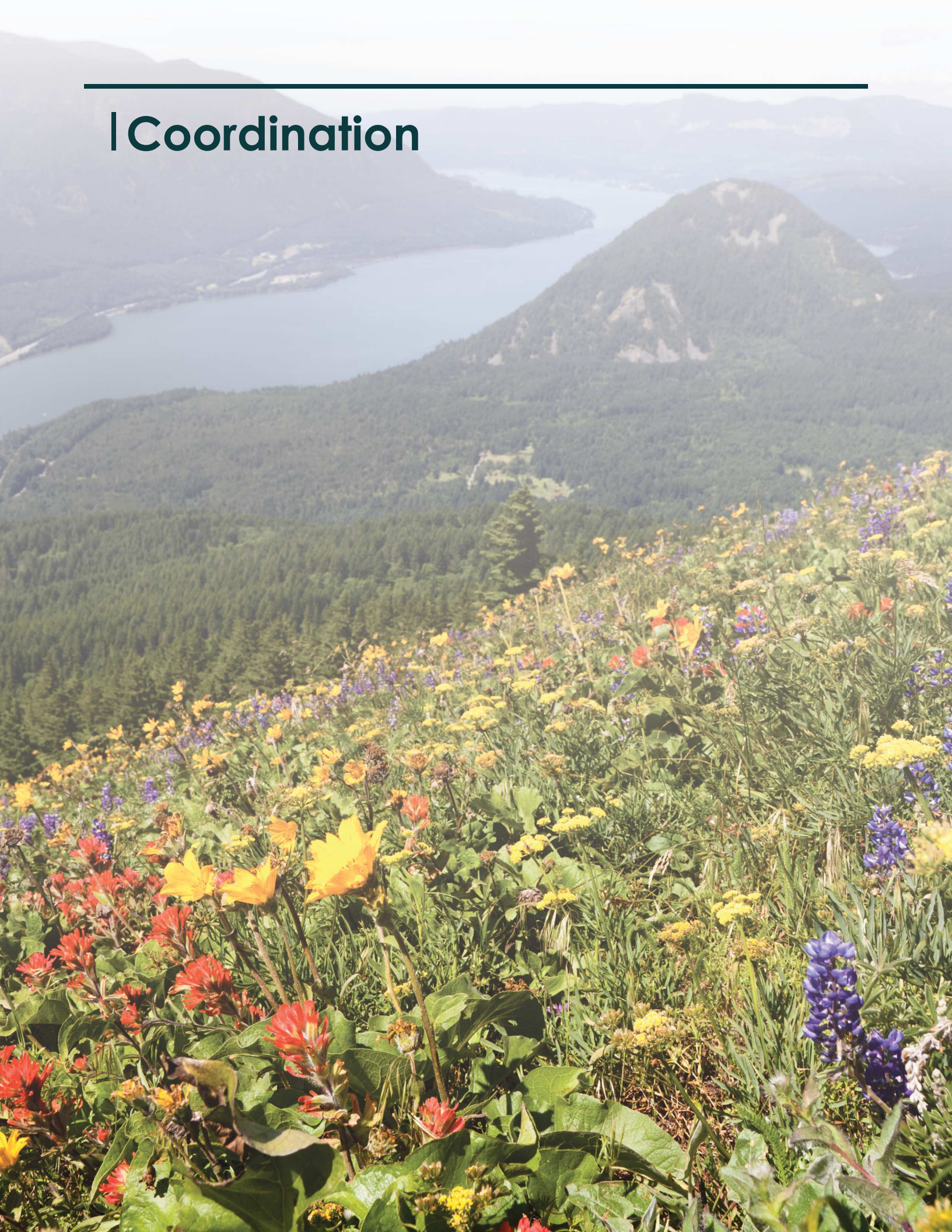
Coordination



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Coordination

The content prepared for this study was based on input from the project partners (FHWA, USFS, and WSDOT), stakeholders, and the public. Consultation and coordination with and input from these groups was vitally important throughout the study planning process.

Project Partners and Core Project Team

Led by the project partners, the study was guided by the CPT, which included representatives from FHWA, USFS, WSDOT, and consultant DEA. The CPT met regularly to discuss study needs and review findings.

Stakeholder Participation

The primary role of the stakeholder group was to provide feedback to the CPT 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:

- U.S. Army Corps of Engineers
- U.S. Fish and Wildlife Service (USFWS)
- Washington State Parks
- Clark County
- Klickitat County
- Skamania County
- Port of Klickitat
- Port of Skamania
- Port of Hood River
- Mid-Columbia Economic Development District
- Confederated Tribes of Warm Springs
- Yakama Nation
- Nez Perce Tribe
- Confederated Tribes of the Umatilla Indian Reservation
- Confederated Tribes of the Grand Ronde
- Cowlitz Tribe
- Siletz Tribe
- Clark County Sheriff
- Southwest Washington Regional Transportation Council
- Washington State Patrol
- 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 1

- **January 2021**
- **Project kickoff**
- **Preliminary assessment of needs/issues**

Stakeholder Meeting 2

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

Stakeholder Meeting 3

- **January 2022**
- **Review draft study report**

Tribal Consultation

The study recognizes the Columbia River Gorge has been home to Indian people since "time immemorial". In addition to including tribes in the stakeholder group, the project partners consulted with tribes on a government-to-government basis. These tribes included the Confederated Tribes of the Warm Springs, and Yakama Nation, Nez Perce Tribe, the Confederated Tribes of Umatilla Indian Reservation, the Confederated Tribes of the Grand Ronde, the Cowlitz Tribe and the Siletz Tribe. In February 2022, FHWA sent letters to the Chairperson of each tribe requesting government-to-government consultation.

Public Involvement

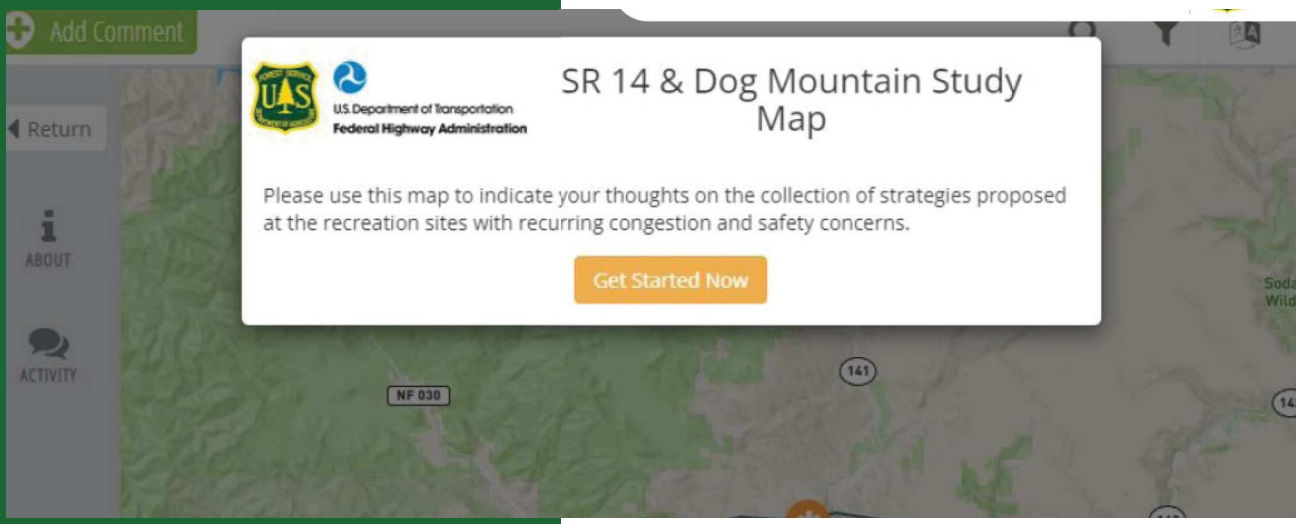
Throughout the planning process, the public was provided opportunity to engage with the CPT. There were three primary avenues for participation during the development of the study: online open houses, attendance at virtual community conversations, and comments submitted by way of the study's project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

Postcards

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. A postcard was also mailed to announce the draft study and collet public comment.

Website

The project website served as a resource for project information, duration of the study, and also served to host the virtual public open houses.

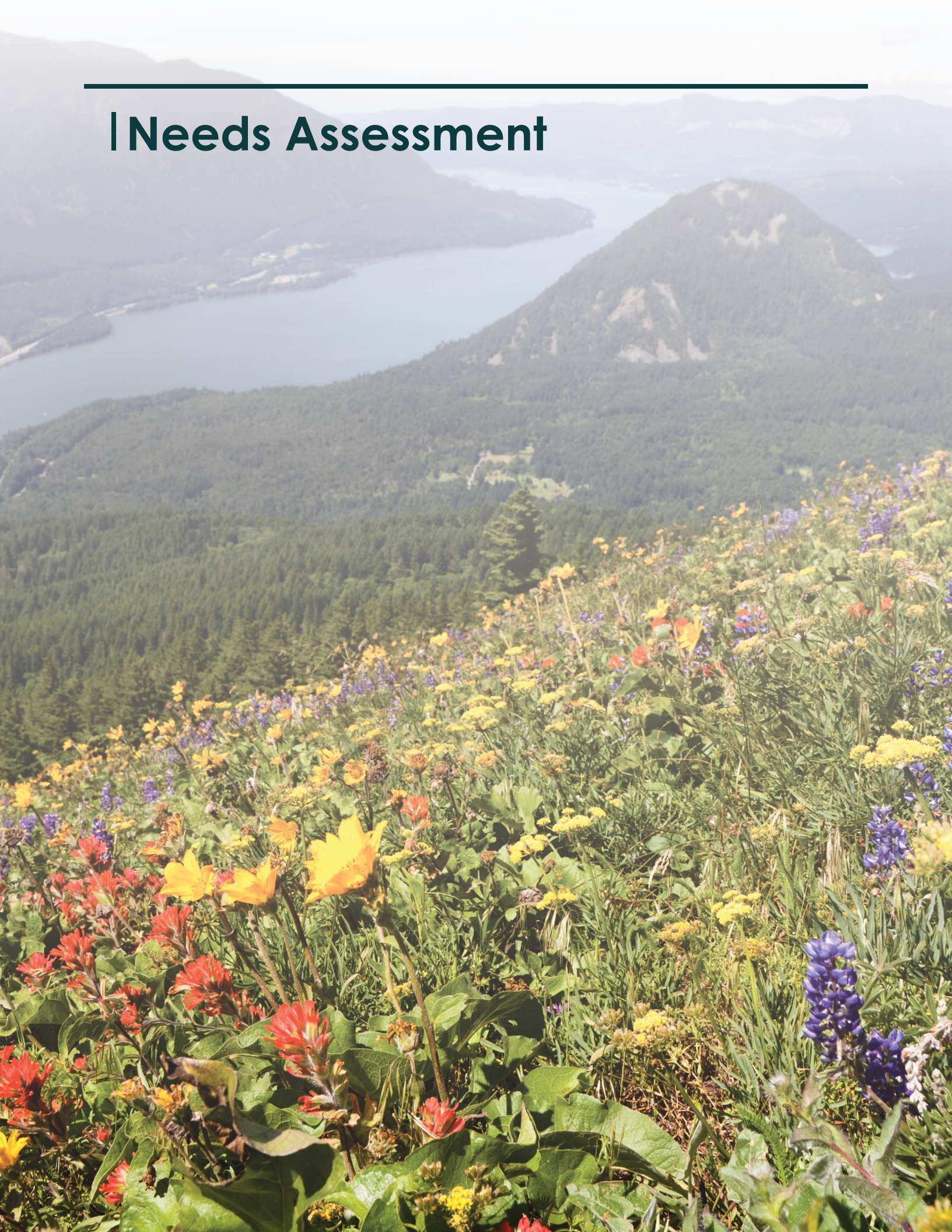


Community Conversations

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

Appendix C includes a full summary of the public involvement process and outcomes.

Needs Assessment



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Needs Assessment

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 Pacific Crest National Scenic Trail 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 in 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 varied, featuring mountains, fields, wildflowers, marshlands, wildlife refuges, and the Columbia River Gorge itself.

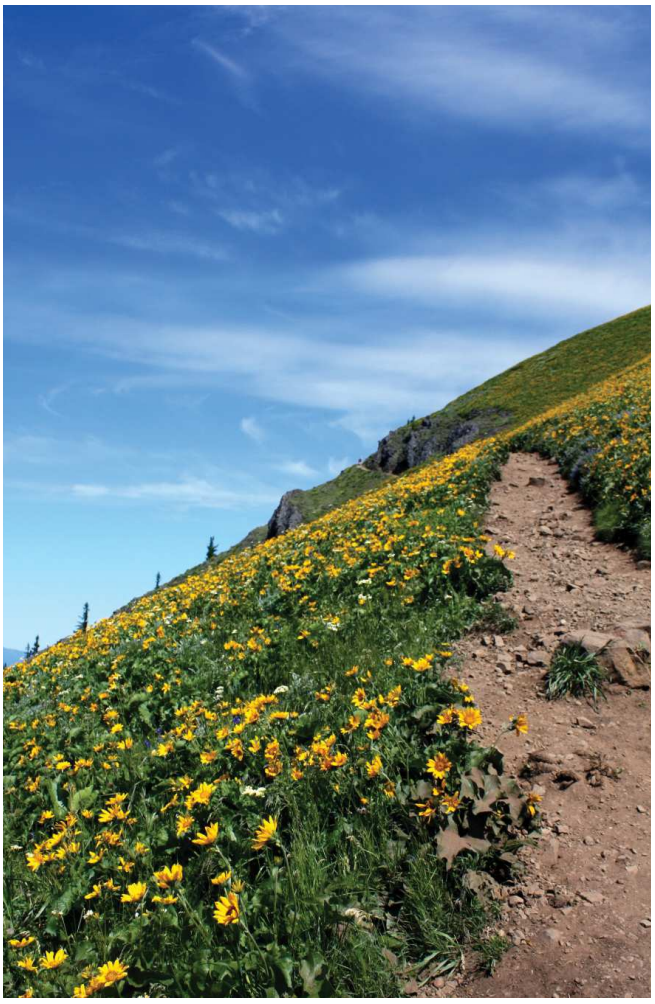
As the Columbia River Gorge continues to gain national and international recognition as a popular recreation and tourism destination, and as the surrounding metropolitan areas continue to grow, it is expected that the Gorge will continue to see an increase in recreation and tourism visitors, activities,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

Recreation Sites

Day use hiking and sightseeing is the most popular activity and centered at various trailheads throughout the Gorge. Trailhead facilities include parking, picnic areas, restrooms, garbage receptacles, informational bulletin boards and other amenities. There are also overnight camping areas that gain greater popularity during the summer months.

Given the rural location of most of the trailheads, and the lack of frequent public transit service, the primary mode of transportation is a personal vehicle, presenting a continued need for adequate trailhead parking or accommodation of shuttle service vehicles. Parking area capacity and conditions vary depending on the trailhead location and range from gravel-surfaced areas, to 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, and there are an increasing number of days when little to no parking is available for most of the day.

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



Dog Mountain Trail Spring Wildflowers

Table 3: Special Management Area and General Management Area Parking Provisions

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/Paved parking area	1	SMA	Yes
Cape Horn Trailhead/ Salmon Falls Park and Ride	26.4	Skamania	USFS/ Skamania	No fee/Paved parking area	2	GMA	Yes
St. Cloud	29.9	Skamania	USFS	Fee/Pavedparking 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/Gravel 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	No fee/Gravel and paved parking area	3-4	SMA	Yes
Bonneville Discovery Trails	37.6	Skamania	Bonneville Trails Foundation	No fee/Paved parking area	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	Fee/Paved parking area	4	SMA	No
Dog Mountain Trailhead	53.7	Skamania	USFS	Fee & Seasonal Permit/Gravel Parking	1/2/4	SMA	Yes
Dog Creek Falls	55	Skamania	USFS	No fee/Gravel parking area	1/2	SMA	No
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	Fee/Paved parking area	2/4	GMA	Yes

Table 3 (continued)

Site	SR 14 MP	County	Operated By	Fee/Parking	RIC[1]	Land Use	Parking Overflow[2]
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 Trailhead/ Rowland Lake	70.9	Klickitat	USFS	No fee/Gravel shoulder	1/2	SMA	Yes
Catherine Creek (Old Hwy 8) Trailhead	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 River Delta (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 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 & 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

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.

Acronyms: MP = mile post; RIC = recreation intensity class; USFWS = United States Fish and Wildlife Service; 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; N/A = not applicable; BIA = Bureau of Indian Affairs

Recurring Congestion and Parking Overflow

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

The tabulated information for each recreation site reference abbreviated terms that require definition here:

AADT stands for annual average daily traffic, and is expressed in number of vehicles per day (veh/day) in 2019 and the projected number of vehicles per day in 2040.

Parking Space "Type" refers to whether parking spaces are either "striped," which have lines on the parking surface to indicate where to park, or "unstriped," which do not have such lines on the parking surface.

ADA refers to marked parking spaces that meet the requirements of the Americans with Disabilities Act (ADA).

Two recreation sites listed in Table 3 have concerns regarding overflow parking onto the shoulder of SR 14 that are not detailed further in this chapter: Ozone Climbing and Klickitat River Delta. These two locations are not currently associated with a formally sanctioned recreation site, although both are recognized as a heavily utilized resource by the recreation community in the CRGNSA. Additional considerations are provided for these two unique sites at the end of the Safety and Congestion Toolkit chapter.

Dog Mountain Trailhead: Congested parking lot during peak hiking season.

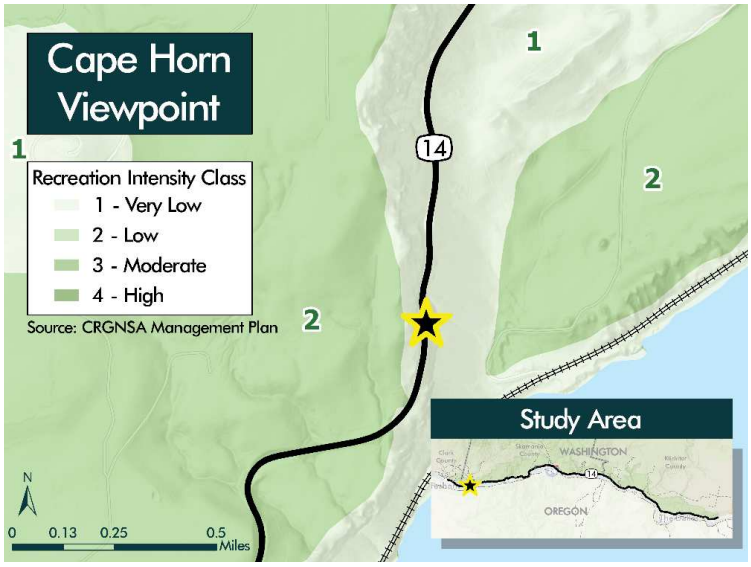
Overflow parking often spills onto the highway at Catherine Creek.

Hikers commonly walk on the highway at Catherine Creek.

Summary Findings at Recreation Sites

The following section highlights summary findings of the Needs Assessment at each of the eight recreation sites with recurring parking overflow and congestion.

Cape Horn Viewpoint



Cape Horn Viewpoint Parking

Parking	Type: Paved Shoulder
Space Type	# Spaces
Striped	0
Unstriped	8
ADA	0

Amenities

- Restrooms —
- Information Kiosk —
- Water Station —
- Day Use Picnic Area —

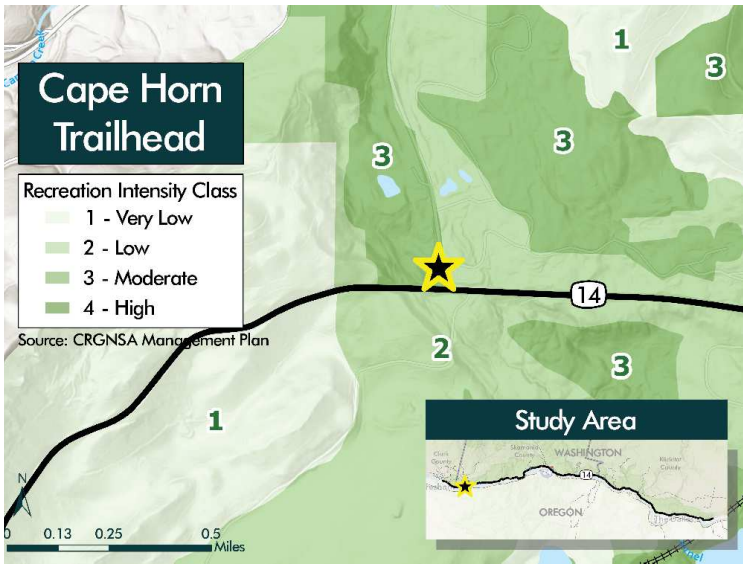
Location	SR 14: MP 25
Peak Use	Year-round (days with visibility)
AADT*	2019: 5,175 veh/day 2040: 9,975 veh/day
Fee/Permit	No Fee
Jurisdiction	WSDOT

* Annual Average Daily Traffic (AADT)

Key

- Available parallel parking shoulder width varies from 10 feet to 15 feet, and there are no barriers from eastbound SR 14 traffic
- Guardrail is the only barrier between shoulder and cliff edge
- Parking within WSDOT right-of-way
- No advanced signage to indicate vehicles entering/leaving highway
- Area surrounded by steep grades and curves with limited sight distance

Cape Horn Trailhead



Park and Ride Parking

Parking	Type: Paved Lot
Space Type	# Spaces
Striped	25
Unstriped	6
ADA	2

Amenities

Restrooms	✔
Information Kiosk	✔
Water Station	—
Day Use Picnic Area	—

Location	SR 14: MP 26.4
Peak Use	Spring/Summer/Fall
AADT*	2019: 5,175 veh/day 2040: 9,975 veh/day
Fee/Permit	No Fee
Jurisdiction	USFS (Trail), Skamania Co. (Lot)

* Annual Average Daily Traffic (AADT)

Key Findings

- Parking is shared with Salmon Falls Park and Ride
- Trail is extremely popular year-round
- Parking lot typically fills up around mid-morning on weekends, additional vehicles park on the shoulder of Salmon Falls Rd and Canyon Creek Rd
- Busiest between 8 am and 3 pm

Beacon Rock State Park

Parking Area

Parking	Type: Paved Lot
Space Type	# Spaces
Striped	27
Unstriped	20-25
ADA	2

Amenities

- Restrooms ✔
- Information Kiosk ✔
- Water Station ✔
- Day Use Picnic Area ✔

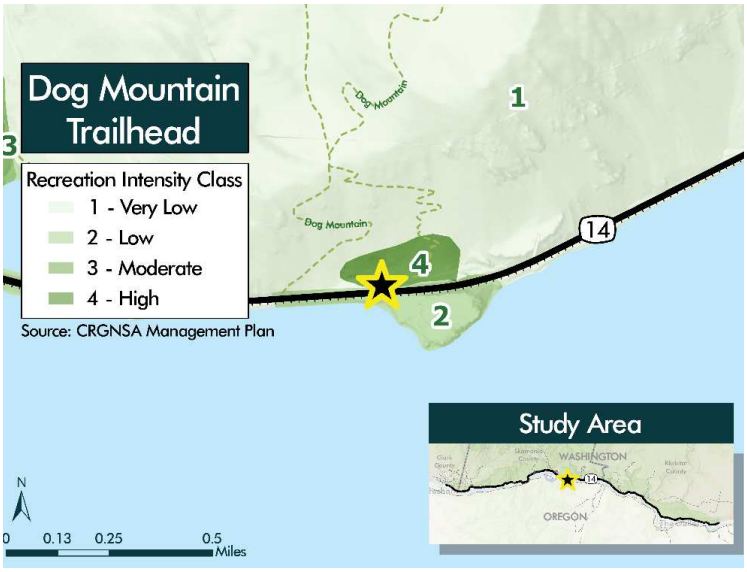
Location	SR 14: MP 34.8
Peak Use	Summer
AADT*	2019: 4,500 veh/day 2040: 7,675 veh/day
Fee/Permit	Day or Annual Discover Pass
Jurisdiction	WA State Parks

* Annual Average Daily Traffic (AADT)

Key Findings

- High vehicle speeds through park
- Limited sight distance at SR 14 access points
- Vehicular circulation does not meet modern standards
- Pedestrians crossing SR 14 have poor visibility of oncoming traffic
- Narrow lanes and shoulders
- Vehicles parking along SR 14 shoulders results in pedestrians walking along highway travel lanes
- Uncontrolled access to parking lots from SR 14

Dog Mountain Trailhead



Trailhead Parking

Parking	Type: Gravel Lot
Space Type	# Spaces
Striped	70
Unstriped	3-5
ADA	2

Amenities

- Restrooms ✔
- Information Kiosk ✔
- Water Station —
- Day Use Picnic Area ✔

Location	SR 14: MP 53.7
Peak Use	Spring
AADT*	2019: 3,925 veh/day 2040: 7,150 veh/day
Fee/Permit	Day use or annual USFS pass, additional permit required in spring
Jurisdiction	USFS

* Annual Average Daily Traffic (AADT)

Key Findings

- Lot reaches maximum capacity by 10 am on weekends in May and June
- No nearby 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
- Ongoing efforts, including shuttle services and implementation of a permit system have alleviated many of the congestion-related concerns during peak season, although the proximity of pedestrians to SR 14 is still a safety concern
- Some of existing parking lot is located on a BNSF easement

Drano Lake Boat Ramp

Parking Area

Parking	Type: Paved Lot
Space Type	# Spaces
Striped	70
Unstriped	0
ADA	3

Amenities

Restrooms	✔
Information Kiosk	—
Water Station	✔
Day Use Picnic Area	—

Location	SR 14: MP 57.3
Peak Use	Fishing Season
AADT*	2019: 3,500 veh/day 2040: 6,525 veh/day
Fee/Permit	Day or Annual (boat launch)
Jurisdiction	Skamania Co.

* Annual Average Daily Traffic (AADT)

Key Findings

- Parking lot exclusively designated for tow vehicle and boat trailer combination; single vehicles not allowed, and some park on SR 14 instead
- Overflow onto SR 14 causes pedestrians to cross the highway
- Inability to expand parking in current location

Swell City

Parking Area

Parking	Type: Gravel Lot
Space Type	# Spaces
Striped	0
Unstriped	20-30
ADA	0

Amenities

Restrooms	✔
Information Kiosk	—
Water Station	—
Day Use Picnic Area	✔

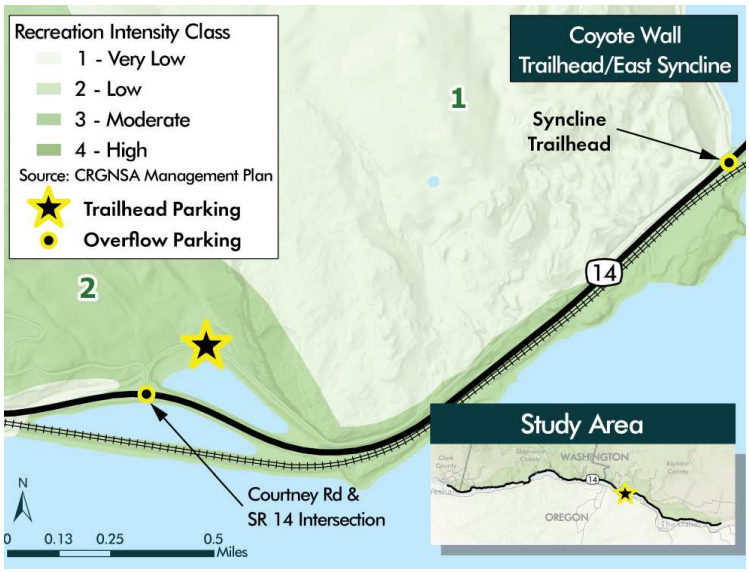
Location	SR 14: MP 61.1-61.4
Peak Use	Windy days/weekends
AADT*	2019: 3,700 veh/day 2040: 5,100 veh/day
Fee/Permit	Day or annual pass
Jurisdiction	Private (Swell City)

* Annual Average Daily Traffic (AADT)

Key Findings

- Popular windsurfing location
- Two 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 SR 14

Coyote Wall Trailhead/East Syncline



Parking Area

Parking	Type: Paved Lot
Space Type	# Spaces
Striped	25
Unstriped	0
ADA	1

Amenities

Restrooms	✔
Information Kiosk	✔
Water Station	—
Day Use Picnic Area	—

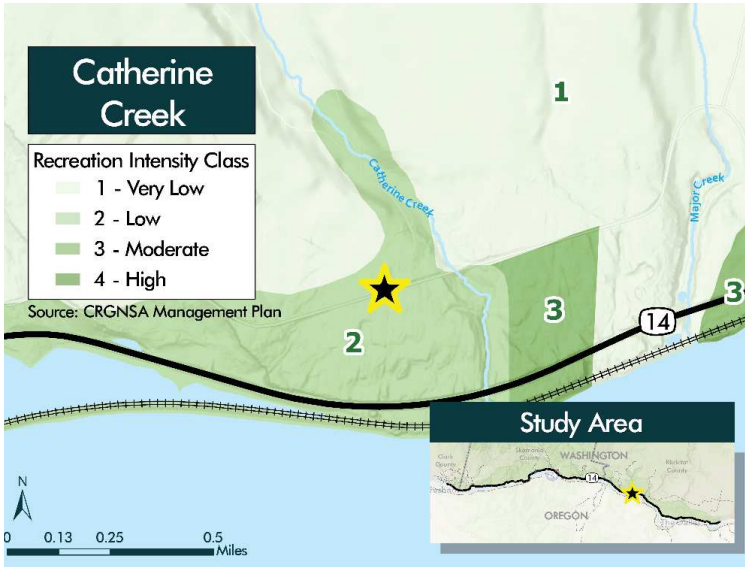
Location	SR 14: MP 69.7
Peak Use	Spring/Fall
AADT*	2019: 4,900 veh/day 2040: 8,725 veh/day
Fee/Permit	None
Jurisdiction	USFS

* Annual Average Daily Traffic (AADT)

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 Highway 8 at SR 14 flagged for safety concern

Catherine Creek



Parking Area

Parking	Type: Gravel Lot
Space Type	# Spaces
Striped	0
Unstriped	20-25*
ADA	0

* There are also several gravel pullouts along Old Hwy 8, cumulatively, space for more that the 20-25 vehicles that park immediately adjecent to trailhead

Amenities

Restrooms	—
Information Kiosk	✔
Water Station	—
Day Use Picnic Area	—

Location	SR 14: MP 70.9
Peak Use	Spring
AADT*	County road data not available
Fee/Permit	None
Jurisdiction	USFS (trailhead), Klickitat Co. (Old Hwy 8)

* Annual Average Daily Traffic (AADT)

Key Findings

- Peak spring wildflower viewing area
- Includes network of shared use trails for hiking and including an accessible, paved loop trail
- Peak season overflow onto Old Hwy 8 that hinders through traffic and degrades visiting experience
- Through traffic travels at high speeds and limited sight distances on Old Hwy 8 (because of topography)
- Lacking clarity of pedestrian wayfinding
- RIC Class 2 limits formalized parking to 25 vehicles
- Lacks accessible parking despite presence of trailhead to one of the only accessible trails in the Gorge

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 SR 14 corridor in the study area. The Existing Conditions Report is based on a planning-level examination of online databases, field observations, historical traffic data, vehicle crash history, aerial imagery, and geographic information system data.

Within the study area, SR 14 is functionally classified as a rural principal arterial by WSDOT and is part of the National Highway System. 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, SR 14 also operates as a "main street" through several communities in the Gorge and as the primary access to popular recreation areas.

SR 14's dual purpose as both a major highway and a local main street creates the need to serve both regional and local trips in the corridor. Although residents rely on the corridor for daily shopping, social and work related trips, 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.

Posted speeds vary along SR 14. Outside of urban areas, which is where most of the accesses to recreation sites are located and where parking on the shoulder of SR 14 occurs, the posted speed ranges from 50 miles per hour (mph) to 60 mph. As SR 14 travels through various communities, the posted speeds vary from 25 mph to 40 mph.

Physical Challenges of the SR 14 Corridor

Physical features on SR 14 are characterized by five different topographical areas. Most of the corridor is confined by rock escarpments on the north side and embankments to the Columbia River and/or railroad tracks on the south side. Between Washougal and North Bonneville, SR 14 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 roadway is again elevated above the river, traversing primarily through forest land. From Home Valley to Dallesport, SR 14 again descends along the river. And finally, from Dallesport to the eastern edge of the CRGNSA, the route ascends onto a plateau overlooking the river and traverses primarily grasslands.

SR 14 through Cape Horn at the Western End of the Study Area

Daily and Seasonal Travel

Existing annual average daily traffic (AADT) varies along SR 14 from approximately 2,000 to 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.

Daily Traffic Variation

At the western end of the study area, AADT along SR 14 is typically highest during the spring and summer months. As shown in Figure 5, the peak month is June, coinciding with higher Gorge tourism and recreation site visitation.

The most congested conditions on SR 14 are likely to occur in the late afternoon or evening on a weekend (Friday through Sunday) between May and September, particularly in June. At the eastern end of the study area, the most congested conditions are likely to occur in the early to mid-afternoon on summer weekends (Friday through Sunday) between July and August.

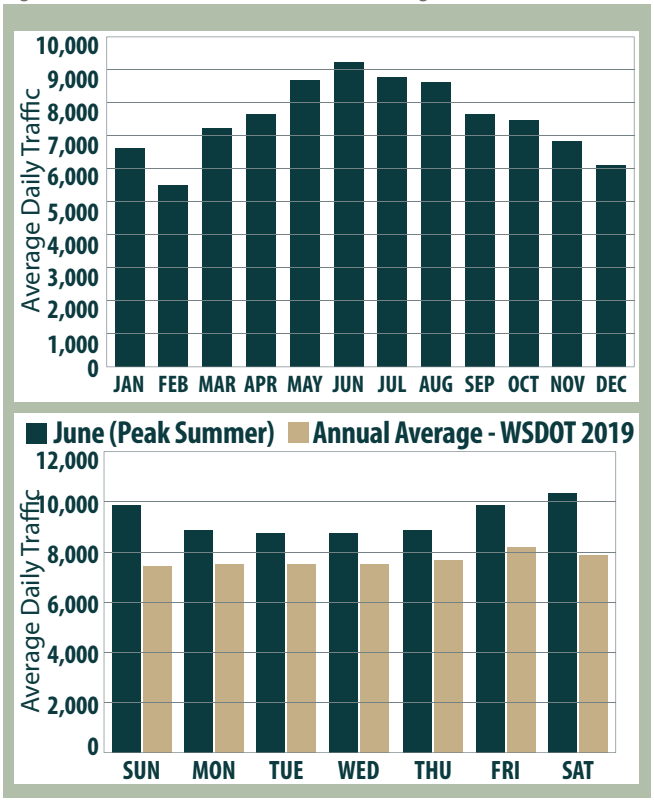
Seasonal Traffic Variation

Given that SR 14 is the gateway to many tourist activities that attract both local and non-local visitors, the corridor sees significant seasonal variation. Though transit options do exist on SR 14, the current organizational structure limits the scope, funding and focus of their services, resulting in the primary mode of access being the single-occupancy vehicle. Therefore, fluctuations in traffic volumes closely follow the tourism seasonality within the study area, as shown in Figure 5.

It should be noted that the peak traffic along SR 14 doesn't always align perfectly with peak use times at recreational sites. Each recreation site has its own unique features that draw visitors at various times of the year, as summarized above. 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. During the hot and dry summer months, sites in the eastern portion of the study area receive less use. Along the western part of the study area, peak activity occurs during the spring and summer months 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 recreational use tends to be winter, primarily January and February, due to the inclement weather, including heavy rains, high winds, and muddy hiking trails.

Figure 5: Variations in SR 14 Traffic - Washougal, WA (MP 18)



Heavy Vehicle Traffic

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

Multimodal Access

Transit

Figure 6 maps the five transportation providers that form the Gorge Translink: Mt. Adams Transportation Service (Klickitat County), Skamania County Transit, Columbia Area Transit (CAT) (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 Saturdays and Sundays during the spring wildflower season, when USFS requires permits. Columbia Area Transit is supporting Skamania County in operating this shuttle service (2021 and 2022).

Mt. Adams Transportation Services (Klickitat County) and Skamania County Transit (Skamania County) are the only two providers who regularly serve SR 14. Both agencies are run by their respective County senior services divisions and while public transportation is an important part of the services they provide, it is not considered a core part of their business. Finally, since 2018, Skamania County has received funding in partnership with the USFS, FHWA and a local lodging tax to provide a shuttle between the Skamania County Fairgrounds gravel parking lot and the Dog Mountain Trailhead on Saturday and Sunday. In 2022, the USFS partnered with CAT and partially funded the shuttle with recreation fee dollars Despite the overwhelming success of this program in addressing safety, access, and parking concerns at the Dog Mountain trailhead on SR14, ongoing funding for the program has not been secured.

The Gorge Translink is an alliance of rural transportation providers, human service organizations, and public planning agencies. The objective of the Gorge Translink alliance 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: 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 appeal only to avid cyclists. Cycling on SR 14 presents safety concerns, particularly on SR 14 outside of the urban areas, where there are limited or no bicycle lanes or shoulder lanes, and high auto and truck 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 Gorge communities in Washington prohibitive for many.

As mentioned previously, some recreation opportunities provide mountain bike trails; however, the bike riders on these trails use personal vehicles to access trailheads. Some recreational road cyclists ride a loop of the eastern end of the CRGNSA, traveling on SR 14 from Hood River to the Dalles and back.

Bicycle travel along the SR 14 corridor presents safety concerns as bicyclists are required to share the highway travel lanes with vehicles. Bicyclists 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 bicyclists, and tight curves limit sight distance in locations where motorists have little advanced warning of bicyclists on the roadway.

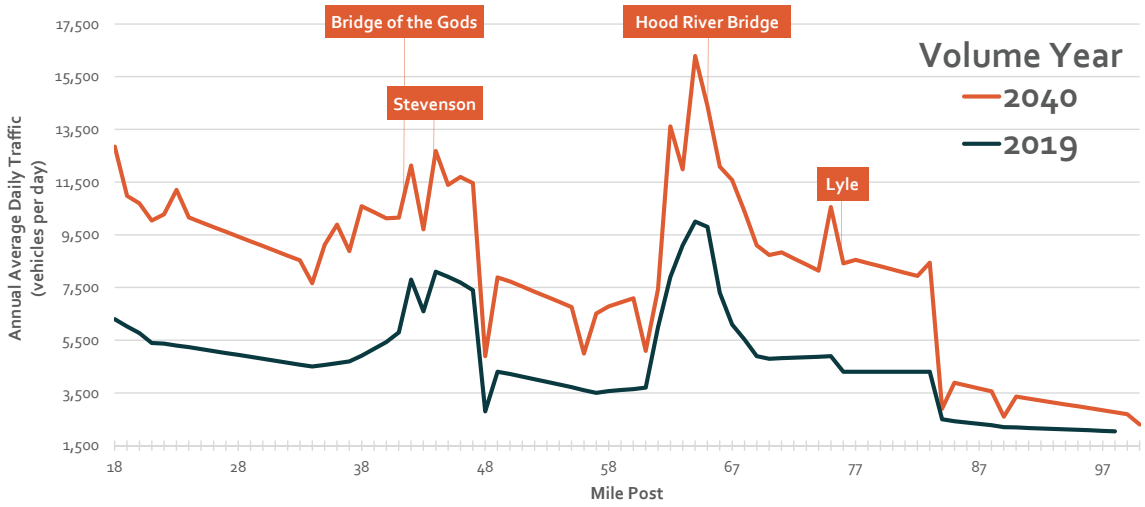
Pedestrian

Pedestrian use within the corridor is limited to urban areas and areas 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 to the trail located on USFS lands. Between the Bridge of the Gods and USFS lands, 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.

Increasing Traffic Congestion

The study analyzed projected transportation conditions to estimate how traffic patterns and characteristics might change compared to existing conditions. The analysis was based on linear trends developed from WSDOT's historical AADT data. On average, SR 14 traffic volumes are estimated to increase by 60 percent by the year 2040. Figure 7 illustrates the estimated increase in traffic volumes compared to the most recent complete five-year historical traffic volumes. The highest increase is expected to occur in the White Salmon and Bingen areas, and near the Hood River Bridge. SR 14 would expect to see a consistent growth in AADT along the length of the corridor, with higher growth in urban areas and between neighboring urban areas.

Figure 7: SR 14 Current and Forecasted Year 2040 Annual Average Daily Traffic (vehicles per day)



Safety Characteristics

The most recent five years of available crash data (January 1, 2015, to December 31, 2019) was reviewed to identify trends or safety concerns within the study area. Crash data was obtained from the WSDOT Crash Data and Reporting Branch and filtered to include crashes within a 500-foot distance on both sides of of SR 14, between mile posts 18 and 98.[2]

A total of 768 reported crashes occurred in the study area; approximately 92 percent of these occurred on SR 14, and 8 percent on an adjacent road.

Number Of Crashes By Severity And Year

Of the 768 reported crashes, 65 percent (498) were property damage only (no apparent injury); 15 percent (115) resulted in a suspected minor injury; 13 percent (103) resulted in a possible injury, 3 percent (22) resulted in a suspected serious injury; 2 percent (17) were unknown; and 1.7 percent (13) resulted in a fatality. Figure 8 summarizes the number of crashes by severity and year.

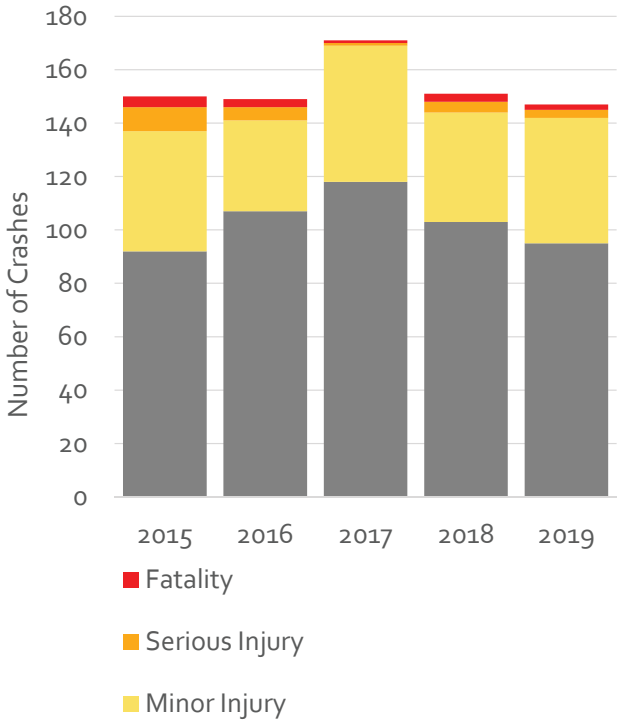
Figure 9 shows the number of crashes that have occurred at a given location, known as "crash density" along the corridor. As shown, crashes tend to be concentrated within city limits, around sharp curves, or near trailheads and other stopping points along the highway. These crash patterns are consistent with a single-lane state highway and are not unusual given the setting.

Figure 10 shows the crash density and severity in the Dog Mountain Trailhead portion of the study area. It shows that there was one fatality east of the Dog Mountain Trailhead parking lot, and three suspected injury crashes adjacent to the access to the trailhead.

Crash Type

Collisions with a guardrail were the most common crash type throughout the study area, 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 and may be distracted by the scenic vista, even while driving. Appendix A includes a detailed summary of the type, severity and causation of vehicle crashes in the corridor from 2015 through 2019.

Figure 8. Number of Crashes by Severity and Year: 2015-2019



[2] Disclaimer: Under 23 United States Code (USC) § 148 and 23 USC § 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. This applies to the entire SR 14 and Dog Mountain Congestion and Safety Study.

Figure 9: Crash Density along SR 14 Corridor in the Study Area

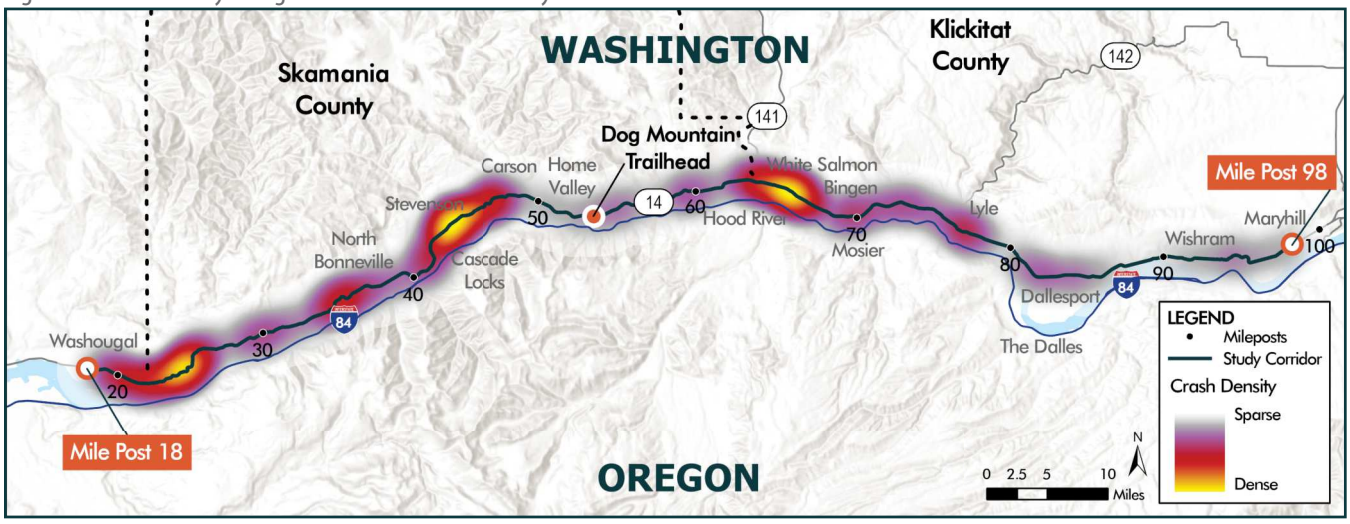
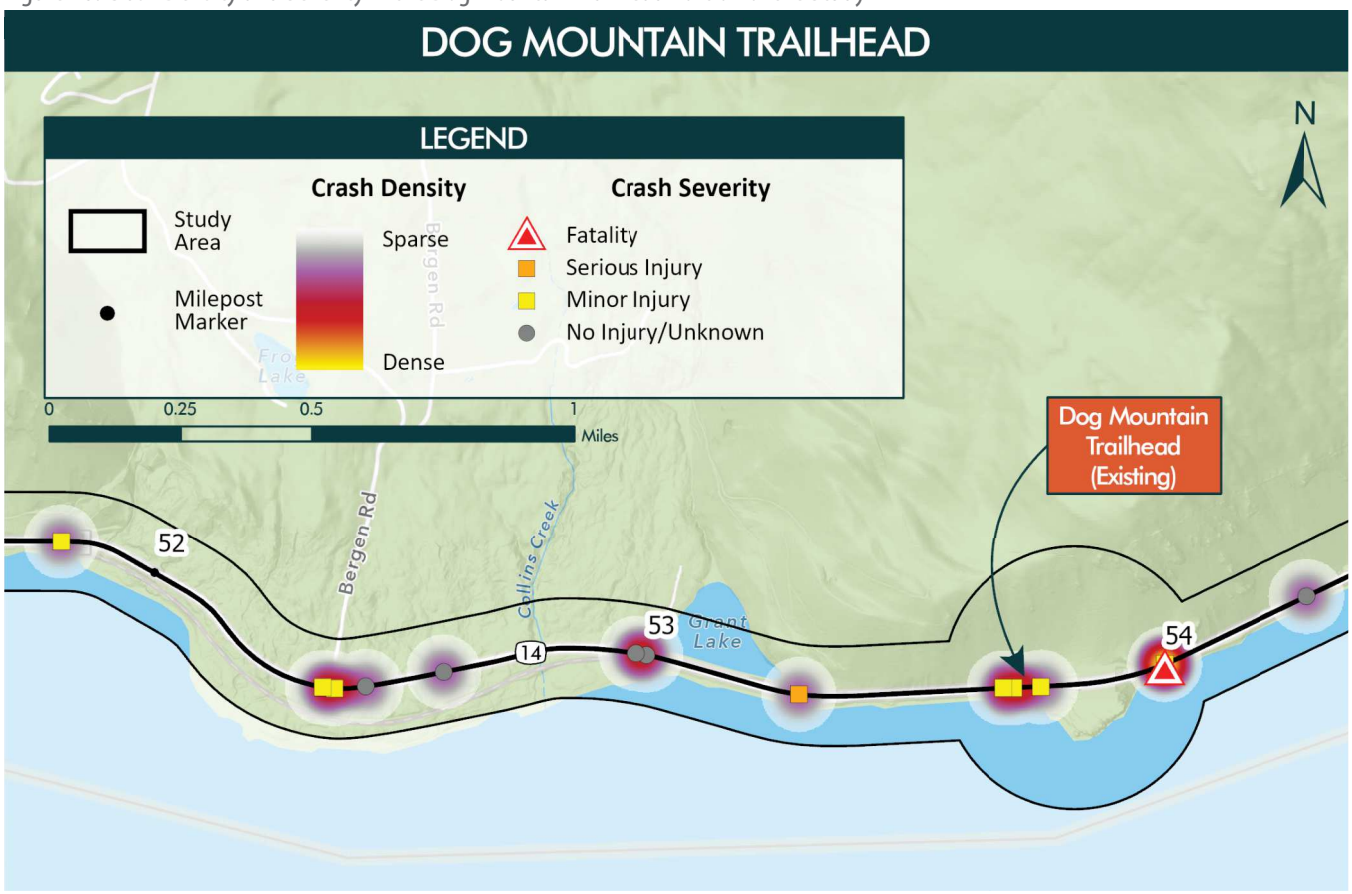


Figure 10: Crash Density and Severity in the Dog Mountain Trailhead Portion of the Study



Natural, Cultural and Scenic 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 Study. The planning-level overview is not a detailed environmental investigation. The existing conditions reporting represents a scoping-level effort that includes information available through desktop studies and does not include site information verified through a site visit. If this study results in improvement projects being forwarded into project development, a detailed analysis for consistency with the CRGNSA Management Plan, 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 study report may be used as guidance for the NEPA process at that time.

The CRGNSA Management Plan contains specific protections, including avoidance buffers and mitigation measures, for natural, cultural and scenic resources. These protections are most restrictive in areas designated as SMAs and in some cases are slightly less restrictive in areas designated as GMAs. In either case, proposed developments in the CRGNSA are required to inventory natural, cultural and scenic resources to ensure impacts to scenic, natural, and cultural resources are avoided. Resources with specific guidelines in the CRGNSA Management Plan are shown in Figure 11. The planning process also involves consultation with the appropriate local, state, and federal agencies.

Figure 11: CRGNSA Management Plan Resources

Scenic

- Most development in the National Scenic Area must be visually subordinate to the landscape.
- Development should be screened from Key Viewing Areas (KVAs).
- Scenic regulations apply to structures, plantings and gradings.

Aquatic

- Proposed uses adjacent to streams, ponds, and lakes must preserve an undisturbed buffer zone that is wide enough to protect both the aquatic and riparian areas.
- For projects forwarded from this study, field surveys would be required to determine potential impacts to any streams and associated riparian areas.

Wetland

- New uses must be sited to avoid wetlands to the greatest extent possible.
- Impacts to wetlands may be allowed only when they are unavoidable, in the public interest, and all practicable measures to minimize impacts have been applied.

Cultural

- The CRGNSA consults with federally recognized tribes that are culturally and historically affiliated with and have ongoing interest in management of CRGNSA-administered lands.
- Agencies must consider the effects of proposed projects on previously identified resources as well as resources not yet identified.

Sensitive Wildlife

- "Sensitive wildlife sites" refers to sites used by species that are: (1) listed as endangered or threatened pursuant to federal or state endangered species acts, (2) listed as endangered, threatened, sensitive, or candidate by the Washington Wildlife Commission, (3) listed as sensitive by the Oregon Fish and Wildlife Commission, or (4) considered to be of special interest to the public.

Rare Plants

- The varied landscape provides habitat for numerous species of rare plants, many of which are endemic to the CRGNSA.
- CRGNSA Management Plan policies require new development to ensure that rare plants are not adversely affected.

Forest

- USFS is required to manage for WDFW sensitive wildlife species on National Forest lands.
- All National Forest System lands shall be subject to the laws and regulations pertaining to National Forest lands, including NEPA and the Gifford Pinchot National Forest Land and Resource Management Plan, as amended by the Northwest Forest Plan.

Archaeological

- Information regarding the nature and location of archaeological resources and cultural resources associated with Native Americans shall be kept confidential to avoid unlawful, malicious, or negligent disturbance.
- Before any ground-disturbing actions can occur in the study area, an archaeological field investigation must be completed.

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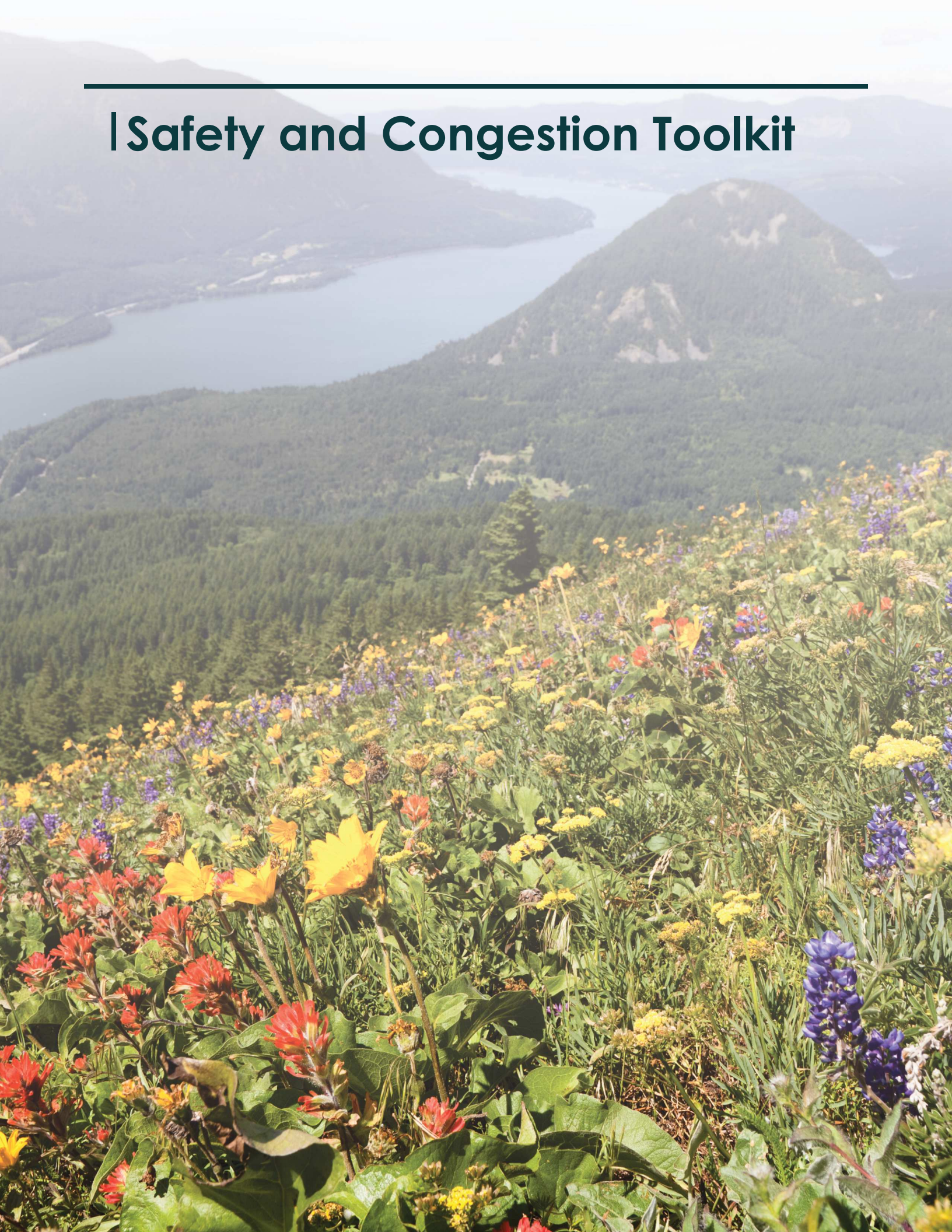
Safety and Congestion Toolkit



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Safety and Congestion Toolkit

A Safety and Congestion Toolkit (Toolkit) is developed for application throughout the two study areas, with tools and strategies to address transportation safety and congestion. These tools and strategies were developed based on the full examination of existing conditions and future traffic demand as summarized in the Needs Assessment, with input from the public, project partners and stakeholders noted under Coordination.

The Toolkit is summarized in Table 4 and organized under eight categories, describing the tools and strategies that are applicable in various focus areas of the study area. Application of the Toolkit follows an adaptive management approach that emphasizes strategies and solutions with the least resource impact, followed by strategies with greater impact as needed.

This chapter summarizes the tools and strategies recommended for implementation within three focus areas: (1) System Level, (2) specific SR 14 Segments, and (3) Recreation Sites. Applied Toolkit findings are also summarized in the Dog Mountain Trailhead Relocation chapter that follows.

Figure 12: Safety and Congestion Toolkit Strategies for the SR 14 and Dog Mountain Study Areas

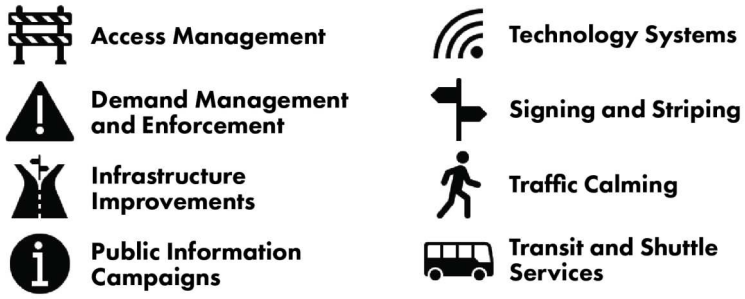


Table 4: Congestion and Safety Toolkit

Category	Tool/ Strategy	Description	Issue(s) Addressed	Applicable Focus Areas
Access Management	Access consolidation	Create consolidated access point to parking area through aesthetically appropriate barrier	• Reduce traffic "conflict points" • Improve driver expectancy	• Recreation Areas • SR 14 Segments D, E & F • Dog 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 Areas • SR 14 Segments D & F • Dog Mountain
	Traffic circulation	Indicate the preferred direction of travel and/or parking	• Improve efficiency of traffic flow • Reduce 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 Areas • Dog Mountain

Table 4: Congestion and Safety Toolkit (cont'd)

Category	Tool/ Strategy	Description	Issue(s) Addressed	Applicable Focus Areas
Visitor Use Management and Enforcement 	Implement permit/user fee (coupled with reservation system)	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 • Explore and implement options of technological enforcement	• Recreation Areas
	Reservation system (coupled with permits)	Establish or expand a reservation permit system during peak season(s)/day(s)	• Disperse arrival and departure times throughout the day	• Recreation Areas • Dog Mountain
	Increased enforcement	Increase enforcement of illegal parking or non-payment (increasing law enforcement capacity will require additional resources)	• Reduce sightline obstructions or physical obstructions on the roadway caused by illegally parked vehicles	• Recreation Areas • SR 14 Segments A, D & F • System • Dog Mountain
	Timed parking	Assign time limits to a few parking stalls to encourage turnover	• Encourage turnover • Explore and implement options of technological enforcement	• Recreation Areas • Dog 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 expectations	• System
	Traffic monitoring, data collection, and analysis	Annual data collection to track congestion or safety issues	• Prioritize improvements • Targeted solutions	• System
Infrastructure Improvements 	Turn lanes or climbing lanes	Provide dedicated left-turn refuge in the median and/or right-turn deceleration lane into access point	• Reduce speed differentials/ conflict points on main roads • Turning-related and rear end collisions	• Recreation Areas (turn lanes) • SR 14 Segments A (climbing lanes), E, F & G (turn lanes)
	Shoulder widening	Widen shoulder of roadway	• Provide additional separation between vehicle traffic and bicyclists and/or pedestrians • Reduce fixed-object collisions	• SR 14 Segments (all, where feasible)
	Landslide and rockfall prevention	Implement landslide and rockfall mitigation measures	• Improve safety of SR 14 corridor	• SR 14 Segments (all, as needed)
	Traffic control changes	Evaluate different intersection control options (e.g., yield signs, stop signs, roundabouts, traffic signals)	• Improve intersection safety • Improve traffic flow	• Recreation Areas • SR 14 Segments A, B & E

Table 4: Congestion and Safety Toolkit (cont'd)

Category	Tool/ Strategy	Description	Issue(s) Addressed	Applicable Focus Areas
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	Establish or expand a reservation permit system during peak season(s)/ day(s)	• Promote less congested times and locations to spread demand • Encourage various transportation modes	• System
	On-site outreach	Staffing of trail ambassadors or field rangers to inform visitors	• Promote less congested times and locations to spread demand • Encourage various transportation modes	• System
Technology Systems	Real-time parking information	Use closed-circuit cameras or video sensors to monitor visitor demand management information Some sites will pose technological/ connectivity challenges	• Reduce unnecessary vehicular trips • Allow users to make informed route, mode, or destination choices based on conditions	• Recreation Areas • System • Dog Mountain
	Variable Message Signs	Continue and expand use of variable message signs in urban areas consistent with the CRGNSA Management Plan Impact of cumulative effects to scenic resources will need to be evaluated	• 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 A, B, D, E & F
	Portable changeable message signs (PCMS) during seasonal congestion	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 (all, as needed)
	Seasonal (portable) speed radar sign	Provide temporary, portable speed radar signs during peak seasonal congestion	• Reduce vehicular speeds	• Recreation Areas • Dog Mountain
	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

Table 4: Congestion and Safety Toolkit (cont'd)

Category	Tool/ Strategy	Description	Issue(s) Addressed	Applicable Focus Areas
Signing and Striping 	Static "Congestion Ahead" or slow vehicle warning signs	Provide advance warning signs to indicate upcoming congestion or areas of slow vehicles -- Evaluate impact of cumulative effects to scenic resources	• Reduce rear end collisions • Improve driver expectancy	• Recreation Areas (congestion ahead) • SR 14 Segments A, B & C (slow vehicle warning)
	Rumble strips	Install rumble strips between travel lane and road shoulder or roadway pull-out	• Reduce fixed object/road departure collisions • Delineate traffic from high-use pedestrian activity in shoulder	• Recreation Areas • SR 14 Segments A, B, E, F & H • Dog Mountain
	No Parking signs	Install No Parking signs to indicate illegal parking zones	• Prohibit parking in certain locations • Limit pedestrians walking alongside vehicular traffic	• Recreation Areas • SR 14 Segments A, B, F & G • 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 C, D, E & F
	Advance warning sign with street name	Provide advance warning signs to indicate name of upcoming access road/destination	• Reduce rear end collisions • Improve driver expectancy	• Recreation Areas • SR 14 Segments
	Left Turning Ahead sign	Provide advance warning signs to indicate upcoming left turn	• Reduce rear end collisions • Improve driver expectancy	• Recreation Areas • SR 14 Segments C & E
	Parking delineation on gravel	Delineate parking spaces 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 activity • Improve driver expectancy	• Recreation Areas • SR 14 Segments A, B, D, E & F
	Pedestrian wayfinding signage	Provide wayfinding signage for pedestrians at recreation sites	• Encourage pedestrian channelization • Traffic calming	• Recreation Areas
Traffic Calming 	Provide buffered pedestrian path	Install buffer between vehicles and pedestrian travelway	• Encourage pedestrian channelization • Reduce conflict points between vehicles and pedestrians	• Recreation Areas
	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 designated pedestrian crossing	• Pedestrian channelization • Reduce vehicular speeds • Increase pedestrian visibility	• Recreation Areas

Table 4: Congestion and Safety Toolkit (cont'd)

Category	Tool/ Strategy	Description	Issue(s) Addressed	Applicable Focus Areas
Transit and Shuttle Services 	Transit amenities	Provide amenities at transit stops (shelters, benches, bus stop signs, discounted gear rental)	• Encourage pedestrian channelization • Reduce conflict points between vehicles and pedestrians	• Recreation Areas • System • Dog Mountain
	Transit pull-outs	Identify locations for new or enhanced transit pull-outs along SR 14	• Reduce vehicular speeds	• Recreation Areas • System
	Seasonal transit shuttle	Establish seasonal transit routes to service peak demand: • East of White Salmon (March–April) • Dog Mountain (April–June) • West of White Salmon (June–August)	• Reduce vehicular speeds • Can be designed to serve as a pedestrian crossing	• Recreation Areas • System
	Establish CRGNSA "loop" shuttles	Establish a shuttle loop to connect Washington and Oregon: The Dalles/Hood River Hood River/Bridge of the Gods	• Encourage pedestrian channelization • Reduce vehicular speeds • Increase driver awareness of pedestrians	• System
	Connect with Oregon transit systems	Coordinate with Columbia Gorge Express to extend service to Washington	• Encourage transit use • Reduce vehicular demand	• System
	Park and ride lots	Provide park and ride lots to reduce single vehicle parking congestion at high-use sites	• Encourage transit use • Reduce vehicular demand • Can be located within urban areas that will benefit from increased tourism	• System
	Public/private partnership	Work with local recreation businesses to create a weekend shuttle to serve recreation-specific sites	• Encourage transit use • Reduce vehicular demand • Can be located within urban areas that will benefit from increased tourism	• System • Recreation Areas
	Service enhancements	Work with transit agencies to establish a frequent, convenient, and reliable transit schedule to Washington's busiest sites	• Encourage transit use • Reduce vehicular demand	• System • Recreation Areas
	Transit incentives	Provide a reason to use transit instead of driving self: Pass reduction rates for locals, low-income persons, students	• Encourage transit use • Reduce vehicular demand	• System • Recreation Areas
	Port of Portland/PDX seasonal Gorge connection	Appeal to ecotourism by connecting Gorge transit to Portland International Airport during spring and/or summer	• Encourage transit use • Reduce vehicular demand	• System
	Weekend shuttle	Establish weekend shuttle to high-use recreation sites	• Encourage transit use • Reduce vehicular demand	• System • Recreation Areas

System Level

A combination of systems level information and parking management strategies are applicable throughout the SR 14 study area, and can be implemented to better inform visitors and provide transit options. The overall objectives of these systems level strategies are to disperse arrival and departure times more evenly and provide transit options to ultimately lower the volume of vehicle parking at popular destinations during peak seasons. Successful deployment of new or expanded systems level tools and strategies will involve bi-state and multi-agency coordination and investments.

Systems Level Strategies	
Visitor Use Management and Law Enforcement	• Establish permit fees coupled with expanded reservation system • Establish parking management association • Increased illegal parking enforcement
Public Information Campaigns	• Provide one-stop visitor centers with traveler information for parking availability and transit shuttle service
Technology Systems	• Install real-time parking information • Expand use of variable message signs in urban areas to inform user route, mode or destination choice • Create trip sharing smartphone applications to promote less congested times to more evenly spread user demand
Transit	• Provide new transit pull-outs along SR 14 and stop amenities • Connect with Oregon transit systems • Provide park and ride lots • Public/private partnership to create weekend shuttle service • Establish more frequent weekday service

SR 14 Segments

Figure 13 illustrates the eight major segments (Segments A through H) defined for the SR 14 study area. The SR 14 highway segments were determined based primarily on their geographic, landscape and alignment characteristics.

In recognition of the traffic crash history (type and severity) and access points along the full SR14 corridor, more specific strategies to improve motorist safety are selected from the Toolkit by category and identified for each highway segment.

Table 5 summarizes the Toolkit strategies by SR 14 segment. Findings of the SR 14 segment application of the Toolkit strategies are largely consistent and reflective of the recommendations contained in the SR 14 Corridor Management Plan (1991).

Figure 13: SR 14 Segments

Table 5: Toolkit Strategies

Category	Toolkit Strategy	SR 14 Segments							
		A	B	C	D	E	F	G	H
Access Management	Access Consolidation				X	X	X		
Infrastructure Improvements	Shoulder Widening	X	X	X	X	X	X	X	X
	Turn Lanes					X	X	X	
	Landslide and Rockfall	X	X	X	X	X	X	X	X
	Traffic Control Changes	X	X		X	X	X		
Technology Systems	Speed Limit Reduction		X	X	X	X	X		
	Portable Message Signs	X	X	X	X	X	X	X	X
Signing and Striping	Slow Vehicle Warnings	X	X	X					
	Rumble Strips	X	X			X	X		X
	No Parking Signs	X	X				X	X	
	No Passing Zones			X	X	X	X		
	Left Turn Ahead Signs			X		X			
	Pedestrian Activity and Wayfinding Signs	X	X		X	X	X		

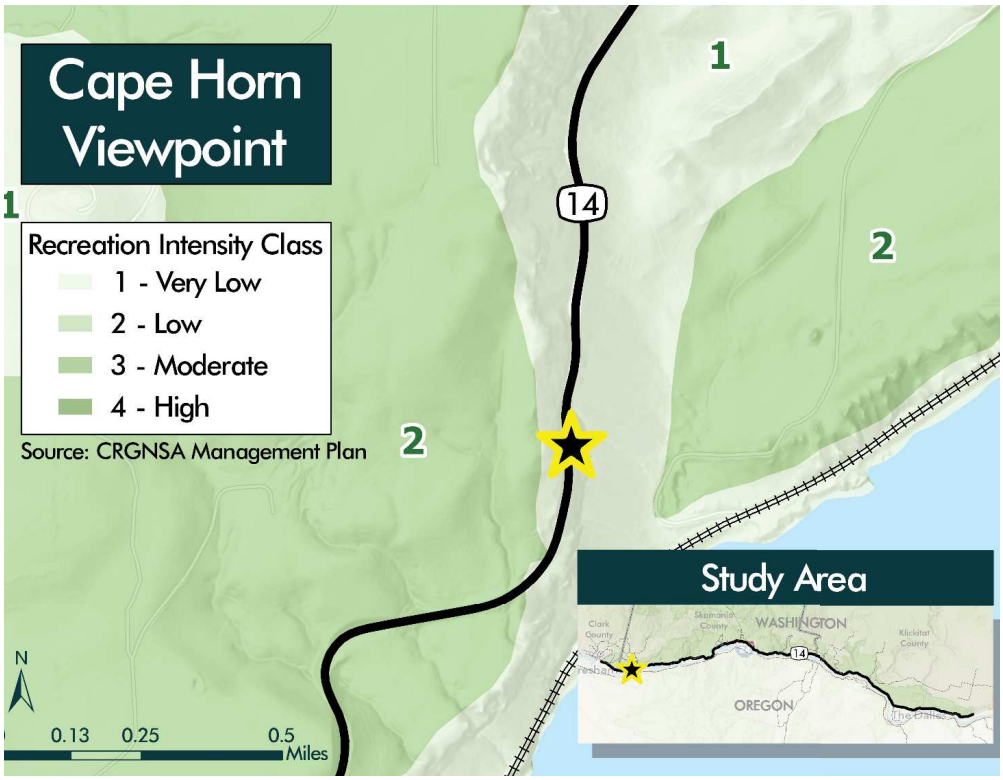
Recreation Sites

As previously discussed in this report, several recreation sites 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 from the Safety and Congestion Toolkit are considered and applied to each of these recreation sites as summarized below. For each site the lead agency (with jurisdiction) is identified for conducting further site study and project development. Lead agencies should partner with local organizations like Friends of the Columbia River Gorge to help guide develop plans of accessible, barrier-free options, and that accessible accommodations are accounted for in the design of parking lots and visitor access facilities.

Cape Horn Viewpoint

Issue	Strategy	Implementation Considerations
Horizontal curves/ sight distance with congestion	Congested area/slow vehicles warning signs	Warning advisory sign with advisory speed more effective than variable speed limits.
	Variable speed limit/speed limit reduction	Variable speed limit not desirable in rural areas per CRGNSA Scenic Guidelines.
	Rumble strips	Installation of rumble strips needs to consider potential impacts to available space for bicycle traffic in shoulder.
Congestion from westbound vehicles turning into shoulder	Prohibit westbound left turn (signage)	Consider providing a designated left turn downstream for vehicles wanting to make a U-turn.
	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.

Lead Agency: WSDOT



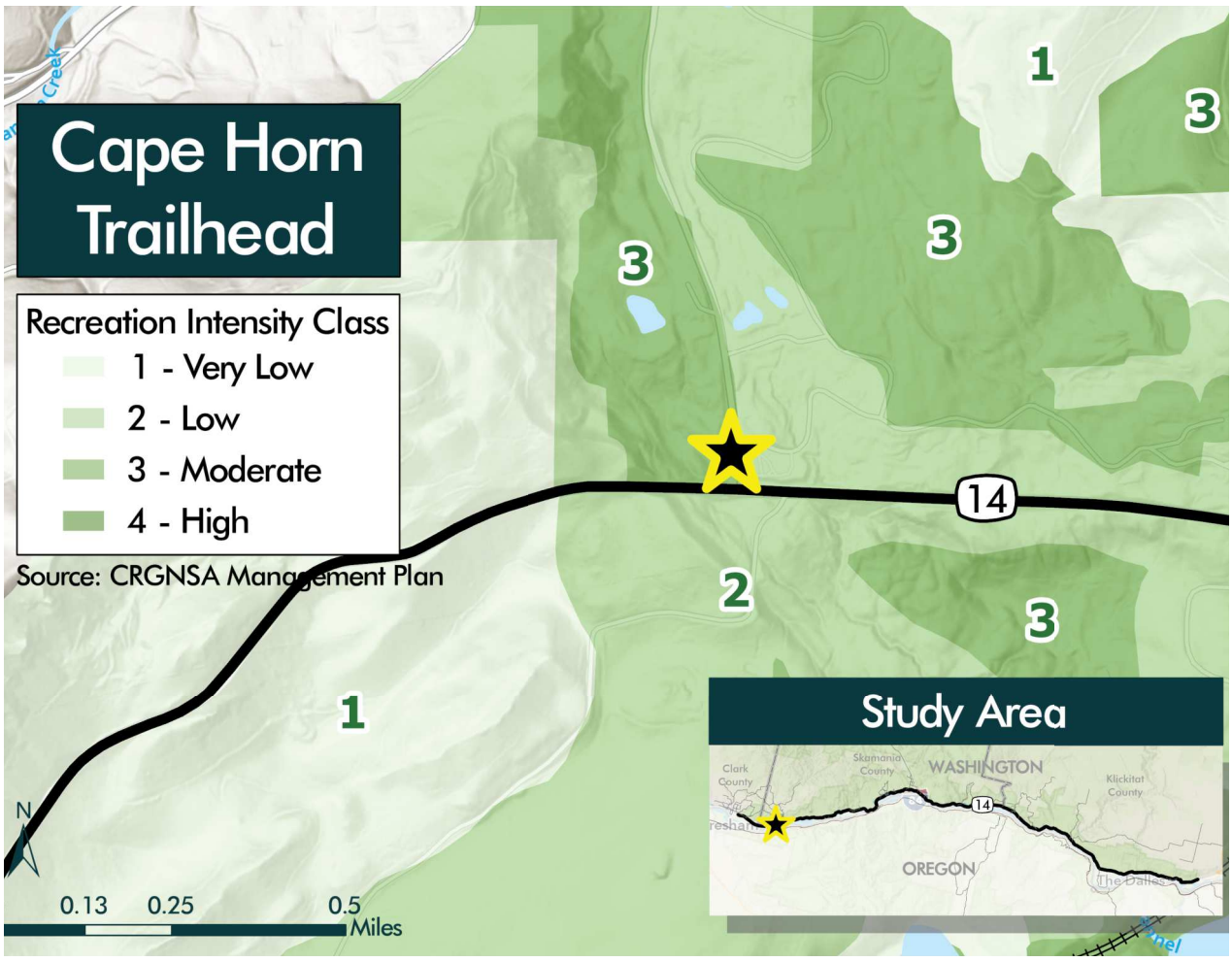
Cape Horn Trailhead

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 and ride users/fee for trail	• Recommend coordination between USFS and Skamania County as the USFS does not own the parking lot. • Regular enforcement would be required to ensure compliance. • County could charge fee but the USFS NW Forest Pass is likely not applicable. • New permit system would require NEPA planning and entail ongoing system management and support. • Policy changes may be needed to collect revenue and establish permit system.
	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 accommodate additional trail/recreation users. • Traffic study should be conducted to quantify potential impacts to local road system. • Depending on the size of parking expansion, there is the potential of inducing area traffic congestion that may require further mitigation.
	B: Collins Parcel – accessibility	• Land straddles boundary of CRGNSA. Recreational Intensity 2 within CRGNSA (maximum 25 parking spaces), outside CRGNSA land is under Skamania County zoning regulations. • Design should consider features/treatments for accessibility and mobility needs. • Consider potential for improvements at this site to address barriers for trail/recreation users with accessibility and mobility needs. • Traffic study should be conducted to quantify potential impacts to local road system. • Requires coordination with adjacent neighbors who will have concerns of increased traffic. • Parcel is currently owned by Friends of the Columbia Gorge. Current vision of the site may conflict with the need for parking to access the Cape Horn Trail.

Cape Horn Trailhead (cont'd)

Issue	Strategy	Implementation Considerations
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. Enforcement resources are at capacity, will require additional resources. • 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.

Lead Agency: Skamania County (parking lot) and USFS (trail)



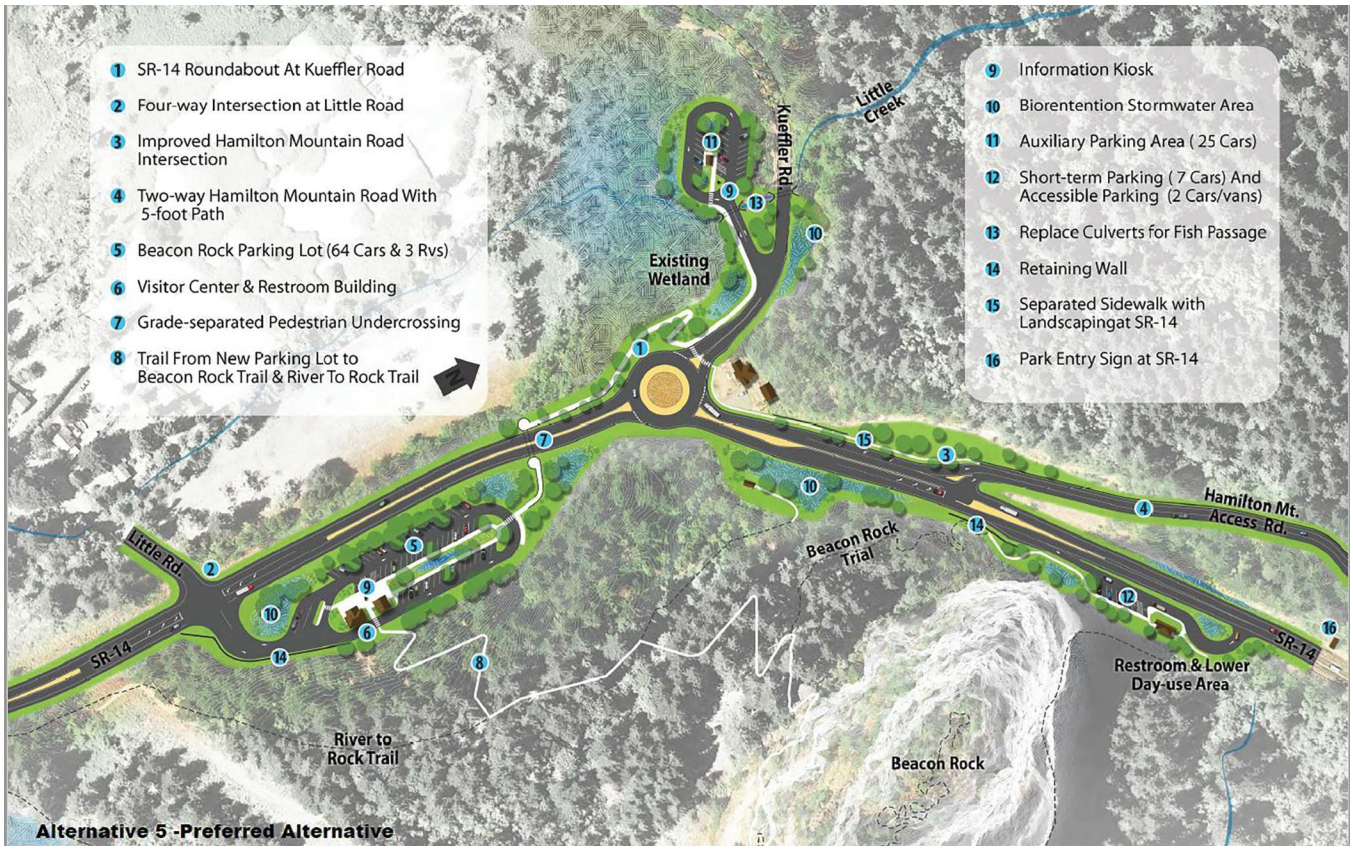
Beacon Rock Trailhead

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 Park[3]. This study supports the strategies identified in the Preferred Concept that was the result of the 2019 planning process, as summarized below:

1. Roundabout at Kueffler Road/SR 14
2. Four-way intersection at Little Road/SR 14
3. Improved Hamilton Mountain Road/SR 14 intersection
4. Two-way Hamilton Mountain Road with 5-foot path
5. New parking lot west of existing parking lot
6. New visitor center and 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 Road/SR 14
12. Short-term and accessible parking at the eastern end (retrofit existing parking)
13. Replace culverts for fish passage north of Kueffler Road/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 at the Beacon Rock Trailhead involves submitting a predesign report to the Office of Financial Management to determine whether 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.

Figure 14: Beacon Rock State Park Preferred Concept Plan



Source: Washington State Parks and Recreation Commission, 2022

[3] https://parks.state.wa.us/1142/Beacon-Rock-Entrance-Road-Realignment

Drano Lake Boat Ramp

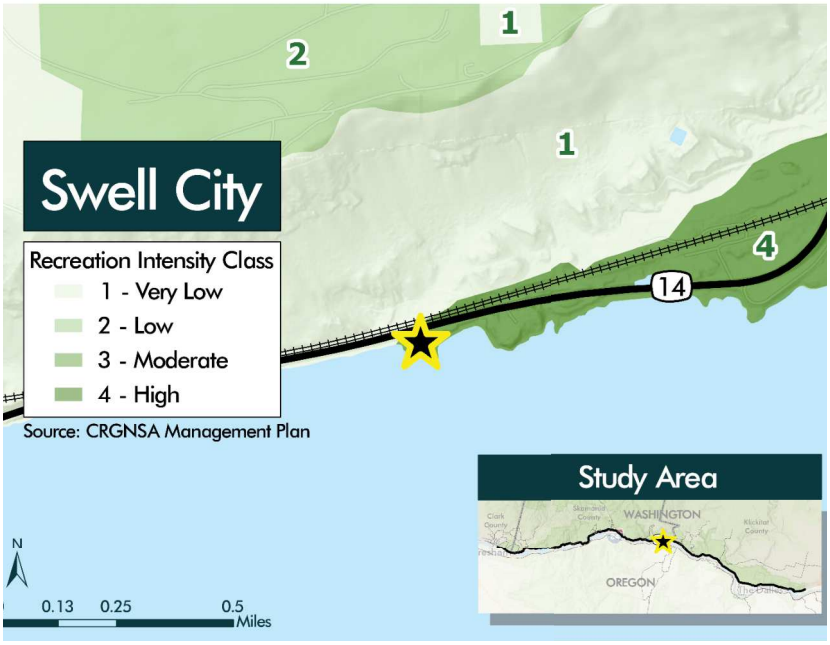
Issue	Strategy	Implementation Considerations
Parking overflow	Real-time parking availability	• Cameras potentially provide visitors with access to images via a website. • Cameras would require infrastructure for power (battery, solar or hardwire/fiber) and communications (wireless, cellular, hardwire/fiber, 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.
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	Installation of rumble strips needs 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 restriction policies and enforcement penalties should be clearly explained to visitors; new traffic restrictions can be implemented in a pilot program to test whether they have the desired impacts before making them permanent. • Often requires increased staff resources on-site.

Lead Agency: Skamania County (parking lot) and WSDOT (SR 14 vehicle access)

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	Installation of rumble strips needs 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).
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).

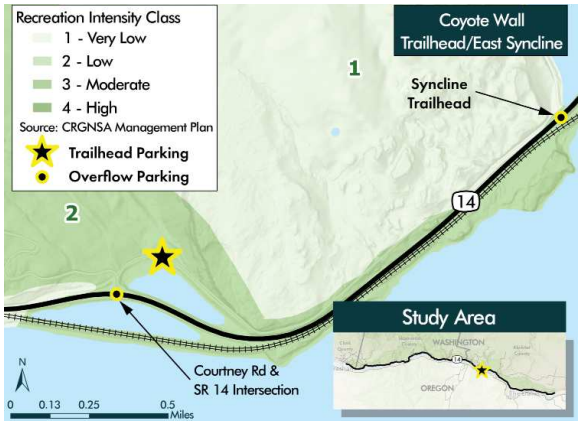
Lead Agency: WSDOT (SR 14 shoulder), and Washington State Parks (Spring Creek Park)



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 (coupled with increased transit shuttle service)	• USFS requires certain amenities to be in place before instituting day-use fee, which are in place at this location, however new fee proposals typically require a one to two year public engagement and approval process. • New policies and enforcement penalties should be clearly explained to visitors. • Often requires increased staff resources on-site for enforcement and ongoing maintenance, and fee collection. Consider automated machine for collections.
	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. Enforcement resources are at capacity, will require additional resources. • 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. Enforcement resources are at capacity, will require additional resources. • Consider zone placement that discourages displacement of the illegal parking to another, potentially more dangerous, location.
SR 14/Courtney Rd intersection safety	Advance intersection warning sign with street name	• Compliance with WSDOT standards.
	Eastbound left-turning vehicles ahead sign	• Compliance with WSDOT standards.

Lead Agency: Skamania County (parking lot) and WSDOT (SR 14 shoulder and vehicle access)



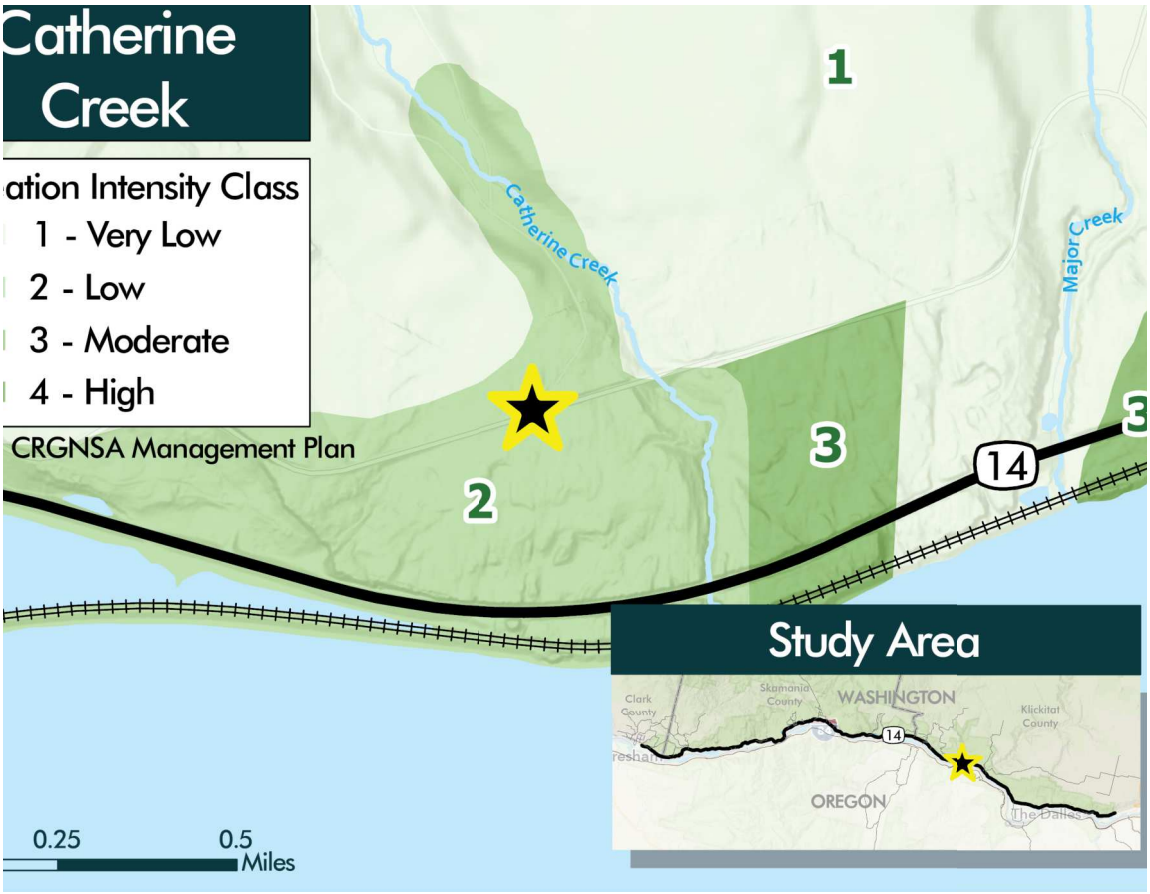
Catherine Creek

Issue	Strategy	Implementation Considerations
Parking overflow	Real-time parking availability	• Camera installation and location must be sensitive to and complementary to the natural surroundings and scenic standards, in compliance with the CRGNSA Management Plan. • 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) • Sensors would require similar infrastructure as cameras and likely an additional maintenance cost.
	Implement usage fee (coupled with increased transit shuttle service)	• Could require an intergovernmental agreement between Klickitat County and USFS due to land ownership. • Could explore mechanism to ensure that the fees collected go to improving a local site. • USFS requires certain amenities to be 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 and ongoing maintenance.
	Channelize and provide angle parking	• Coordination between USFS and Klickitat County would be needed 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. • Accessible parking spaces should be designed consistent with ADA and Architectural Barriers Act (ABA) requirements.
	Transit shuttle (seasonal – originating in Lyle, White Salmon or Hood River)	• Will likely require coordination with Gorge TransLink alliance. • Would entail ongoing system management and support. • Explore a public-private partnership for providing shuttle service for recreationalists.

Catherine Creek (cont'd)

Issue	Strategy	Implementation Considerations
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 would be needed to ensure compliance with roadway standards and CRGNSA Scenic Guidelines.
	Provide pedestrian wayfinding signage	• Coordination between USFS and Klickitat County would be needed to ensure compliance with roadway standards and CRGNSA Scenic Guidelines.
	Consider accessible trail connection to universal access trails	• Coordination between USFS, Friends of the Columbia River Gorge, and Klickitat County would be needed to ensure compliance with roadway standards and CRGNSA Scenic Guidelines. • If Friends of the Columbia Gorge's Catherine Creek parcel were to be used for parking, it would not be designed as a traditional parking lot and it may include accessible parking and potentially a transit option.

Lead Agency: Klickitat County (access and parking) and USFS (trailhead)



Informal Recreation Sites - Special Considerations

Lyle / Klickitat River Delta

Similar to other recreation sites in the study, the informal but popular Klickitat River Delta access in Lyle (referred to by some as the 'Klickitat Spit') also experiences recurring congestion and safety concerns. There are a number of technical issues associated with access and vehicle parking at the site.

Continued conversations between USFS, WSDOT and BNSF Railway (BNSF) acknowledge three key issues concerning access: (1) currently, pedestrians crossing the railroad accessing the Klickitat River Delta are trespassing (illegally) and present unique safety and legal liability issues, (2) the only pedestrian crossing design that BNSF might approve would be a pedestrian undercrossing, and (3) BNSF will likely not commit any funding resources for the design and construction of a new pedestrian undercrossing. Potential railroad crossing solutions are likely expensive, and affirming roles and responsibilities for the design and interagency discussions have yet to identify federal and/or state and local funding support. Complicating the access issues in this area is the lack of parking on SR 14, which contributes to the safety concerns. Providing a formal access also presents its own challenges as there are potential impacts to cultural and fisheries resources that must be considered.

The USFS has been holding meetings with the community of Lyle to discuss potential measures to reconcile access and parking issues. Locating more formal site access parking is a challenge, and may require the extension of public sidewalks, and coordination with WSDOT to determine the most appropriate access from SR 14.

The Forest Service and Yakama Nation continue to meet to understand Yakama Nation's plans for the restoration of the Klickitat River Delta and current and future recreation use. It is premature to conclude the SR 14 Dog Mountain Congestion and Safety Study with specific findings and recommendations for this site until the Klickitat River Delta restoration planning is complete, and Yakama Nation and federal, state, local agencies and community can convene and affirm the next planning steps towards plan agreements and potential project development to improve site access, parking and safety.

Any future plan strategy or project design proposal with inter-agency support can be readily incorporated in the forthcoming Klickitat County Regional Transportation Plan Update (expected in 2023), and will be fully eligible on their merits for state and federal funding grants and assistance as other potential projects identified in the SR 14 and Dog Mountain Congestion and Safety Study (above).

In the interim, some of the system level strategies or toolkit strategies listed in Table 5 may be applicable to help alleviate safety concerns associated with recreation congestion along SR 14 and Old Highway 8 near the Klickitat River Delta: Access consolidation, shoulder widening, PCMS messaging (seasonal), temporary speed radar, congestion ahead warning, pedestrian activity and wayfinding signs, increased enforcement of illegal parking and public information campaigns to encourage safe behavior.

Leading Agency: USFS (Yakama Nation and BNSF coordination) and WSDOT (parking and access design)

Ozone Climbing

At the west end of the study area, Ozone Climbing is an informal site known to rock climbers. Users of this site park in the shoulder area on the south side of SR 14 to access the crag (also on the south side of SR 14). The area experiences recurring congestion and safety concerns with the limited space for vehicular parking and traffic entering and exiting the highway.

A more formal site designation or expanded access is not proposed at this time. However, similar to the Klickitat River Delta site, some of the system level strategies or toolkit strategies listed in Table 5 may be applicable to help alleviate safety concerns associated with recreation congestion along SR 14: PCMS messaging (seasonal), temporary speed radar and congestion ahead warning.

Leading Agency: WSDOT (SR 14 right of way) and USFS (partially on USFS lands)

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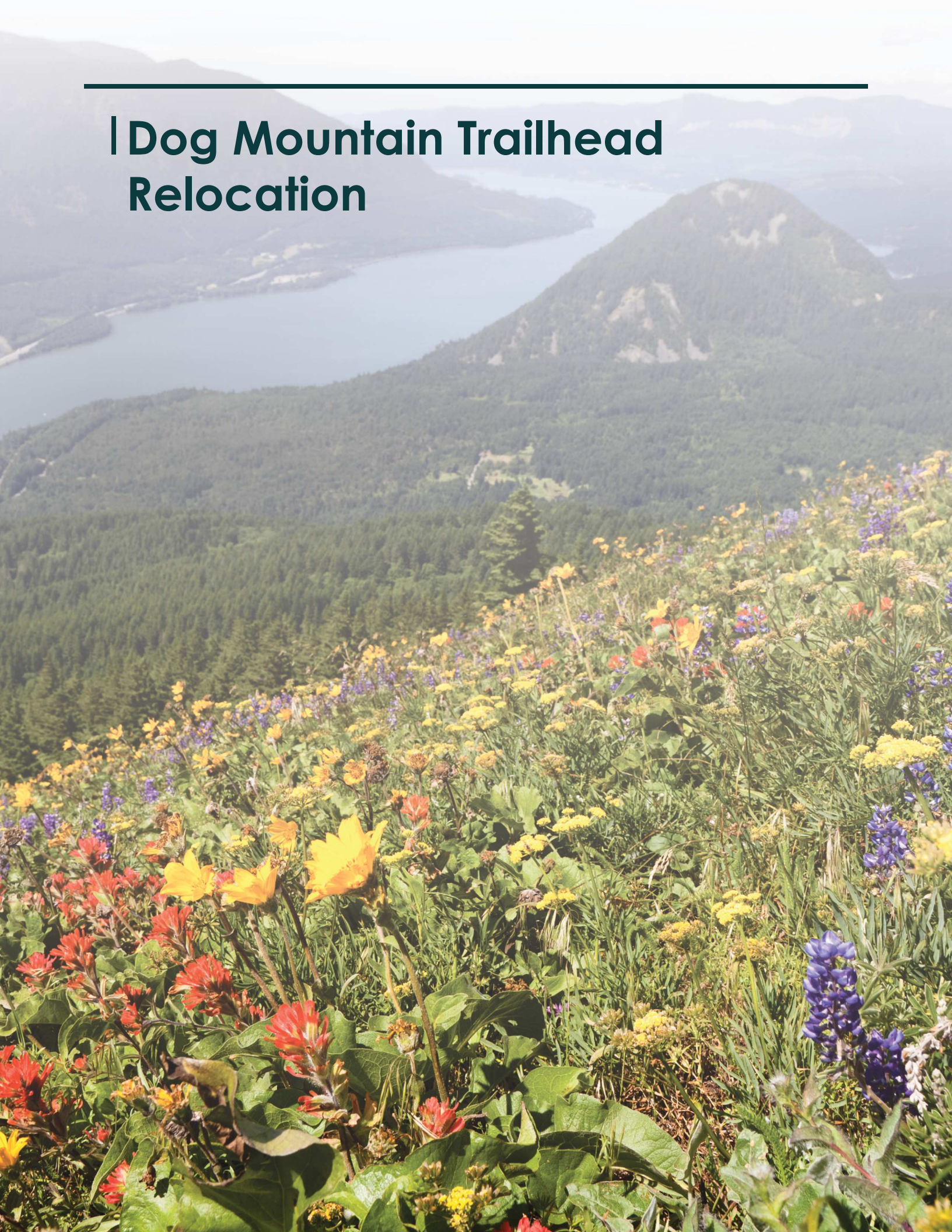
Dog Mountain Trailhead Relocation



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Dog Mountain Trailhead Relocation

The Dog Mountain Concept Refinement Report (Appendix B) is a separately-funded project to identify solutions that address known safety and congestion concerns at the existing Dog Mountain Trailhead, located immediately north of SR 14 (see Figure 1).

The purpose of the Concept Refinement Report is to provide the project planning partners (USFS, WSDOT, and FHWA) information needed to refine the project scope and support subsequent NEPA analysis, the project purpose and need statement and a rational basis for a reasonable range of options considered and evaluated.

Concept Development

As shown in Figure 14, there were initially five site options identified to relocate or improve the Dog Mountain Trailhead and associated parking lot. The five options were distributed to the appropriate staff from the project planning partners for preliminary feedback.

Screening the Options

A screening process was undertaken by the Core Project Team (CPT) to identify site options that are unlikely to be implemented, whether the concept would address the project purpose and need (as defined to the right), or whether the agencies have other jurisdictional or resource related concerns.

Feedback from the project planning partners on the five trailhead relocation options aided the CPT in determining which options best met the purpose and need and thus warranted further study and evaluation (Preliminary Site Concepts below), and those options that should be removed from further consideration. The results of the screening process and feedback are also summarized in Figure 14.

Defining Purpose and Need

The purpose of the Dog Mountain Trailhead relocation is to:

- Minimize or remove hazardous conditions along SR 14 as they relate to accessing the Dog Mountain Trailhead
- Discourage parking on SR 14
- Support the land management strategies of USFS
- Maintain the trail user experience of the Dog Mountain Trail

Preliminary Site Concepts

As a result of the preliminary screening process, two of the Dog Mountain Trailhead relocation options (Grant Lake and Existing) were advanced for further study and refinement, as described in the following sections.

USFS Interdisciplinary Team Site Visit

Although the existing trailhead parking lot had undergone multiple studies, not as much was known about the Grant Lake area. A site visit was conducted on Tuesday, July 27, 2021, with USFS natural resource and recreation staff to further evaluate potential sites to relocate the Dog Mountain Trailhead in the areas west and north of Grant Lake.

Figure 14: Dog Mountain Trailhead Relocation Initial Conceptual Locations

# Parking Lot Options	Screening Outcome: Further Refinement	Remove from Further Consideration	Finding
1 Grant Lake	✔		
2 Mountain Glade West		✕	Unmitigable natural resource impact
3 Mountain Glade East		✕	Unmitigable natural resource impact
4 Maintenance Yard		✕	Does not meet study purpose and need
5 Existing		✕	Does not meet study purpose and need

Concept Refinement

The CPT considered the feedback from the preliminary screening and the USFS interdisciplinary team site visit to further vet relocating the Dog Mountain Trailhead west near Grant Lake or improving the existing parking lot. The CPT determined that even with improvements to the existing parking lot, it would not meet the purpose and need. As a result, the project team continued to refine the parking lot and trailhead options near Grant Lake while suggesting interim improvements for the existing site. The existing site improvements could be implemented while the trailhead relocation process continues to move forward.

To meet the needs of year-round recreational users, the CPT determined that a new Dog Mountain Trailhead parking lot should account for the following features:

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

Grant Lake Conceptual Layout Plans

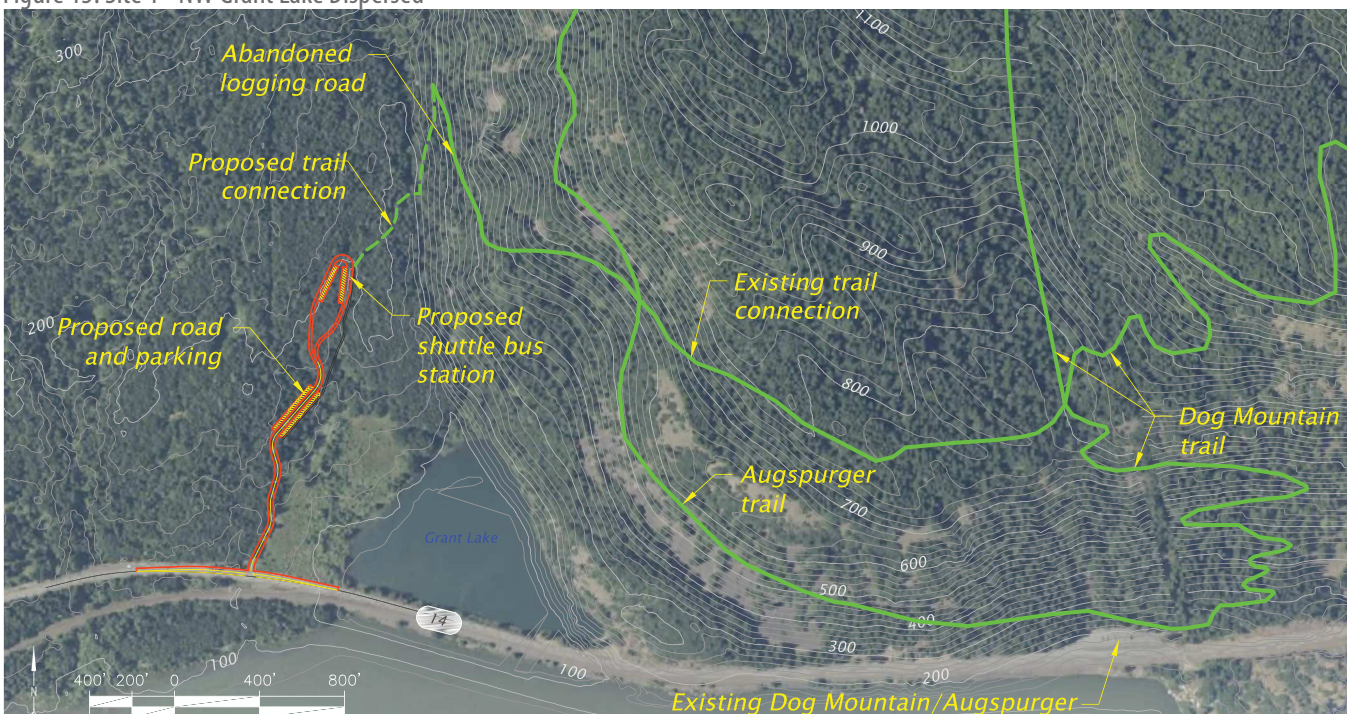
Two unique conceptual layouts were developed to illustrate possible trailhead and parking configurations near Grant Lake. These layouts are meant to serve as preliminary plans that will inform future project development in the conceptual and final Dog Mountain parking lot and trailhead design.

Site 1: NW Grant Lake Dispersed

Figure 15 depicts Site 1, titled "NW Grant Lake Dispersed", as its notable feature minimizes the distance between the northern parking lot and shuttle bus area, and the existing Dog Mountain Trail system.

A preliminary, rough order-of-magnitude cost estimate for the NW Grant Lake Dispersed site ranges from $2.3 million to $3 million, depending on design features. These costs may increase to approximately $3.2 million to $4.1 million if project and construction engineering design support is required.

Figure 15: Site 1 - NW Grant Lake Dispersed

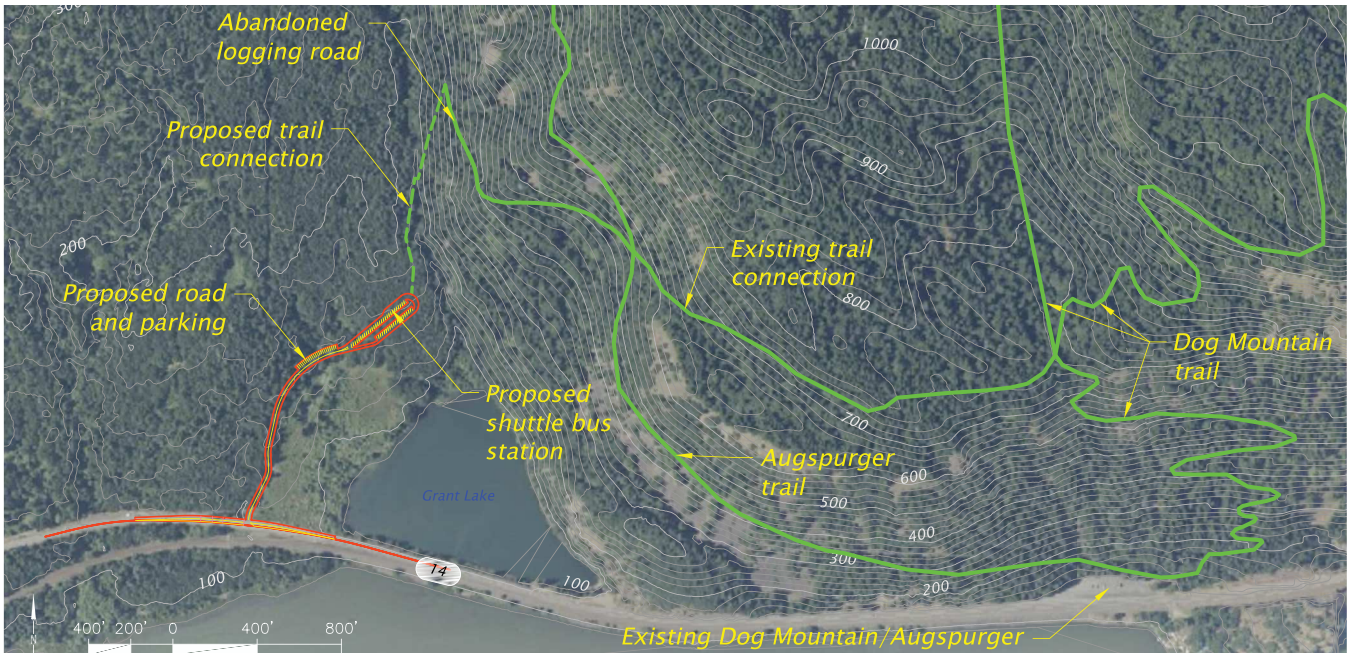


Site 2: NW Grant Lake Compact

Figure 16 depicts Site 2, titled "NW Grant Lake Compact", as its distinguishing feature minimizes the distance between the north and south parking lots, reduction in the overall footprint and limits the extents of new roadway construction and impervious surface.

The preliminary, rough order-of-magnitude cost estimate for Site 2 ranges from $1.9 million to $2.5 million, depending on design features. If project and construction engineering design support is required, the rough cost estimate may increase to approximately $2.7 million to $3.6 million.

Figure 16: Site 2 - NW Grant Lake Compact



Assessing Natural Resource Impacts

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, including the CRGNSA development review and approval process. The NW Grant Lake conceptual layout plan options were developed based on information gathered from existing studies and two site visits. Combined, this information provides some preliminary considerations related to potential impacts to natural resources, as described below.

Biological Considerations

USFS and the Washington Department of Fish and Wildlife have a Memorandum of Understanding (MOU) for the NW Grant Lake area regarding sensitive species. Any parking lot/trailhead designs will need to account for the MOU findings, and will require coordination with all relevant management programs.

Visual Considerations

Scenic quality is a fundamental element of recreation experiences within the CRGNSA. The CRGNSA Management Plan defines 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." Both Dog Mountain and SR 14 are identified KVAs within the CRGNSA.

New roadway grading and parking lot construction activities will be visible from SR 14. Special design treatments will likely be required to blend the new road and parking lot with the natural environment, even if the future parking lot itself is not visible. A comprehensive, "leaf off"[4] site evaluation is needed to more accurately determine the type and extent of needed special design treatments.

[4] "This term is often used when considering image acquisition through remote sensing and refers to the time of the year during which an image is taken. . . Leaf-off means that there is no foliage or a reduced amount of foliage on the tree or shrub species. Sometimes it is beneficial to have leaf-off imagery so that you can see ground features more distinctly. This is helpful for mapping features such as buildings and roads, which may be obscured by tree foliage during the growing season (https://mapasyst.extension.org/what-is-the-difference-between-leaf-on-and-leaf-off-imagery)."

Access and Safety Improvement Opportunities

Existing Dog Mountain Trailhead Interim Improvements

The study recognizes the Dog Mountain Trailhead relocation project is still in the early stages of analysis and the existing trailhead and parking lot will remain open to the public for the foreseeable future. Projected trail use is expected to continue its upward trend and managing congestion at the current Dog Mountain Trailhead and parking lot under the existing configuration and trail system will remain a challenge.

The existing Dog Mountain Trailhead parking lot, while "grandfathered" in under the CRGNSA Management Plan, does not meet the plan's current scenic quality standards or recreation intensity class standards. Significant physical changes to the parking lot would need to be designed to meet CRGNSA guidelines.

The next phase in project development will require further discussions with the USFS and the other project partners to determine the appropriate mitigations for the existing trailhead parking lot, regardless of whether the parking lot is relocated. Interim strategies for consideration at the existing Dog Mountain Trailhead are summarized below in Table 6.

Table 6: Interim Strategies for Consideration at Existing Dog Mountain Trailhead

Strategy	Description	Considerations
Real-time parking availability	• Use closed-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. • Use 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 of the CRGNSA. • Sensors would require similar infrastructure as cameras and likely additional maintenance costs.
Expand peak season reservation system	Expand peak season reservation system throughout spring and summer and/or include weekday permit requirements.	• Regular enforcement would be required to ensure compliance. Enforcement programs are at capacity, will require additional resources. • 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 ~300 feet east of the Dog Mountain Trailhead.	• Risk of restricting parking is that 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 to be 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 a sustainable, long-term funding source. • Need to identify additional funding for increased capital and operating costs. • Transit vehicle size may be limited by existing parking lot geometry.

Existing Dog Mountain Trailhead Long-Term Mitigation Considerations

As previously mentioned, keeping the primary access to the Dog Mountain trail system at its current location does not meet the purpose and need of this study. The proximity of the existing trailhead and parking lot to SR 14 creates a safety concern for users of the trail system and the state highway. This safety concern will continue to exist without changes to the existing site.

A prior effort to improve the existing parking lot was shelved in 2008 due to complexities with land ownership and preliminary results from environmental studies. Those complexities still exist today and, in combination with the RIC standards, create uncertainty that an upgraded parking lot with adequate capacity is feasible in its current location.

The project team anticipates the fate of the existing Dog Mountain Trailhead parking lot will be reviewed during the next phase of the Dog Mountain Trailhead relocation project. Some preliminary ideas were developed as part of this study and are summarized in Table 7.

Table 7: Long-Term Mitigation Considerations at Existing Dog Mountain Trailhead

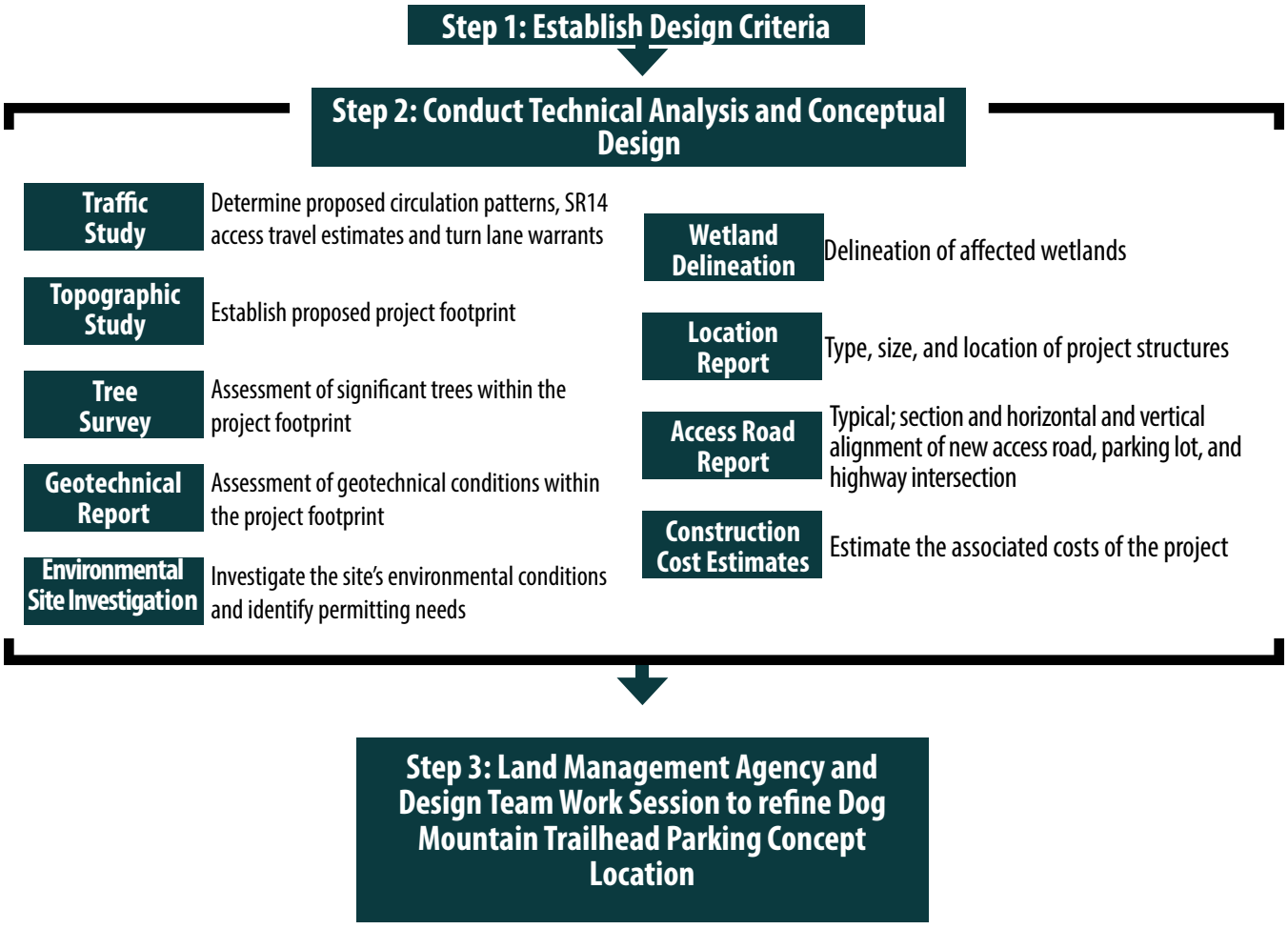
Strategy	Description	Considerations
Restore parking lot to natural conditions	Abandon existing parking lot, trailhead and restore to natural conditions.	• Would require relocated parking lot to be operational. • Could be a form of visual mitigation for the relocated parking lot. • Design would need to deter visitors from parking on SR 14 and attempting to access the existing trail from the abandoned trailhead location. • Coordination with BNSF (existing BNSF easement).
Repurpose existing parking lot	• Repurpose existing parking lot to transit only.	• 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. • Coordination with BNSF (existing BNSF easement).
Single access point	• Create consolidated access point to existing parking lot through aesthetically appropriate barrier. • Access point should be located at western end to achieve adequate sight distance.	• Provides overflow parking option for relocated trailhead. • 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. • Coordination with BNSF (existing BNSF easement).

Next Steps in Project Development

Prior to initiating the NEPA analysis phase, the next step in developing the Dog Mountain Trailhead relocation project will be to develop Conceptual Level Plans (30 percent design) to clearly identify the footprint of the project and identify the boundaries of the environmental studies that follow. Figure 17 illustrates the next steps in project development through a series of studies and interagency coordination in support of the Conceptual Level Plan.

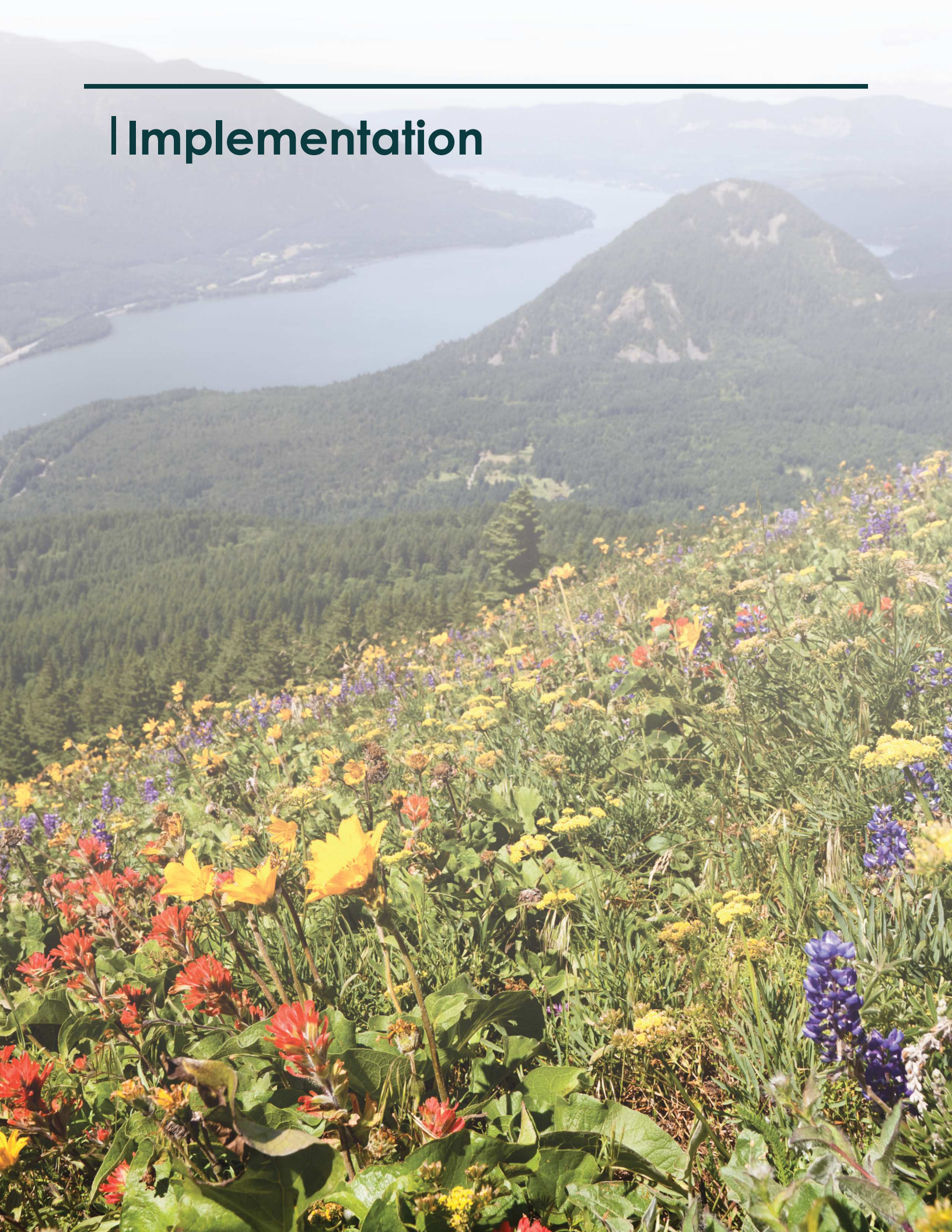
Although not specifically called out in the figure, stakeholder engagement will be a critical component of the project development process and should be initiated in parallel with step 1. Not only are there multiple stakeholders in the CRGNSA, but the existing Dog Mountain Trailhead parking lot is partially on a BNSF easement and any plans for improvements or mitigation at this site will require cooperation with the railroad.

Figure 17: Project Development



Lead Agency: The USFS will lead the next steps in Conceptual Level Planning and Site Investigations in further development of the project.

Implementation



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Implementation

Flexible Response

To address the complex recreation and transportation needs within the CRGNSA, the study area 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 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.

ADAPTIVE MANAGEMENT CYCLE

Cooperation

The project partners 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. Prioritizing projects and implementing strategies outlined in this study should be a collaborative effort with the relevant stakeholders that considers the overall vision to address congestion and safety concerns while protecting scenic, natural, cultural, and recreational resources. Consideration should also be given to how well the tools meet the study goals previously described in the Introduction Chapter and must align with the goals of 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. Long-term agency collaboration through coordination with the Columbia River Gorge Commission and partnering agency representatives is likely to yield the greatest success in funding priority improvements.

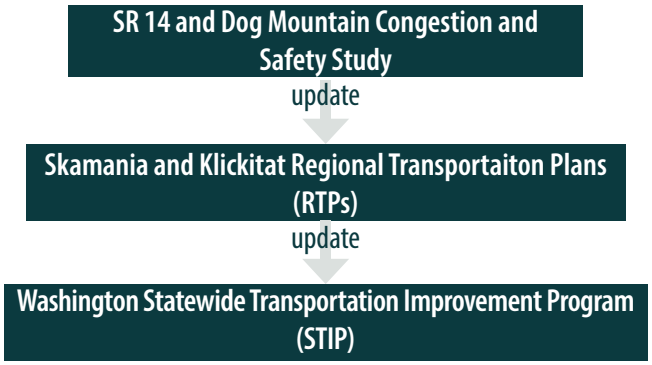
Funding Multimodal Access Projects

The Congestion and Safety Toolkit identifies and describes tools and strategies to improve safety and relieve congestion along SR 14 and at several key recreation access sites in the study area, and the lead agency likely to sponsor future project development, including further environmental planning, project design and securing funding for construction, operation and maintenance of multimodal access improvements. The process to secure funding for potential projects on SR 14 or other state highways in the study area differs from those projects exclusively on federal lands.

SR 14 Projects

Projects along SR 14 that are identified for implementation from the SR 14 and Dog Mountain Congestion and Safety Study will be programmed for funding and prioritization in the **Statewide Transportation Improvement Program** (STIP). The current STIP (2022-2025) prioritizes the state's multimodal transportation program of state, local, tribal, and public transportation (transit) projects through year 2025, usually sourced from one of the WTP modal plans, including highways, streets, roads, railroads, transit hubs, park and ride lots, bridges, sidewalks, bike lanes, ferry terminals, trails and safety projects funded with federal, state, tribal and local sources.

The STIP is a calendar year document and is developed on an annual basis from local, metropolitan planning organizations (MPOs), and regional transportation planning organizations (RTPOs) transportation improvement programs (TIPs). Only those projects programmed in the STIP can be authorized by FHWA and the Federal Transit Administration (FTA) to utilize federal funds. Once projects are approved in the STIP, agencies may request federal fund authorization of the project.



The process to confirm and secure funding of priority state highway projects originating from the SR 14 and Dog Mountain Congestion and Safety Study

Federal Land Projects

Potential projects on federal lands external to state highway rights-of-way may be funded directly through federal grants on a merit basis and requiring a formal application process.

Funding Sources

The Federal Lands Access Program (FLAP) is a popular source to help fund potential safety and access projects on federal lands. A combination of FLAP and other federal grant and state funding programs are a resource to fund SR 14 safety and access improvements. **Appendix D** contains a comprehensive list of federal, state and private funding sources for the range of potential projects as outcome from the SR 14 and Dog Mountain Congestion and Safety Study.

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SR 14 AND DOG MOUNTAIN CONGESTION AND SAFETY STUDY
DECEMBER 2022