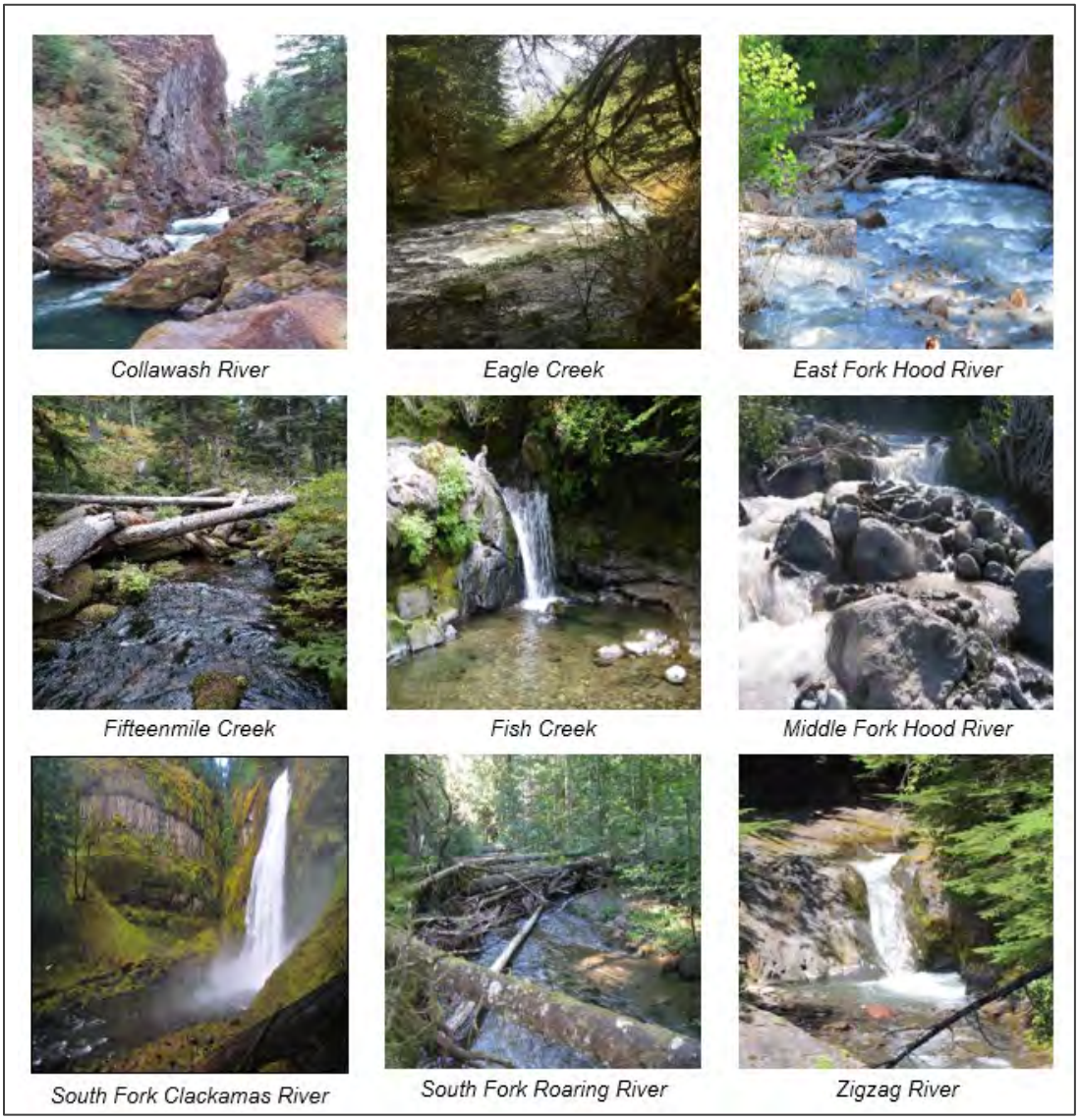
# Comprehensive River Management Plan for Nine Wild and Scenic Rivers

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# Introduction

In 2009, nine rivers/streams on the Mt. Hood National Forest and Northwest Oregon District of the Bureau of Land Management were designated as additions to the National Wild and Scenic Rivers System in the Omnibus Public Land Management Act (Public Law 111-11, 123 Stat. 991) (this act is hereafter referred to as the Omnibus Act.). The Omnibus Act designated wild and scenic rivers across Mt. Hood National Forest (the Forest) on the Barlow, Hood River, Clackamas, and Zigzag Ranger Districts. These designated rivers include the Collawash River, Eagle Creek, East Fork Hood River, Fifteenmile Creek, Fish Creek, Middle Fork Hood River, South Fork Clackamas River, South Fork Roaring River, and Zigzag River. South Fork Clackamas River includes Northwest Oregon District, Bureau of Land Management (BLM) administered lands.

## Purpose of Comprehensive River Management Plan

This comprehensive river management plan establishes programmatic management direction for nine wild and scenic rivers. It has been developed to implement the direction of the Wild and Scenic Rivers Act (Public Law 90-542)[1] of 1968, as amended (hereafter referred to as the Act). The Omnibus Act added 84.4 miles of wild and scenic rivers on the Forest, as described in Appendix A: Excerpts from Public Law 111-11 and shown in table 1. The Wild and Scenic Rivers Act established a system for preserving outstanding free-flowing rivers. Section 1(b) of the act directs that:

> certain selected rivers of the Nation which, with their immediate environments, possess outstandingly remarkable scenic, recreation, geologic, fish and wildlife, historic, cultural, or other similar values, shall be preserved in free-flowing condition, and that they and their immediate environments shall be protected for the benefit and enjoyment of present and future generations (Public Law 90-542, 1968).

Federal agencies charged with the administration of the National Wild and Scenic Rivers System are required to prepare a comprehensive river management plan for designated river segments to provide for the protection and enhancement of the river values and to achieve the purposes of the Wild and Scenic Rivers Act, section 3(d)(1).

The purpose of the comprehensive river management plan is to establish overall management direction to protect and enhance the values for which these rivers were designated (free-flowing condition, water quality, and outstandingly remarkable values). This plan establishes river corridor boundaries, management direction, user capacities, monitoring, and other management practices necessary to protect and enhance the river values.

## Designated Segments and Classification

The locations of the nine designated river segments addressed in this plan are shown in Appendix B: Maps of Final Wild and Scenic River Boundary. The river names, description, classification, river miles, and outstandingly remarkable values for each segment are shown in table 1.

[1] The original act along with all the amendments in order is available here: https://www.rivers.gov/documents/act/complete-act.pdf

Rivers designated by the Wild and Scenic Rivers Act are classified as wild, recreational or scenic (Section 2(b)). The 2009 Omnibus Act established a classification for each river segment based on the level of development within the river corridor (see table 1). These classifications are defined as follows.

> **Wild River:** A river or segment of a river that is free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted. These represent vestiges of primitive America.
>
> **Scenic River:** A river or segment of a river that is free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads.
>
> **Recreational River:** A river or segment of a river that is readily accessible by road or railroad, that may have some development along its shorelines, and that may have undergone some impoundment or diversion in the past.

The legislation specifies the start and end point (termini) of each river segment, shown in figure 1[2]. Segment lengths were also identified in the legislation (see Appendix A: Excerpts from Public Law 111-11) and were based on the eligibility study conducted as part of the analysis for the Mt. Hood Land and Resource Management Plan (1990). Between the initial inventory of eligible river segments and now, however, more accurate information became available on the length of river segments. Based on current Geographic Information System analysis, the corrected river miles are shown in table 1.

Outstandingly remarkable values vary by segment and were determined through an interdisciplinary analysis process and are discussed in the following sections.

[2] A map packet is available on the project website: https://www.fs.usda.gov/project/?project=54674. These maps are at a larger scale and can be zoomed to areas of interest.

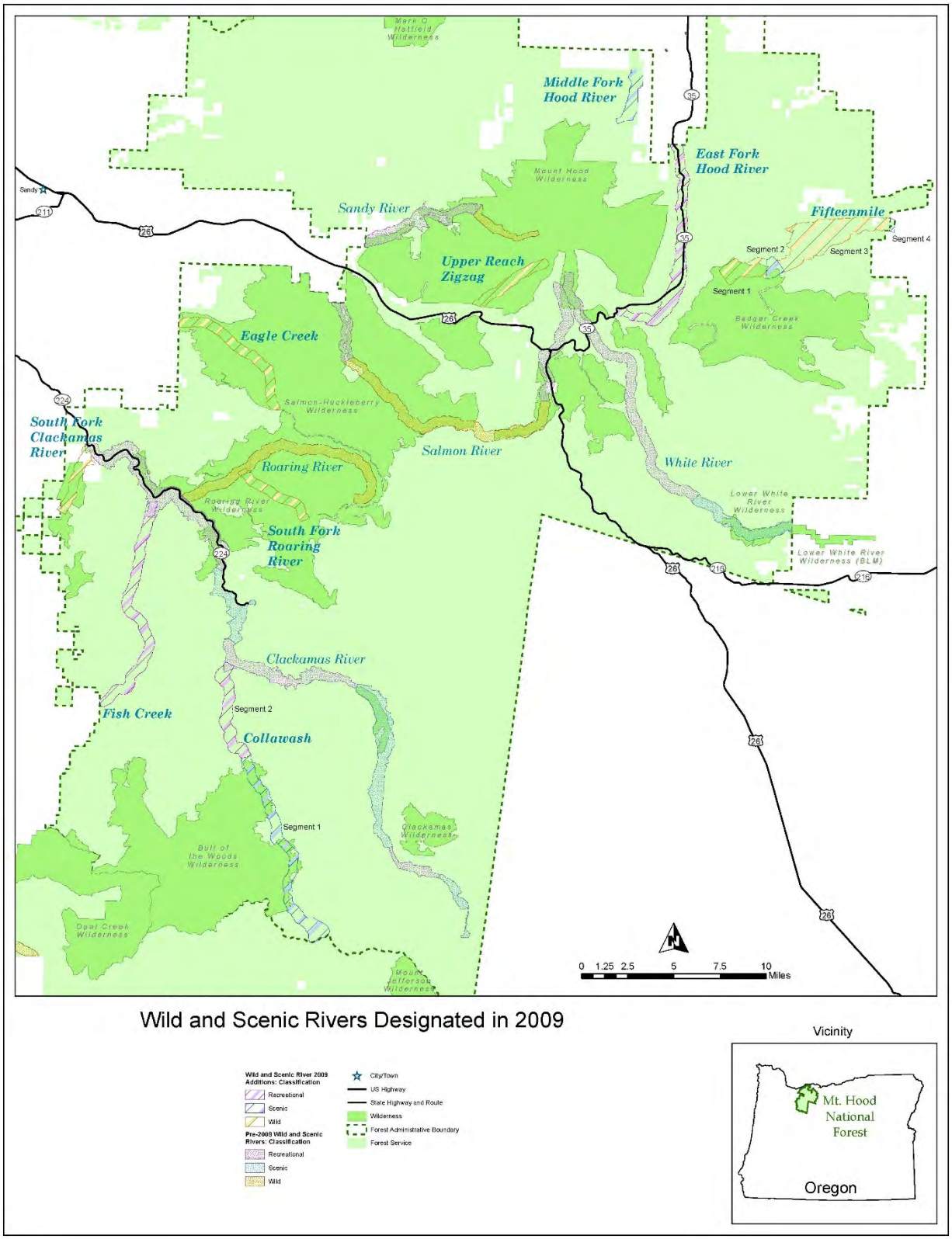


**Figure 1. Location of the wild and scenic rivers designated in 2009 on Mt. Hood National Forest**

**Table 1. Description, classification and outstandingly remarkable values (ORVs) of wild, scenic, and recreational river segments designated by the Omnibus Act of 2009**

| Designated Segment | Description | Classification | Miles | ORVs |
|---|---|---|---|---|
| Collawash River | Segment 1: Headwaters of the East Fork Collawash River to Buckeye Creek | Scenic | 12.9 | Recreation, Geology, Fisheries, and Botany |
| Collawash River | Segment 2: Buckeye Creek to Clackamas River | Recreational | 6.9 | Geology and Fisheries |
| Eagle Creek | Headwaters to the Mount Hood National Forest boundary | Wild | 8.4 | Recreation and Botany |
| East Fork Hood River | Oregon State Highway 35 to the Mount Hood National Forest boundary | Recreational | 14.1 | Wildlife, Recreation, and Botany |
| Fifteenmile Creek | Segment 1: Source at Senecal Spring to the Badger Creek Wilderness boundary | Wild | 2.6 | Wildlife, Historic |
| Fifteenmile Creek | Segment 2: Badger Creek Wilderness boundary to the point 0.4 miles downstream | Scenic | 0.8 | Wildlife and Recreation |
| Fifteenmile Creek | Segment 3: Point 0.4 miles downstream of the wilderness boundary to the western edge of T2S, R12E, Sec. 20 | Wild | 7.4 | Wildlife, Recreation, and Fisheries |
| Fifteenmile Creek | Segment 4: Western edge of T2S, R12E, Sec. 20 to the southern edge of the NW quarter of the NW quarter of T2S, R12E, Sec. 20 | Scenic | 0.3 | Wildlife and Fisheries |
| Fish Creek | Headwaters to the confluence with the Clackamas River | Recreational | 13.6 | Fisheries |
| Middle Fork Hood River | Confluence of Clear and Coe Branches to the north section line of section 11, T1S, R9E, Sec. 11 | Scenic | 3.7 | Geology, Scenery, and Fisheries |
| South Fork Clackamas River | Confluence with the East Fork of the South Fork Clackamas to its confluence with the Clackamas River | Wild | 4.3 | Scenery and Historic |
| South Fork Roaring River | Headwaters to its confluence with Roaring River | Wild | 4.7 | Botany |
| Zigzag River | Headwaters to the Mount Hood Wilderness Boundary | Wild | 4.7 | Scenery, Recreation and Macroinvertebrate |

# Final River Boundaries

The Wild and Scenic Rivers Act requires that each federally administered river in the National Wild and Scenic River System have a legally established boundary. Section 3(b) of the Act provides specific direction to the river-administering agencies.

> The agency charged with the administration of each component of the national wild and scenic rivers system designated by subsection (a) of this section shall…establish detailed boundaries…which boundaries shall include an average of not more than 320 acres of land per mile…measured from the ordinary high water mark on both sides of the river.

The 2009 Omnibus Act (Section 1203(a)(1)(176)(B)) specified that: "the lateral boundaries of both the wild river area and the scenic river area along Fifteenmile Creek shall include an average of not more than 640 acres per mile measured from the ordinary high water mark on both sides of the river" (see Appendix A: Excerpts from Public Law 111-11).

While the designating Act established the termini for the designated segments, it does not establish the lateral boundary for the rivers. Until the legally established boundary is identified, the rivers are managed with an interim boundary (a quarter mile from the ordinary high-water mark, but half a mile for Fifteenmile Creek). Upon adoption of the comprehensive river management plan and the Forest Service and BLM decisions, the river corridors will be managed to the final boundaries.

Maps of the final boundaries are shown in Appendix B: Maps of Final Wild and Scenic River Boundary. The final boundaries include the following modifications from the interim corridors.

- The boundary on the **Collawash River** was widened near the headwaters to fully encompass and protect the fisheries and botany outstandingly remarkable values. The boundary was also extended to the watershed boundary to better protect the fisheries outstandingly remarkable value. The boundary was narrowed in the wilderness to balance the addition because the wilderness designation protects the river values, including the identified outstandingly remarkable values.
- The boundary on the **East Fork Hood River** was adjusted to include two wetlands and meadows that are being used by elk and other wildlife to enhance the wildlife outstandingly remarkable value. The boundary was then narrowed near the forest boundary to balance the addition because the recreation, wildlife and botany outstandingly remarkable values are not located in this area.
- The boundary on **Fish Creek** was extended to the watershed boundary to better protect the fisheries outstandingly remarkable value. The boundary was narrowed along the length of the designated segment to account for this change because water quality, free flow, and fisheries (the identified outstandingly remarkable value) are adequately protected given the limited access within the corridor.
- The boundary on **Fifteenmile Creek** was adjusted to follow the National Recreation Area boundary in segments 2 and 3 to capture the recreation outstandingly remarkable value; this adjustment also provides benefits for the fisheries and wildlife outstandingly remarkable values. The boundaries were also adjusted to follow Forest Service Road 4420 in the first segment to capture the historic outstandingly remarkable value.
- The boundary on **Middle Fork Hood River** was adjusted to encompass as much of the lava beds as possible within the lateral boundary requirements (average of 320 acres per river mile) to protect the geology outstandingly remarkable value. The boundary was then narrowed to exclude the pipeline at the Coe diversion towards the settling pond within the Middle Fork Irrigation District to balance the addition because this area is not contributing to the identified outstandingly remarkable values of scenery, fish or geology.
- The boundary on **South Fork Clackamas** was adjusted to incorporate the additional features of the South Fork Water Board infrastructure and thus to protect the historic outstandingly remarkable value. The boundary was then adjusted to follow the forest boundary in one place, and then narrower where it overlaps with the Clackamas River Wild and Scenic River to balance these additions. The Clackamas River Wild and Scenic River affords the same protections.
- The boundary on **Zigzag River** was extended to the watershed boundary to better protect the macroinvertebrate outstandingly remarkable value. The boundary was narrowed along the length

> of the designated segment to account for this change because it is within the designated wilderness, which protects the water quality, free flow, and outstandingly remarkable values.

No changes to the interim boundaries are being proposed for Eagle Creek or South Fork Roaring River. These rivers are within designated wilderness and the existing corridors adequately protect the river values, including the identified outstandingly remarkable values.

# Regional Setting and River Values

The river values (free flow, water quality and outstandingly remarkable values) are established as the three-fold purposes of the Wild and Scenic Rivers Act in Section 1(b).

> It is hereby declared to be the policy of the United States that certain selected rivers of the Nation which, with their immediate environments, possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values, shall be preserved in free-flowing condition, and that they and their immediate environments shall be protected for the benefit and enjoyment of present and future generations. The Congress declares that the established national policy of dam and other construction at appropriate sections of the rivers of the United States needs to be complemented by a policy that would preserve other selected rivers or sections thereof in their free-flowing condition to protect the water quality of such rivers and to fulfill other vital national conservation purposes.

This section establishes the baseline conditions of the river values that contributed to the river's designation within the National Wild and Scenic River System, along with the regional settings for each river. The regional setting and river values draw upon the conditions at the time of designation in 2009, rather than the changed conditions that resulted from the Riverside and Lionshead Fires in the fall of 2020. The changed conditions are description in the accompanying environmental assessment, and the monitoring plan will help to restore the baseline conditions in the South Fork Clackamas River, Fish Creek, and Collawash River over time.

## Overarching Water Quality Protections

The Mt. Hood Land and Resource Management Plan (Forest Plan) was amended by the *Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents within the Range of the Northern Spotted Owl and Standards and Guidelines for Management of Habitat for Late-Successional and Old-Growth Forest Related Species within the Range of the Northern Spotted Owl* (Northwest Forest Plan) in 1994. The Northwest Forest Plan allocations within most of the designated wild and scenic river corridors are managed under the Riparian Reserve standards and guidelines, which offer protections to water quality and free flow. Riparian Reserves include areas along rivers, streams, wetlands, ponds, lakes, and unstable or potentially unstable areas where the conservation of aquatic and riparian-dependent terrestrial resources receives primary emphasis. A complete list of these standards and guidelines can be found in Appendix C: Management Direction.

Riparian Reserves are designed to protect the health of the aquatic system and its dependent species (Forest Service and Bureau of Land Management 1994). The standards and guidelines include the Aquatic Conservation Strategy, which was developed to restore and maintain the ecological health of watersheds and aquatic ecosystems. The strategy also protects salmon and steelhead habitat on federal lands managed by the Forest Service and Bureau of Land Management within the range of Pacific Ocean anadromy.

The BLM signed the Northwestern and Coastal Oregon Record of Decision for the Resource Management Plan on August 5, 2016. The record of decision and resource management plan include management

direction for Congressionally Reserved Lands, including Wild and Scenic Rivers, and the Riparian Reserve land use allocation (see Appendix C: Management Direction for a list of applicable management direction). The record of decision and resource management plan also incorporates the Aquatic Conservation Strategy objectives from the Northwest Forest Plan. The record of decision and resource management plan addresses all four components of the Aquatic Conservation Strategy by modifying and updating components and includes a riparian management strategy that carries forward the concept of key watersheds from the Aquatic Conservation Strategy objectives, which varies riparian management based on the importance of the sub watershed to the conservation and recovery of Endangered Species Act-listed fish (2016 Record of Decision, pages 19 and 25). Additionally, the record of decision and resource management plan included best management practices for resources and activities within the planning area. The record of decision and resource management plan accounts for the Aquatic Conservation Strategy objectives in the Riparian Reserve management direction (Record of Decision, pages 68 to 74).

In addition, the national best management practices for water quality management (Forest Service 2012) and the memorandum of understanding between the State of Oregon Department of Environmental Quality and the Forest Service Pacific Northwest Region (Forest Service 2015) protect water quality in all designated segments. The national best management practices focus on protecting water quality while implementing numerous, diverse activities across the landscape. The memorandum of understanding helps to implement these national best management practices with the purpose to "prevent, reduce, eliminate, or remediate point and nonpoint source water pollution and, where necessary, improve water quality to support beneficial uses" (page 2).

Lastly, the Watershed Condition Framework focuses on implementing integrated, whole watershed restoration programs in priority watersheds on National Forest System lands (Potyondy and Geier, 2011). The nine designated Omnibus river segments consist of twelve sub-watersheds ($6^{th}$ field watersheds[3]). These watershed conditions were evaluated as part of the Watershed Condition Framework. As shown in table 2, ten were identified as functioning properly and two (Headwaters Fifteenmile Creek and Lower Middle Fork Hood River) were identified as functioning at risk in the most recent reporting available. A rating of properly functioning is synonymous with being in good condition, which is "the expected indicator value in a watershed with high geomorphic, hydrologic, and biotic integrity relative to natural potential condition" (Potyondy and Geier, 2011, page 9). A rating of at risk is synonymous with fair condition, which is "the expected indicator value in a watershed with moderate geomorphic, hydrologic, and biotic integrity relative to natural potential condition" (Potyondy and Geier, 2001).

The water quality condition was rated as good in seven watersheds and fair in five; and the water quality condition was rated as good in seven watersheds and fair in five; and, the water quantity condition was rated as good in ten of the watersheds and poor in two (see table 2). Headwaters Fifteenmile Creek also has a fair rating for aquatic habitat condition, road and trail condition, and fire effects/fire regime condition. Lower Middle Fork Hood River also has fair ratings for aquatic biota condition, aquatic habitat condition, soil condition, forest cover condition, and fire effects/fire regime condition, and a poor rating for road and trail condition.

Each of these designations and programs offers water quality protection to the wild and scenic river segments and provide the foundation for the water quality descriptions for each river in the following sections.

[3] Sixth field watersheds or $6^{th}$ level hydrologic unit code (HUC) are typically 10,000 to 40,000 acres in size.

**Table 2. Summary of watershed condition framework for designated omnibus river segments**

| River Segment | 6th Field Watershed | Overall Watershed Condition Rating | Water Quality Condition | Water Quantity Condition |
|---|---|---|---|---|
| Collawash River | Farm Creek-Collawash River | Functioning Properly | Fair | Good |
| Collawash River | Happy Creek-Collawash River | Functioning Properly | Good | Good |
| Collawash River | East Fork Collawash River | Functioning Properly | Good | Good |
| Eagle Creek | Upper Eagle Creek | Functioning Properly | Good | Good |
| East Fork Hood River | Upper East Fork Hood River | Functioning Properly | Fair | Good |
| Fifteenmile Creek | Headwaters Fifteenmile Creek | Functioning at Risk | Fair | Poor |
| Fish Creek | Fish Creek | Functioning Properly | Fair | Good |
| Middle Fork Hood River | Lower East Fork Hood River | Functioning Properly | Good | Good |
| Middle Fork Hood River | Lower Middle Fork Hood River | Functioning at Risk | Fair | Poor |
| South Fork Clackamas River | South Fork Clackamas River | Functioning Properly | Good | Good |
| South Fork Roaring River | Roaring River | Functioning Properly | Good | Good |
| Zigzag River | Zigzag Canyon | Functioning Properly | Good | Good |

# Outstandingly Remarkable Values Summary

The outstandingly remarkable values for each river segment were determined using the evaluation process outlined in Appendix D: Evaluation Process and Criteria for Outstandingly Remarkable Values. Table 1 summarizes the outstandingly remarkable values for the Collawash River, Eagle Creek, East Fork Hood River, Fifteenmile Creek, Fish Creek, Middle Fork Hood River, South Fork Clackamas River, South Fork Roaring River, and Zigzag River. The outstandingly remarkable values for each river are discussed in the following sections.

# Collawash River

The Collawash River is a major tributary to the Clackamas River, generally oriented south to north, on the western slopes of the Cascade Range in northwest Oregon (see Appendix B: Maps of Final Wild and Scenic River Boundary). Segment 1 is designated from the headwaters of the East Fork Collawash River to Buckeye Creek and is classified as scenic. Segment 2 is designated from Buckeye Creek to Clackamas River and is classified as recreational.

## River Description and Landscape Character

### Segment 1

#### *River Description*

This segment flows between about 4,000 and 1,900 feet above mean sea level. It is mostly a 3rd and 4th-order perennial reach that originates from headwater springs and wetlands. Within this segment, the Collawash River changes name to the East Fork Collawash above its confluence with Elk Lake Creek.

The segment falls within the East Fork Collawash and Happy Creek-Collawash subwatersheds (12th-field Hydrologic Unit Codes (HUC) 170900110105 and 170900110106 respectively). The contributing watershed area is mountainous, with a dendritic stream network comprised of many named tributaries. Portions of this segment are within the Bull of the Woods Wilderness additions that were designated in the Omnibus Act.

The Collawash River within this segment has a confined channel with moderate to steep gradient. It flows through a narrow, steeply sloped, well-dissected canyon that contains several cliffs and talus slopes. The channel is rocky with many large boulders and pools. In one location, it flows over a waterfall approximately 20-feet high. Most of this segment is not in sight of, nor accessible by, a road or trail.

In fall 2020, the Lionshead Fire burned approximately 690 acres within segment 1 with approximately 53 percent at low soil burn severity (366 acres) and another 37 percent at moderate soil burn severity (248 acres). Similarly, 254 acres had no tree mortality and another limited acres has high tree mortality (152) immediately following the Lionshead Fire. In fall 2021, the Bull Complex fires burned another 860 acres within segment 1 with approximately 71 percent at low or no soil burn severity (612 acres) and approximately 15 percent at high soil burn severity (132 acres). A little more than half of the burn area (447 acres) had no tree mortality and approximately 29 percent had high tree mortality (247 acres) following the Bull Complex fires. Overall, approximately 1,550 acres burned in this segment with mixed severity during the 2020 and 2021 fire seasons.

### *Landscape Character*

The overall appearance along segment 1 is a natural forested setting. Vegetation patterns are common with a combination of plantation stands, older mixed conifer, and some maple and alder which contribute to seasonal color changes. The recreation opportunity spectrum class featured is semi-primitive motorized due to the motorized use on maintenance level two roads in the area, and semi-primitive non-motorized within the Bull of the Woods Wilderness. Scenic segments shall provide semi-primitive non-motorized and/or semi-primitive motorized recreation opportunity spectrum settings (Forest Plan Standard and Guideline B1-007).

## Segment 2

### *River Description*

Segment 2 has a very confined channel, dominated by a low to moderate gradient. This segment has several unstable earthflows, one of which is considered a "textbook" (an easily interpreted) example by geologist and geomorphologists. Most of the length of this segment is visible from Forest Service Road 63 along which there are several developed and undeveloped riverside campsites featuring large, quality pools that are enjoyed by recreational users.

The elevation of this segment ranges between about 1,900 and 1,500 feet. Segment 2 is mostly a 5th and 6th-order perennial reach. The segment lies within the Farm Creek-Collawash River subwatershed (12th-field HUC 170900110107). The contributing watershed is mountainous, with a dendritic stream network comprised of many named tributaries, the largest of which is the widely recognized Hot Springs Fork.

The Riverside Fire burned 128 acres in segment 2 in September 2020; the majority (54 percent) burned with low soil burn severity (69 acres) and no tree mortality (79 acres). Almost 80 percent of the acres had no basal area mortality immediately following the fire.

### *Landscape Character*

The presence of the Forest Service Road 63 in segment 2 and associated past harvest units affect scenic integrity. The recreation opportunity spectrum class featured is roaded natural, mostly natural appearing with some slightly to moderately altered scenery and interactions between users is common. Recreational segments shall provide roaded natural recreation opportunity spectrum settings (Forest Plan Standard and Guideline B1-008).

**Figure 2. Collawash River, segment 2**

## River Values

### Outstandingly Remarkable Values

Geology and fisheries are outstandingly remarkable values for both segments 1 and 2 of the Collawash River. These wild and scenic river segments include the full suite of native species; Endangered Species Act-listed fish and their critical habitat are present as well. Geology/hydrology include large, deep-seated earthflows that are very active. They are regionally significant providing textbook examples easily observable as you travel through the area.

Recreation and botany are outstandingly remarkable values for segment 1. Recreation is an outstandingly remarkable value because it provides a unique and challenging experience for kayakers. High-quality habitat for cold water corydalis, a Forest Service sensitive species that is critically imperiled in Oregon, make segment 1 outstandingly remarkable from a botanical standpoint.

**Figure 3. Textbook example of earthflow in segment 2 (as seen from Forest Service Road 63)**

### *Geologic/Hydrologic*

Most of the watershed lies within the Western Cascade physiographic province, a thick sequence of interbedded lava flows, pyroclastic flows, and volcanic deposits. This material erupted from volcanic vents of the ancestral Cascade Range about 20 to 4 million years ago to a thickness of over 15,000 feet. The volcanic strata have been uplifted, faulted, and warped by tectonic forces and intruded by numerous dikes, sills, and small stocks. The largest intrusions in the watershed are the Bull of the Woods intrusive complex and the Austin Point intrusion, both of which may be the remnant cores of source areas for some of the Western Cascade rocks.

Segments 1 and 2 contain several very large, active earthflows, representing “textbook” examples that are easily interpreted in the field. Earthflows within segment 1 are only visible from the river (see figure 2), while those in segment 2 are easily observable from Forest Service Road 63 (see figure 3). Intense precipitation events lead to increased river flows, and subsequently, the river’s erosive potential. During periods of increased runoff, the river actively cuts into the toe of the earthflows, accelerating their rate of downslope movement. The dynamic relationship between the river and the earthflows results in constant rearrangement of the river channel and is not something found within the region of comparison. Because of this, and the fact that earthflows of this size are not typically found within the region of comparison, geology is found to be an outstandingly remarkable value.

## *Fisheries*

### Fish Populations

The Collawash River contains a unique diversity of wild fish stocks that includes anadromous salmonids (late-run coho, winter steelhead, and spring Chinook), a recently re-introduced population of bull trout, as well as coastal cutthroat trout. All these species are on federal or state lists as threatened or sensitive species due to declining populations range wide. Although not yet documented in the Collawash, suitable habitat is available for Pacific lamprey, a state-listed sensitive species. It is expected that this species will progressively re-colonize historic habitat of the upper Clackamas tributaries due to targeted lamprey passage improvement projects at downstream dams completed in the last decade. Rainbow trout, mountain whitefish, mountain sucker, longnose dace, and sculpins are also known to occur in the Collawash, though there is little documented information on their abundance and extent of upstream distribution in these segments.

The Clackamas River late run coho is considered the last viable wild coho stock in the Columbia River basin (Nehlsen et al. 1991). For reference, the 2015 population status review concluded that the vast majority (over 90 percent) of historical populations remaining in the Lower Columbia River coho salmon Evolutionarily Significant Unit appeared to be either extirpated or nearly so given the high proportion of hatchery spawners that dominated many of the coho populations, and that there was little natural productivity (Northwest Fisheries Science Center 2015). Native coho stocks that once ranged into the Snake River and mid-Columbia tributaries of the Columbia River Basin are now extinct above Bonneville Dam. Similarly, Clackamas River spring Chinook were rated as one of only two remaining natural runs in the Willamette basin with the least hatchery influence and is thus a natural population stronghold. Of the tributaries, the Collawash River is the most used by spring Chinook in the Clackamas River Basin for spawning (Northwest Power and Conservation Council 2004). Review of winter steelhead stocks in the Lower Columbia River Evolutionarily Significant Unit noted that for most populations, total abundances and natural-origin abundances (where available) have remained low, averaging in the hundreds of fish. Notable exceptions to this were the Clackamas and Sandy River winter-run steelhead populations that are exhibiting recent rises in abundance and maintaining low levels of hatchery-origin steelhead on the spawning grounds.

Bull trout were historically present in segment 2 and were likely historically present in segment 1 (Shively et al. 2007). Similar to many other watersheds in its native range, this species was considered extirpated in the Clackamas River Basin by the 1970’s. Range-wide, bull trout are native throughout the Pacific Northwest and historically occurred throughout the Columbia River Basin, east to western Montana, south to the Jarbidge River in northern Nevada, the Klamath Basin in Oregon, the McCloud River in California and north to Alberta, British Columbia and possibly southeastern Alaska. Although the species was once abundant and widespread, bull trout now exist primarily in upper tributary streams and several lake and reservoir systems. The main populations remaining in the lower 48 states are in Montana, Idaho, Oregon, and Washington with a small population in northern Nevada. Bull trout have been extirpated from California. Beginning in 2011, an interagency effort reintroduced bull trout to the upper Clackamas River from the McKenzie River donor population. Surveys have detected radio-tagged adult bull trout in the lowermost segment of the Collawash River in 2013 and 2014. Although stream temperatures are not ideal for spawning in all years, the Collawash supports important foraging habitat, and potentially rearing habitat for bull trout. This successful re-introduction plan is unique in being the only known range-wide attempt to return a bull trout population to its historically occupied watershed.

Pacific lamprey in the Columbia River Basin have declined to a remnant of their historical abundance. The Willamette Basin, which includes the Collawash River in the headwaters, has one of the largest

remaining adult returns in the Columbia River system (Kostow 2002). Within the Willamette Sub-Unit, ladder improvements by Pacific Gas and Electric at River Mill, Faraday, and North Fork Dams on the lower mainstem Clackamas River, as well as the installation of ramps at River Mill and North Fork Dams, have successfully increased adult lamprey passage on the Clackamas River upstream of North Fork Dam (US Fish and Wildlife Service 2015).

The Collawash River is the largest tributary in the upper Clackamas River watershed. Since 1999, the upper Clackamas (upstream of Pacific Gas and Electric's North Fork Dam) has been managed as a wild fish sanctuary by the Oregon Department of Fish and Wildlife. At this time, all anadromous salmonids identified as hatchery origin (those that are adipose fin clipped), are captured at the North Fork Dam fish trap and prevented from migrating past the dam into the upper river. To further support wild fish protection goals, this upper river reach has also been closed to all salmon and steelhead fishing since 1998. In 2010, the new federal license for the Clackamas River Hydroelectric Project has started to improve both upstream and downstream passage at mainstem Clackamas River facilities, increased minimum flow in the Oak Grove Fork (high-quality tributary to the Clackamas River), as well as dedicated several million dollars to habitat restoration in the Clackamas watershed. These improvements will benefit the overall fish production and habitat quality in the watershed and will likely translate to increased fish utilization within the Collawash segment.

Introduced fishes are not a significant concern except where they have migrated out of several high lakes where they were (or still are) planted for recreational fisheries. Non-native brook trout pose a future threat to native cutthroat, rainbow, and bull trout through predation and competition for food and available habitat if they expand their distribution. Brook trout could also hybridize with bull trout, which is an additional threat. At this point, it does not appear that introduced fishes compete well against native fish in undisturbed portions of habitat in the Collawash, but there are subwatersheds where they have naturalized.

### Fish Habitat

Aquatic and riparian habitat in the Collawash River is generally in excellent condition, except in few localized areas of disturbance due to recreational activity (segment 2) and residual effects from past timber harvest. As the largest tributary in the upper Clackamas Basin, the Collawash River is a key area for survival and recovery of federal and state listed fish in the Clackamas River Basin. The East Fork Collawash probably naturally contributes to higher water temperatures despite having a relatively undisturbed riparian zone. Timber harvest and road building have occurred; however, because much of this watershed is in steep inaccessible canyons, few roads have been built near the stream except in the lower Collawash from the mouth to Fan Creek. The river provides high-quality habitat for fish species indigenous to the region. Of significance is habitat for wild stocks considered unique, and populations of federal or state listed threatened or sensitive status species.

Habitat changes quickly in the Collawash because of the flashy nature of the hydrograph with periods of high run off and high turbidity caused by rain on snow events during the fall and winter. Habitat in the main stem Collawash appears to meet standards for large wood and fails to meet standards for pools.

Naturally, unstable geology, primarily in the lowermost segment below Buckeye Creek, as well as anthropogenic sources, contribute to elevated sediment and turbidity in the Collawash. The degree to which the elevated sediment and turbidity can be attributed to road building or impacts to fisheries is uncertain.

The range of fish use of the Collawash has not changed significantly. Steelhead have probably always had access to the upper Collawash, but a passage improvement project in the late 1980's has improved adult passage at Collawash Falls at river mile 7.4 (segment 1), especially for Chinook and coho. Some habitat has been lost because of impassable road culverts, but these affect resident, not anadromous fish. The impassable culverts are located at Perry, Sand, Paste, Peat, Happy, and Blitzen Creeks.

The Collawash provides diverse, quality habitat for threatened and sensitive species that helps support the goals of the upper Clackamas as a wild fish sanctuary.

**Figure 4. A Paddler navigates a large bedrock and boulder enhanced feature on the rapid named "The Churn" (Photo received from American Whitewater.)**

### *Recreation*

Segment 1 of the river flows over and around many rocks, through pools, and over one waterfall approximately 20 feet high. While there are few, if any long-distance views from the canyon, the combination of cliffs and the river with its large rocks, pools and cascades provides substantial photo opportunities.

Recreational use within the corridor is primarily dispersed in nature such as camping, hiking, and fishing and expert kayaking. Seasonal use is relatively moderate, with high use during peak summer holidays. Users are primarily local in nature, but some travel from other places within the state to experience the rare and unique kayaking opportunities offered in this segment.

Segment 1 of the Collawash River is popular for local use and can draw advanced recreationalist looking for a high-quality and challenging run (see figure 4). What makes segment 1 unique for recreation is the challenge it provides to expert kayakers. This is due primarily to the geology of the area allowing for a change in experience nearly every time it is run. The remoteness and challenge of this segment make recreation an outstandingly remarkable value.

### *Botany (Other Value)*

Both river segments contain a substantial amount of old-growth forest (both riparian and upland stands); a number of native plant communities (plant associations), including regional priority habitats (special habitats) identified in the West Cascades ecoregion; a diversity of plants and animals; and act as a refuge for rare and uncommon botanical species (vascular plants, lichens, bryophtyes, and fungi). Except for Forest Service roads and campgrounds, the river segments lack human settlement and development (anthropogenic disturbance) and are relatively free of adverse effects such as pollution that degrade plant habitat. Both segments offer visitors access to intact and relatively unspoiled riparian forest that includes late-successional/old-growth forest and a rich diversity of plant and animal species, including some rare taxa.

There is habitat for cold water corydalis (*Corydalis aquae-gelidae*), a sensitive species on the Region 6 Regional Forester and Oregon/Washington State Director Special Status Species List, and a Survey and Manage species (Northwest Forest Plan). Cold water corydalis is a river-related/river-dependent species. A number of cold water corydalis sites are documented relatively nearby in the upper Clackamas River. Oregon Biodiversity Information Center has documented cold water corydalis as vulnerable throughout its range (G3), critically imperilled in Oregon (S1) and species of concern. It is also a candidate for listing as threatened or endangered, and on List 1, threatened and endangered throughout its range. No sightings/occurrences of this species in the Collawash River are documented, but botany field surveys in this area are incomplete.

Cold water corydalis grows along streams of many sizes, from headwater seeps to large rivers (Goldenberg and Zobel 1999). Community composition ordinations indicate that species occurrence is highly correlated with dense western hemlock canopies at lower elevations and with Pacific silver fir and Sitka alder canopies at higher elevations, and, conversely, less so with less dense forest canopies found on larger rivers (western red cedar, red alder) (Goldenberg and Zobel 1999). Percent canopy cover appears to strongly affect the occurrence of cold water corydalis with its abundance significantly reduced in areas that have been clear cut (Goldenberg and Zobel 1999). The species seems best suited to habitats in which a high, partial canopy allows enough light for growth and reproduction, but hinders the establishment of competing vegetation (Montgomery et al. 2017). Cold water corydalis can be found in late-successional riparian forest, mostly in areas not recently subjected to catastrophic floods (Goldenberg and Zobel 1999). Many cold water corydalis populations have been documented in the relatively nearby upper Clackamas River, many in late-successional/old-growth riparian forest. The Collawash River segment includes reaches where past timber harvest (clear cuts and commercial thinning) has occurred as well as undisturbed late-successional/old-growth riparian forest.

The high-quality habitat, including old growth riparian forest and stream temperature, for cold water corydalis within segment 1 of the Collawash River make this river segment outstandingly remarkable for botany. Cold water corydalis may be present in river segment 1 and is a river-related/ river-dependent species. This species is critically imperilled in Oregon. For these reasons, botany is an outstanding remarkable value for segment 1.

## Free-flow Condition

There are no stream gages on these segments, and no known instantaneous streamflow records; although there are several gages far downstream on the Clackamas River. Generally, peak flows for this basin occur in the winter and early spring months in response to heavy precipitation, runoff, and snowmelt, while base flows typically occur during late summer and early fall.

Segment 1 is considered to be free flowing as there are no human-made impoundments or diversions and it is unregulated. There are two road crossings within this segment; one has a culvert in the first-order headwater reach, and the other has a bridge with slightly impinging abutments over the mainstem. Naturally occurring barriers to navigation are present in the channel, such as large and small log jams, recurring beaver dams, and a steep, highly incised cascade reach just downstream from the confluence with Dickey Creek.

Similarly, segment 2 is considered to be free flowing as there are no human-made impoundments or diversions and it is unregulated. There are two road crossings within this segment; both are bridges with slightly impinging abutments. There is a single road immediately adjacent to the entire reach. Sections of it impinge upon the banks and channel. There is a 50-foot vertical waterfall in the upper reach of the segment above the confluence with the Hot Springs Fork, and above that, some naturally occurring small log jams.

## Water Quality

Water quality data for these segments of the Collawash are limited. Overall, water quality is considered to be good, and no exceedance for pollutants have been detected. The segment is not on the Oregon Department of Environmental Quality 303(d)[4] list of impaired waters. There is, however, a total maximum daily load[5] for temperature. Stream temperature data compiled by the Forest Service's Aquatic and Riparian Effectiveness Monitoring Program indicate that exceedance of the Oregon Department of Environmental Quality's seven-day maximum standard for cold-water fish has been observed several times during late summer months. For more information on this cold water standard see Section 11 of the Oregon Department of Environmental Quality, Chapter 340, Division 41, Water Quality Standards: Beneficial Uses, Policies, and Criteria for Oregon, 340-041-0028, Temperature.

Sediment is not considered to be a pollutant for segment 1. The terrain in the watershed however is inherently prone to mass wasting, and there is a half-dozen large earthflow features that are sources of large, naturally episodic pulses of sediment.

Similarly, sediment is not considered to be a pollutant for segment 2. The terrain in the watershed, however, is also inherently prone to mass wasting which contribute (naturally occurring) episodic pulses of sediment during high flows; the exposed toes of large earthflow features (which form portions of the river's eastern banks) are highly visible from the adjacent road. Yet, there often exists a remarkable clarity in the water with a noticeable quality of greenish color.

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[4] Section 303(d) of the Clean Water Act requires the Environmental Protection Agency or delegated states, such as Oregon, to prepare a list of water bodies where these violations occur. The resulting list (the 303(d) list) is a comprehensive catalog of all waterbodies in the state that fail to meet one or more water quality criteria based on available data.

[5] A total maximum daily load is a regulatory term in the U.S. Clean Water Act, describing a plan for restoring impaired waters that identifies the maximum amount of a pollutant that a body of water can receive while still meeting water quality standards.

Timber harvest and road construction in past decades was extensive in the watershed, and there is a high likelihood that varying degrees of additional sediment has been contributed over time. Efforts to alleviate those effects began in earnest in the mid-1990s, which included closing and decommissioning many miles of road. A moderately high density of roads in the upper tributary reaches of the watershed remain, as well as many plantations of a comparatively young age. Continued road maintenance and efforts to disconnect the transportation system from the hydrologic network help to minimize anthropogenic sediment sources.

# Eagle Creek

Eagle Creek is designated from the headwaters to the Mount Hood National Forest boundary and is classified as wild (see Appendix B: Maps of Final Wild and Scenic River Boundary).

## River Description

Eagle Creek is a tributary of the Clackamas River in the western slopes of the Cascade Range in northwest Oregon. Eagle Creek flows to the west and joins the Clackamas River north of the town of Estacada, Oregon. The creek begins in a cirque-shaped headwater area flowing then through a steeply sloped "V" shaped valley that is heavily forested with older aged Douglas fir and hemlock. The creek contains some riffles, with numerous downed logs and pools. The segment falls within the Upper Eagle Creek subwatershed (12th-field HUC 170900110501).

The presence of large, old trees and the lack of human alterations along the segment add to the visual quality of the river. The designated Eagle Creek wild and scenic river corridor is entirely within the Salmon-Huckleberry Wilderness. The Eagle Creek Addition to the Salmon-Huckleberry Wilderness was designated in the Omnibus Act.

**Figure 5. Eagle Creek**

## Landscape Character

Long-range views are limited due to the density of the forest. Views are from the river itself or the trail paralleling the river and include classic western Cascade forested landscapes, with little variation, season changes, or vistas. The recreation opportunity spectrum class featured is semi-primitive non-motorized, with a high degree of natural character. Eagle Creek corridor is entirely within the Salmon-Huckleberry Wilderness which may provide for a more primitive setting the further into the Wilderness one travels. Wild segments shall provide primitive non-motorized and/or semi-primitive non-motorized recreation opportunity spectrum settings (Forest Plan Standard and Guideline B1-006).

## River Values

### Outstandingly Remarkable Values

Recreation and botany are the outstandingly remarkable values for Eagle Creek. The river is very popular with the local equestrian communities and they have a special interest in the area. Equestrian trail use along the river is a unique characteristic, especially as an easy trail that follows a river. Equestrian trails of this caliber are limited within the region of comparison; as such, people are willing to travel long distances for this experience. In addition, quality habitat for cold water corydalis, a Forest Service sensitive species that is critically imperiled in Oregon, within the Eagle Creek corridor make it outstandingly remarkable from a botanical standpoint.

#### *Recreation*

Because Eagle Creek is entirely within the Salmon-Huckleberry Wilderness, uses are limited to wilderness-compliant uses, such as hiking, horseback riding, dispersed camping, nature viewing, paddling, and trout fishing. The main activity is hiking and horseback riding, but nature viewing, photography, and picnicking may be ancillary activities. There are some hiking trails in the river corridor, but most used in the snow-free season. The level of use in the area is light to moderate.

Since this area experiences less visitation than other parts of the forest, there is a high-quality experience for those seeking solitude. There is likely little to no crowding or conflict issues for visitors, however, equestrian use is becoming increasingly more popular in the area. Local equestrian groups have a special interest in the area due to the easy trail grade and ease of use for horses. Equestrian trail use along the river is a unique characteristic for the area because of old growth stands and the opportunities for solitude. Access to the area is limited because of the wilderness designation and limited trailhead facilities.

While this corridor lies entirely in wilderness, the attractions and unique experiences along the river draw a specific equestrian use that is not found in many areas throughout the region. Since equestrian trails of this caliber are limited within the region of comparison, people are willing to travel long distances to experience it. For that reason, recreation was found to be an outstandingly remarkable value for this river.

#### *Botany (Other Value)*

The river corridor has habitat for cold water corydalis (*Corydalis aquae-gelidae*); cold water corydalis has been found in locations outside the corridor in tributaries to the creek (see figure 6). See the Botany (Other Value) section under the Collawash River discussion for more information on the species and its habitat. No sightings/occurrences of this species in the Eagle Creek are documented, but botany field surveys in this area are incomplete.

Eagle Creek includes undisturbed late-successional/old-growth riparian forest, where cold water corydalis habitat is present. A botany survey of Eagle Creek done from the Eagle Creek Trail (#501) in November

2018 verified the presence of high-quality habitat (old-growth forest, low-gradient stream reaches, gravel bars) for cold water corydalis. The high-quality habitat for cold water corydalis within Eagle Creek make this river outstandingly remarkable for botany. Cold water corydalis may be present in the river corridor and is a river-related/river-dependent species.


**Figure 6. Cold water corydalis in wetland woods along headwater streams (photo from Flora and Fauna Northwest)**

## Free-flow Conditions

The watershed is mostly within the transient snow zone where snow falls and melts more than once per winter and rain-on-snow events are common. Base flows and peak flows are within the range of natural variability likely because there have been only limited management activities within the headwaters. Generally, low flows occur in the late summer, with several distinct storm events between October and April. High flows occur midwinter and during early spring. There are no U.S. Geological Survey gaging stations in the vicinity, but an automated water monitoring station was installed downstream of the designated river segment by the Forest Service in 2001 (the current status of the forest gage, however, is unknown and is likely not currently operating).

The designated segment of Eagle Creek is free flowing, as there is no human made impoundments or diversions, and it is unregulated.

## Water Quality

Overall, water quality within the designated Eagle Creek segment is very good, likely because it is located within the Salmon-Huckleberry Wilderness. Eagle Creek is on the Oregon Department of Environmental Quality 303(d) list for bio-criteria (waters of the state must be of sufficient quality to support aquatic species without detrimental changes in the resident biological communities); however, the samples used to assess this parameter were collected far downstream of the designated segment and so may not be representative of the segment's water quality (especially since the headwaters are within wilderness and are therefore not likely impaired). There is one hiking trail that parallels the creek, but it does not appear to be a sediment source. There is also a total maximum daily load for temperature (2006).

# East Fork Hood River

East Fork Hood River is designated from Oregon State Highway 35 to the Mount Hood National Forest boundary and is classified as recreational (see Appendix B: Maps of Final Wild and Scenic River Boundary).

## River Description

The East Fork Hood River flows out of the Newton-Clark Glacier on the south face of Mt. Hood in the Cascade Range of Oregon. After flowing for about 2.5 miles toward the southeast, the river makes a sweeping turn to the north. Oregon State Highway 35 follows the river after this turn. The river flows through a relatively broad valley bottom made up of glacial outwash before flowing into a narrower steep-sided canyon containing several cliffs. Due to the nature of the outwash, there are numerous springs and small tributaries that flow into the river. The East Fork Hood River has a naturally high suspended sediment load and lacks riparian vegetation due to the glacial nature of the river. The designated segment of the East Fork Hood River is located within the Middle and Upper East Fork Hood River subwatersheds (12th-field HUC 170701050502 and 170701050501 respectively).

## Landscape Character

Significant mortality of existing timbered stands from glacial events is relatively evident from Highway 35. The recreation opportunity spectrum class featured is roaded natural, mostly natural appearing environment and interactions between users is common. Numerous man-made features and modifications are noticeable within the river viewshed, such as the road itself, rip rap and guard rails and developed recreation sites adjacent to the highway. Where these features are noticeable, a modified setting is present. Recreational segments shall provide roaded natural recreation opportunity spectrum settings (Forest Plan Standard and Guideline B1-008).

**Figure 7. East Fork Hood River**

# River Values

## Outstandingly Remarkable Values

Wildlife, recreation and botany are the outstandingly remarkable values for East Fork Hood River. The wild and scenic river corridor provides a critical travel (migration) corridor for deer and elk between winter and calving seasons. The corridor also provides habitat for the harlequin duck; this population is one of the largest on the Forest, potentially due to its proximity to the Columbia River and good quality connectivity to wintering grounds in the Pacific Ocean. Lastly, the corridor provides diversity of wildlife species, including threatened species, because of habitat quality within the wild and scenic river corridor. Recreation is an outstandingly remarkable value because of low impact recreation opportunities and unique whitewater opportunities. Botany is an outstandingly remarkable value because of the rare and uncommon plants that occupy the corridor, particularly the violet suksdorfia.

### *Wildlife*

The East Fork Hood River corridor contains high-quality riparian habitat that provides for harlequin duck (Forest Service sensitive species) nesting, brooding, and rearing. It is also a critical seasonal travel corridor for deer and elk populations on the east side of the Forest.

The population of harlequin ducks within this corridor is higher than on other portions of the Forest. The reasons for this are unknown, but possibly due to an abundance of aquatic invertebrates prey species, the proximity of the area to the Columbia River, or access from wintering waters of the Pacific Ocean. This species lives most of its life on the ocean coast, only migrating into freshwater streams during the nesting season. The East Fork Hood River is situated on the easternmost edge of this species range within the Pacific Northwest region. The river corridor provides for a contiguous migration corridor for harlequins to travel from their ocean wintering areas to summer nesting habitat.

The upper corridor provides critical elk calving and deer fawning habitat. The corridor is seasonally important to maintain populations of deer and elk as it provides a critical travel corridor from wintering grounds to calving and fawning habitat. There is a diverse range of wildlife species that would be found in the corridor because the riparian habitat links to Stringer Meadow within and adjacent to the corridor. Within the lower portion of the segment, important habitat for most wildlife species is very limited due to the steepness of the slopes within the canyon. Past timber harvest units do provide good habitat diversity for deer and elk.

One federally threatened species is found in the corridor, the northern spotted owl. The mid-elevations of the corridor consist of suitable nesting habitat for the northern spotted owl and spotted owl critical habitat. There are portions of two historic northern spotted owl home ranges and two one-hundred acre late successional reserves (Northwest Forest Plan land use allocation) within the corridor. Past timber harvest has fragmented suitable habitat in the remainder of the corridor for spotted owl.

### *Recreation*

This 13.5 mile segment of river receives year-round recreational use of varied types and experiences. Year-round recreation activities include camping, hiking and biking of trails that follow the river. Some climbing and fishing occur throughout the year as well as kayaking when river conditions are right. Hunting is a popular activity and occurs throughout the corridor. Winter activities include snowshoeing and Nordic skiing. Recreational use is low in many areas along the corridor due to the limited parking; however, use is high in isolated locations. Steep terrain within the corridor makes parking difficult.

Two developed campgrounds, Sherwood and Nottingham, are very popular throughout the spring, summer, and early fall as they provide an opportunity to camp along the river. There are also several dispersed campsites along the river that are very popular during the summer. There is heavy non-motorized use along the trails that follow and cross the East Fork Hood River including East Fork Trail (Forest Service Trail #650), which follows the river, and Tamanawas Falls Trail (#650A), which crosses the river. Other popular trails within the river corridor include Zigzag Trail (#678) and Dog River Trail (#675). Trailheads for these trails are developed but limited in size. Gumjuwac Trail (#480) is another popular trail that enters the river corridor, but access is limited by the trailhead capacity of one or two vehicles.

The most popular groomed Nordic ski trail system on Mt. Hood National Forest is present in the river corridor. There are regional Nordic skiing competitive events and races on the groomed trails. The ungroomed Nordic system receives moderate use and is dependent on snow levels. One of the few rock climbing areas on Mt. Hood exists within the corridor. Routes varying from easy to extremely difficult are present in the columnar basalt cliffs. Access to climbing is dispersed in nature and not established or officially recognized.

Recreational opportunities along the East Fork Hood River are popular where established and accessible. They provide for unique experiences and vary immensely across the corridor.

**Figure 8. A "low-flow" trip in early spring with Northwest Rafting Company, an Outfitter located in Hood River, Oregon (Photo received from American Whitewater)**

One of the very reasons the East Fork Hood River was designated is for the "…low impact recreation opportunities abound." This corridor can accommodate many types of recreation and offers a unique experience for kayakers due to its sustained gradient and continuous boulder features, unlike the more common bedrock formations (see figure 8). These traits make this corridor unique when compared to other rivers in the region. For these reasons, recreation is found to be an outstandingly remarkable value for the East Fork Hood River.

### *Botany (Other Value)*

In the upper corridor of the East Fork Hood River, the river and its immediate environment provides important riparian habitat in quantities greater than that usually found along other rivers throughout the region. This habitat is generally high in quality though some past management practices have lowered quality in specific locations. Important riparian habitat is very limited in the lower corridor due to canyon narrowness and the presence of Highway 35 and associated structures. This area is often heavily impacted by debris flow in the upper corridor from Pollalie, Newton and Clark Creeks. These flows have in the past removed or smothered riparian vegetation, providing an opportunity to observe early successional stages of riparian habitat. Throughout the river corridor there are numerous wetlands, streams, and side channels that support diverse plant communities, some within late-seral forest habitat suitable for a variety of Region 6 sensitive or special status species.

In the lower-mid river corridor the moist basalt rock outcrops provide high-quality habitat for the violet suksdorfia (*Suksdorfia violacea*). The violet suksdorfia is a Region 6 Sensitive Plant and is also listed by the Oregon Biodiversity Information Center. The Oregon Biodiversity Information Center ranking of this species suggests that it is threatened with extirpation in Oregon (List 2), and may be critically imperiled due to extreme rarity (S1). Violet suksdorfia is known to occur on the Mt. Hood National Forest and the Columbia River Gorge National Scenic Area within the region of comparison.

**Figure 9. Photo of violet suksdorfia in rock outcropping**

Violet suksdorfia can mostly be found in shady, damp to wet mossy areas on steep, rocky slopes, rock crevices, cliffs, and riparian areas of east-side Ponderosa Pine-Douglas Fir stands. It has also been found growing in creek-side sand in some areas. The rock composition observed at known sites was basalt, granite, and limestone. The elevation range of this species is from 75 to 1300 meters.

There is conservation concern for the violet suksdorfia because of its limited range and global rarity. The known sites are small and disjunct, and the tolerance for disturbance by this species is not completely known. Suitable habitat is present throughout the East Fork Hood River corridor and is extremely important for the dispersal and viability of the species, particularly in Oregon where there are few known sites.

## Free-flow Conditions

The steep topography of the watershed results in a flashy hydrograph with brief but large peak flows. Runoff is especially rapid with early winter storms during which warm rain melts the existing snowpack. Periodically, natural dams created by the terminal moraines of Mt. Hood's receding glaciers break, causing outburst floods and debris flows. Peak floods generally occur during winter months, while base flows typically occur during September or October in many tributaries. Tributaries with glacial sources however maintain higher summer flows.

The U.S. Geological Survey does not have any gages on the East Fork Hood River; there is one gage site on the mainstem Hood River. Also downstream, the Confederated Tribes of Warm Springs and Oregon Department of Fish and Wildlife collect flow data.

Within the greater Hood River Basin, there is currently a lack of adequate streamflow during the summer months to meet the competing demands for water downstream of the segment (Bureau of Reclamation 2015). This could be exacerbated by climate change. The basin's natural runoff is projected to increase during the fall and winter months and decrease during the spring and summer months when water uses are greatest. Hood River basin streamflow relies heavily on snowmelt at the beginning of summer and Mount Hood glacial melt during August and September. Warming temperatures in future years could increase the speed of snowpack and glacial melting. Glaciers and snowpack are expected to decrease in size and volume. Between 50 and 70 percent of flow during the irrigation season is provided from glacial melt; if the Mt. Hood glaciers were to fully recede, the basin would lose one of its largest water supplies (Bureau of Reclamation 2015).

The designated segment of the East Fork Hood River is free flowing, although some minor impingements are present. For a substantial portion of the designated river segment, Highway 35 parallels the East Fork and sections of rip-rap along the embankments result in minor constraints at higher flows. Where log jams accumulate at milepost 72, the Oregon Department of Transportation periodically removes them to prevent flooding of the road-way. A footbridge trail crosses the river; the crossing may slightly impound flows during floods. Other alterations within the designated segment include two campgrounds that encroach onto the floodplain of the East Fork Hood River as well as large woody debris installed for restoration purposes.

## Water Quality

In general, water quality in the designated segment of the East Fork Hood River is fair. The Oregon Department of Environmental Quality considers the river 303(d) listed for the following pollutants: iron, copper, thallium, and biological criteria. There is a total maximum daily load (2018) for temperature. This total maximum daily load is being revised to incorporate the current temperature standards adopted by the State of Oregon.

Even though anthropogenic sediment sources, such as the Mt. Hood Meadows Ski Area, Highway 35, and a relative high road density, have likely affected water quality to some degree, the East Fork Hood River is not listed for sediment (and does not have a total maximum daily load for sediment).

The Forest Service has collected both short and long-term temperature monitoring data. Recent stream flow data has been collected by the Hood River Watershed Group, Oregon Department of Fish and Wildlife, and the Confederated Tribes of Warm Springs.

# Fifteenmile Creek

Fifteenmile Creek originates at Senecal Spring on Lookout Mountain in Oregon's Cascade Range (see Appendix B: Maps of Final Wild and Scenic River Boundary). Segment 1 is designated from the source at Senecal Spring to the Badger Creek Wilderness boundary and is classified as wild. Segment 2 is designated from the Badger Creek Wilderness Boundary to the point 0.4 miles downstream and is classified as scenic. Segment 3 is designated from 0.1 miles downstream of the wilderness boundary to the western edge of township 2 south, range 12 east, section 20, and is classified as wild. Lastly, segment 4 is designated from the western edge of township 2 south, range 12 east, section 20 to the southern edge of the northwestern quarter of the northwestern quarter of township 2 south, range 12 east, section 20, and is classified as scenic.

## River Description

Fifteenmile Creek flows toward the northeast eventually joining the Columbia River just below the Dalles Dam. Fifteenmile Creek is located within the Headwaters Fifteenmile subwatershed (12th-field HUC 170701050301).

Fifteenmile Creek, segment 1 flows entirely through the Badger Creek Wilderness, starting at Senecal Spring, which is a series of large springs with unconfined braided stream channels in a sub-alpine forest type. The braided channels soon come together as one confined channel flowing in a high gradient stream through a dense mixed conifer forest prior to ending at Badger Creek Wilderness boundary at Forest Service Road 2730 crossing. In segment 1, the elevation descends about 1,621 feet.

Fifteenmile Creek, segment 2 flows downriver from the Badger Creek Wilderness boundary at Forest Service Road 2730 crossing and Fifteenmile Creek Campground to about 0.2 river miles downriver of Fret Creek confluence with Fifteenmile Creek. Flow from Fret Creek supplies about 30 percent of Fifteenmile Creek’s total water flow. Fifteenmile Creek Trail (Forest Service Trail #456) parallels Fifteenmile Creek for its entirety of segment 2 and Fret Creek Trail (#456A) crosses Fifteenmile Creek once before intersecting with Fifteenmile Creek Trail. Fifteenmile Creek is highly confined in a high gradient stream channel, which flows through a mixed conifer forest type.

Fifteenmile Creek, segment 3 starts 0.4 river miles downriver from Badger Creek Wilderness boundary and ends at Forest Service Road 4421 crossing. Fifteenmile Creek Trail parallels Fifteenmile Creek for about 5.7 of its 7.9 river miles. The eastern trailhead of Fifteenmile Creek Trail is located at the eastern end of segment 3. Cedar Creek Trail (Forest Service Trail #457) splits off Fifteenmile Creek Trail for about 4 miles before intersecting with it again, all the while crossing Fifteenmile Creek twice. Multiple waterfalls are present in segment 3 with the highest estimated at 51 feet high. Downriver of these falls, summer steelhead and resident redband trout can be observed. About 0.5 river mile below the waterfalls Fifteenmile Creek meanders through a moderate width floodplain located in a box canyon with the vegetation transitioning from mixed conifer to pine/oak habitat. Flow from Cedar Creek supplies about 30 percent of Fifteenmile Creeks total water flow. In segment 3, the elevation descends about 2,138 feet.

Fifteenmile Creek, segment 4 starts at Forest Service Road 4421 and ends at the forest boundary. Both summer steelhead and resident redband trout are present in this segment; large adult steelhead trout can be seen in the late spring swimming in one of the numerous log jam pools. The elevation descends about 41 feet within this segment.

**Figure 10. Fifteenmile Creek, segment 1**

## Landscape Character

The area falls in a transition zone between the High Cascades and the Columbia Plateau with a diversity of vegetative types. Visitors experience a variety of scenery along the river, from an alpine fir forest along the upper segment to a ponderosa pine and Oregon white oak forest while moving east along the Fifteenmile Creek Trail (Forest Service Trail #456), which follows the river. Prominent exposures of columnar basalt along the Fifteenmile corridor add to its scenic natural qualities. There are places where long distance views of eastern Oregon and the Blue Mountains, Columbia River Corridor, and Deschutes River Corridor can be seen adding to the scenic quality of the corridor. White oak and larch can be found throughout the corridor adding to color and contrast between seasons. The vegetative transition zone provides a variety of contrasts in texture and color due to the differing vegetative types found within the river corridor.

The recreation opportunity spectrum class featured in the wild segments (1 and 3) is semi-primitive non-motorized with a high degree of natural character. In the scenic segments (2 and 4) the recreation opportunity spectrum class featured is semi-primitive motorized with a naturally appearing character. Modifications are limited throughout the corridor.

Scenic segments shall provide semi-primitive non-motorized and/or semi-primitive motorized recreation opportunity spectrum settings (Forest Plan Standard and Guideline B1-007). Wild segments shall provide primitive non-motorized and or semi-primitive non-motorized recreation opportunity spectrum settings (Forest Plan Standard and Guideline B1-006).

# River Values

## Outstandingly Remarkable Values

Wildlife is an outstandingly remarkable value for all four segments of Fifteenmile Creek. The wild and scenic river corridor provides a wide diversity of wildlife habitat types; much of this diversity is rare within the region of comparison. Its diversity is due to the elevation changes within the corridor and creek itself. Recreation is an outstandingly remarkable value for segments 2 and 3. These segments overlap with the Fifteenmile National Recreation Area (a part of the Mount Hood National Recreation Area), which was designated to provide protection, preservation, and enhancement of recreational, ecological, scenic, cultural, watershed, and fish and wildlife values, and is popular with mountain bikers. Historical resources are another outstandingly remarkable value for segment 1. This segment includes transportation routes that owe their location to the creek and could be spurs of the Historic Barlow Road. Lastly, fisheries are an outstandingly remarkable value for segments 3 and 4. The headwaters are some of the best habitat within the subwatershed, providing habitat for the mid-Columbia steelhead, one of the few remaining wild runs with little hatchery introgression.

### *Wildlife*

This corridor contains an exceptionally wide range of wildlife habitat, because it spans 11 miles east to west beginning in subalpine fir at Lookout Mountain (6,500 feet) and ending in pine/oak habitat at the forest boundary (2,400 feet). Species that specialize in these habitat types vary greatly, from American marten (a forest management indicator species) in the high elevations to gray squirrel (management indicator species) in the pine/oak. A large diversity of migratory birds are also supported along the corridor because of the varying habitat types. Some of these bird populations are significantly declining (blue grouse, olive-sided flycatcher, and brown creeper). Beaver colonies are present in the watershed, which create even more habitat diversity within the river corridor.

The eastern five miles of the river corridor provides moderate quality winter range for deer and elk as most of these animals spend winters off-forest. The western 2.5 miles provide high-quality calving/fawning habitat, and the entire corridor serves as an important migration route for deer and elk. The south facing slopes along 4 miles of the eastern section provide habitat for pine/oak dependent species which is limited on the forest and declining range-wide due to conversion to agricultural or residential/urban expansion. The pine/oak portions of the corridor provide habitat for a number of Forest Service and/or state-listed sensitive species (Lewis' woodpecker, white-headed woodpecker, and western bumblebee) and forest management indicator species (deer, elk, wild turkey, and western gray squirrel).

Most of the river corridor, aside from the pine/oak, provides suitable habitat for northern spotted owl (federally threatened species), and is within the Surveyor's Ridge Late Successional Reserve (Northwest Forest Plan land use allocation). There are portions of seven northern spotted owl territories that fall within the corridor. Spotted owls are a federally threatened species and have continued to decline despite habitat protections put in place under the 1994 Northwest Forest Plan.

The diversity of habitat types and highly diverse range of species found in this corridor is quite unique. There are few areas on the forest or region of comparison that transition from subalpine-fir to pine/oak in only 11 miles. The Fifteenmile Creek corridor also provides a high-quality critical habitat linkage for deer and elk wintering range to summer (calving/fawning) range. Wildlife is an outstandingly remarkable value for these segments because of the diversity of habitat and high-quality big game travel corridor.

### Recreation

There is a great diversity of recreation uses within the Fifteenmile Creek corridor. A majority of the use occurs in the summer and includes camping, hiking, mountain biking, climbing, horseback riding, mushrooming, hunting, berry picking, and paddling. There are opportunities for Nordic skiing and snowmobiling in the winter. Access for some of these activities can be difficult during the shoulder seasons of spring and fall due to the elevation of the corridor and generally limited vehicle access. Overall, use levels are relatively low, except at main entry points where it can see moderate use. Higher use is focused around key access points, such as trailheads and campgrounds, as well as roadways. There is less use farther away from these access points.

The Fifteenmile National Recreation Area overlaps with segments 2 and 3 of this corridor. The recreation area is quiet, primitive, low road infrastructure, beautiful, and offers the opportunity for a primitive, yet unique experience for visitors. Only one campground exists in the corridor and the lack of development is part of the draw to this area. Fifteenmile Campground and Fifteenmile Trail (Forest Service Trail #456) are popular for hiking and mountain biking due to their proximity to the river. The campground sits along the banks of the river and the trail follows the river for most of its extent. The river can be seen and heard while hiking or biking the trail.

Fifteenmile Creek provides an opportunity to enjoy a quieter recreation experience than can be found along many river corridors on the Mt. Hood National Forest. The setting along the river corridor is generally more primitive than many areas; however, the river itself does not stand out as unique to other rivers in the region of comparison. Visitors to the area are mainly local, although some may come from within the region to hike or ride the trail.

### Historic

Cultural resources in the area relate to themes of Forest Service administration, homesteading, agriculture, timber harvest, transportation, and recreation. The period of significance covers the later half of the nineteeth century, and the first half of the twentieth century.

The Dufur to Lookout Mountain Trail is within segment 1 of Fifteenmile Creek. This trail played a prominent role in the early history and settlement of Wasco County. The drainage was first documented as Nansene Creek prior to the large immigration waves of the mid-nineteenth century, and archaeological evidence suggests the headwaters and travel corridor have been in use for more than 2,000 years. In 1852, the first permanent settlers, primarily stockmen, arrived in the Fifteenmile Creek drainage, homesteading near the current site of Dufur. By 1872, the Dufur brothers and others were grazing large herds of sheep and other livestock along this travel corridor and at High Prairie, near the Headwaters of Fifteenmile Creek. Several small sawmills operated along the upper extent of Fifteenmile Creek during this period to support the area’s fledgling communities and homesteads, the trail and waterway essential to growth. In 1893, the upper extent of Fifteenmile Creek became part of the Cascade Range Reserve. Fire prevention was a priority, and an extensive and well-maintained trail system was considered vital to that effort. During this period the first fire lookout on the eastern side of the Forest was constructed on Lookout Mountain; the peak considered one of the best vantage points in Oregon. Sometime prior to 1901, the Dufur to Lookout Mountain trail was extended to the southwest, over Bennett Pass, to link with the Barlow Road near Summit Creek. This would become an important cutoff from the Barlow Road, linking the communities from east and west. Much of this work was spearheaded by J.B. Senecal, the first Ranger in the northeastern portion of the Reserve. Within a decade recreational use of the trail increased greatly. To the east, the trail provided a grand view of eastern Oregon and the Blue Mountains. The unobstructed view of Mt. Hood, several miles to the west, was considered the best on the Forest. Planning was under way for the Mt. Hood Loop Highway during this period, and the Lookout Mountain Trail was a strong

candidate for improvement as this scenic travel route. An alternate route prevailed, however, efforts to convert the trail to a road persisted. In 1933, Roy T. Johnson and a crew of sixty Civilian Conservation Corp men were charged with creation of the Bennett Pass Road. This road followed the trail alignment from High Prairie to the Barlow Road in the west, and Fifteenmile Campground in the east. The men camped at High Prairie, using the cabin built nearly three decades earlier by Senecal as a main office.

The Dufur to Lookout Mountain Trail is associated with nearly every activity occurring in the drainage including grazing, timber harvest, recreation, and Forest Service administration. Fifteenmile Creek played a prominent role in each.

### *Fisheries*

#### Fish Population

Fifteenmile segments 3 and 4 sustains multiple fish species listed as federal or state-listed species, including steelhead, redband trout, and highly likely Pacific lamprey. As of fall 2017, all known year-round human created barriers to fish passage have now been removed up to the middle designated segment 4 in Fifteenmile Creek. There are no known fish in segments 1 and 2 of Fifteenmile Creek. Multiple impassable waterfalls (10 to 51 foot height) are present in these segments (Forest Service 2017).

Steelhead in the Fifteenmile Creek basin are federally threatened and considered unique because they are one of the few remaining wild runs with little hatchery introgression. There has never been a hatchery stocking program for steelhead in the Fifteenmile Creek basin. The steelhead in this subbasin are the easternmost run of wild winter steelhead in the Columbia Basin. The Middle Columbia Technical Recovery Team charged with developing technical guidance and analysis to aid in recovery planning efforts (French, personal communication 2007) recognizes the winter steelhead population in Fifteenmile Creek as both a “core” and “genetic legacy” population. A core population is defined as one that either represented substantial portions of the evolutionarily significant unit/distinct population segment historical abundance or contained life-history strategies specific to the evolutionarily significant unit/distinct population segment. Core populations are considered important for maintaining the evolutionary legacy of the evolutionarily significant unit/distinct population segment, and managers are encouraged to give priority to these populations in recovery planning. A genetic legacy population is defined as one that either had minimal influence from non-endemic fish through artificial propagation practices or exhibits important life-history traits no longer found throughout the majority of the evolutionarily significant unit/distinct population segment historical range. Managers are encouraged to give recovery planning priority to genetic legacy populations because they retain the most intact representatives of the genetic composition of the evolutionarily significant unit/distinct population segment. Oregon Department of Fish and Wildlife has closed fishing for steelhead in the Fifteenmile Subbasin since 1979 to protect this unique stock.

There has been considerable discussion on whether redband trout are present in the Fifteenmile Creek basin. Most recently, Blankenship et al. (2011) grouped the Fifteenmile Creek samples as having more of a redband trout genetic lineage and metapopulation with other known redband trout populations in the Columbia River basin. Schreck et al. (1986) grouped steelhead that are found in Fifteenmile Creek with the redband, but Behnke (1992) states, “these fish resemble coastal rainbow trout in their full suite of taxonomic characters more than they do other redband steelhead from east of the Cascades.” Currens (1987) conducted a genetic study on differences between resident and anadromous rainbow trout in the Deschutes River basin. Currens found evidence that the trout in the White River basin (the southern boarding basin to Fifteenmile Creek basin) above White River Falls may be remnants of an ancestral redband trout population, which are morphologically more similar to redband trout from the Oregon

desert basins. Unlike White River above the White River Falls, Fifteenmile Creek trout are not isolated from outside genetic flow, potentially from steelhead. Since the study from Blankenship et al. (2011) has been conducted on a Columbia River basin-wide systematic sampling framework, which Fifteenmile Creek Watershed was included, fisheries professionals are referring to the resident trout in Fifteenmile Creek as Columbia River interior redband trout.

Pacific lamprey distribution is relatively unknown in Fifteenmile Creek, but larval lamprey and redds have been found above the Dufur City intake. The historic range of Pacific lamprey has shown to coincide with other anadromous species, including within the Fifteenmile segments 3 and 4.

**Figure 11. Fifteenmile Creek, segment 3**

## Fish habitat

There are no known fish in segments 1 and 2 of Fifteenmile Creek, but this reach does provide high-quality and -quantity, cold, clean water downstream to designated segments 3 and 4 of Fifteenmile Creek. Multiple federal or state-listed threatened and sensitive fish species and their habitat (both adult spawning and juvenile rearing habitat) are present in the segments of 3 and 4 of Fifteenmile Creek. Both segments 3 and 4 of Fifteenmile Creek are considered of high importance to move the wild steelhead population toward recovery as described in the Mt. Hood National Forest 2010 Fifteenmile Creek Basin Aquatic Habitat Restoration Strategy. As well as the Fifteenmile Creek Watershed population as part of the Cascades Eastern Slope Tributaries Major Population Group, as described in the 2008 Oregon Department of Fish and Wildlife Recovery Plan for Oregon Steelhead Populations in the Middle Columbia River Steelhead Distinct Population Segment (Oregon Department of Fish and Wildlife 2010).

Designated segments 1 and 2 of Fifteenmile Creek provide high-quality and quantity, cold, clean, water downstream to designated segments 3 and 4 of Fifteenmile Creek. Fifteenmile Creek provides national and regional opportunities for scientific study and interpretation for the interaction between wild stocks of inland redband trout and anadromous steelhead.

### Free-flow Conditions

There are no U.S. Geological Survey gage stations on Fifteenmile Creek, but there are four gage stations operated by Oregon Water Resources Department. None of them, however, are located within the designated segments (all are downstream). Peak flows are snowmelt driven while baseflows are supported by a series of springs near the headwaters. High flows are generally expected during spring and early summer months while low flows occur during late summer and early fall. Both peak flows and baseflows are altered from the range of natural variability due to timber harvest openings and high road density.

The Fifteenmile Creek channel is relatively steep and confined with waterfalls in the headwater reaches. Within the two wild segments of Fifteenmile Creek (segments 1 and 3), the creek is completely free flowing in nature with negligible anthropogenic influences (dikes, riparian roads, stream crossings, dams, etc.) apparent in the channel. Within the two scenic segments of Fifteenmile Creek (segments 2 and 4), the free-flowing nature of the creek is impacted by road crossings, a footbridge, and several diversion structures (one within segment 2; six within segment 4). The diversions not only remove a substantial amount of water from the stream, but are also at least partial fish barriers.

Flows within the designated river segments could be made more natural by minimizing the connectivity of the road system drainage features with the stream network, as well as enhancing vegetative cover of upland slopes.

### Water Quality

Some water quality monitoring has occurred within the designated segments. The Forest Service has collected stream temperature data within segment 2 and at the boundary between segments 3 and 4 (at the Wilderness boundary and the forest boundary, respectively). Wasco County Soil and Water Conservation District and Oregon Department of Fish and Wildlife have also collected data on Fifteenmile Creek. Sediment monitoring (percent fines data) were collected by the Forest Service within segment 3 and off-Forest in 2000. Oregon Department of Environmental Quality and Oregon Department of Agriculture have both collected pebble counts and bed stability data throughout the watershed, several times, most recently in 2015 and 2016. In addition, the Oregon Department of Environmental Quality has collected stream temperature data downstream from all segments.

Overall, water quality within the designated segments of Fifteenmile Creek is fair; all segments are on the 303(d) list for sedimentation. There is also a total maximum daily load for temperature (2008) for the Middle Columbia-Hood (Miles Creek) Subbasin. The Forest Service has started a draft Water Quality Restoration Plan for temperature, but it has not yet been finalized.

## Fish Creek

Fish Creek is designated from the headwaters to the confluence with the Clackamas River and is classified as recreational. Fish Creek is a tributary to the Clackamas River, generally oriented south to north, on the western slope of the Cascade Range in northwest Oregon (see Appendix B: Maps of Final Wild and Scenic River Boundary).

## River Description

The lower terminus is at the mouth of Fish Creek where it empties into the Clackamas River. Elevation of the termini range between about 920 and 4,940 feet. This segment of Fish Creek is mostly a 4th and 5th-order perennial reach that originates from headwater springs, seeps, small lakes, and intermittent streams. This segment lies within the Fish Creek subwatershed (12th-field HUC 170900110403). The contributing watershed is ruggedly mountainous and highly dissected with a dendritic stream network comprised of many long seeps, named, and unnamed tributaries.

The segment has a very confined channel dominated by a low to moderate gradient in the lower reaches below Wash Creek, and moderate to steep gradient in the reaches above. The four-mile section ending at the Clackamas River is suited for whitewater paddling by experienced boaters.

In September 2020, the Riverside Fire burned the majority (82 percent) of the wild and scenic river corridor. Although it was a mixed severity burn, approximately 77 percent of the corridor had moderate soil burn severity and 54 percent had high tree mortality with 75 to 100 percent of the basal area being removed. Given the severity of fire in this corridor, it will take for the baseline conditions (described here) to fully recover (5 to 50 years).

**Figure 12. Mouth of Fish Creek**

## Landscape Character

Only the lower 1.5 miles of this segment is visible from Forest Service Road 54, where there are some dispersed campsites and a boat ramp. The remainder of this segment's length is largely out of site and inaccessible by any roads or trails. Many cliffs in the corridor add visual diversity. Vegetation management activities have occurred within the corridor along the length of the canyon and are visible from the creek. Human alterations cause some reduction in the visual quality, especially in the upper

portions of the drainage. The area immediately adjacent to the creek is protected, for scenic viewing and streamside protection along the lower 3 miles of the creek. The recreation opportunity spectrum class featured is roaded natural along Forest Service Road 54 where interactions with others is common. The four-mile section ending at the Clackamas River is suited for whitewater paddling by experienced boaters. The recreation opportunity spectrum class featured in the remainder of the corridor is semi-primitive non-motorized with limited non-motorized access and interactions between users is less common. Recreational segments shall provide roaded natural recreation opportunity spectrum settings (Forest Plan Standard and Guideline B1-008).

# River Values

## Outstandingly Remarkable Value

Fisheries is the outstandingly remarkable value for Fish Creek. Fish Creek supports diverse fisheries populations, including wild and native species, and threatened and sensitive species. Fisheries habitat within the wild and scenic corridor is moving towards exceptional habitat based on the large-scale road decommissioning that occurred following the 1996 flood events, effectively eliminating access to about 90 percent of the watershed. Very few other watersheds in the region has gone from such high levels of road access to almost none within a few decades.

### *Fisheries*

#### Fish Populations

Fish Creek is a regionally important producer of wild threatened and sensitive anadromous fish species, especially winter-run steelhead. Research on smolt production after the 1996 flood, revealed that, on average, Fish Creek produced more steelhead juveniles and smolts than most other upper Clackamas tributaries, such as the North Fork and Oak Grove Fork (Hansen et. al. 2009). There is a diversity of wild fish stocks that includes anadromous salmonids (late-run coho, winter steelhead, and spring Chinook), coastal cutthroat trout, rainbow trout, mountain whitefish, longnose dace, and sculpins.

The Clackamas River late-run coho is considered the last viable wild coho stock in the Columbia River basin (Nehlsen et al. 1991). For reference, the 2015 population status review concluded that the vast majority (over 90 percent) of historical populations remaining in the Lower Columbia River coho salmon Evolutionarily Significant Unit appeared to be either extirpated or nearly so given the high proportion of hatchery spawners that dominated many of the coho populations, and that there was little natural productivity (Northwest Fisheries Science Center 2015). Native coho stocks that once ranged into the Snake River and mid-Columbia tributaries of the Columbia River Basin are now extinct above Bonneville Dam. Similarly, Clackamas River spring Chinook were rated as one of only two remaining natural runs in the Willamette basin with the least hatchery influence and is thus a natural population stronghold. Review of winter steelhead stocks in the Lower Columbia River Evolutionarily Significant Unit noted that for most populations, total abundances and natural-origin abundances (where available) have remained low, averaging in the hundreds of fish. Notable exceptions to this were the Clackamas and Sandy River winter-run steelhead populations that are exhibiting recent rises in abundance and maintaining low levels of hatchery-origin steelhead on the spawning grounds.

Although not yet documented in Fish Creek, suitable habitat is available for Pacific lamprey, a state-listed sensitive species. It is expected that this species will progressively re-colonize historic habitat of the upper Clackamas tributaries due to targeted lamprey passage improvement projects at downstream dams completed in the last decade. Bull trout, a federal threatened species range-wide, were likely historically present in in Fish Creek (Shively et al., 2007). Similar to Pacific lamprey, recent changes in management

(bull trout were reintroduced in 2011 to the upper Clackamas watershed) may allow bull trout use again in Fish Creek. Bull trout have been detected throughout the upper Clackamas River since the reintroduction began, and regularly migrate past the mouth of Fish Creek. Fish Creek is able to provide foraging, and possibly rearing, habitat for this species.

Fish Creek is a major tributary in the upper Clackamas River watershed. Since 1999, the Oregon Department of Fish and Wildlife has managed the upper Clackamas (upstream of Pacific Gas and Electric's North Fork Dam) as a wild fish sanctuary. At this time, all anadromous salmonids identified as hatchery origin (those that are adipose fin clipped), are captured at the North Fork Dam fish trap, and prevented from migrating past the dam into the upper river. To further support wild fish protection goals, this upper river reach has also been closed to all salmon and steelhead fishing since 1998. In 2010, the new federal license for the Clackamas River Hydroelectric Project has started to improve both upstream and downstream passage at mainstem Clackamas River facilities, increased minimum flow in the Oak Grove Fork (high-quality tributary to the Clackamas River), as well as dedicated several million dollars to habitat restoration in the Clackamas watershed. These improvements will benefit the overall fish production and habitat quality in the watershed that will highly likely translate to increased fish utilization within Fish Creek.

Introduced brook trout (non-native) have been planted in two high lakes upstream of this segment. Non-native brook trout pose a future threat to native cutthroat, rainbow, and bull trout through predation, and competition for food and available habitat, if they expand their distribution. Brook trout could also hybridize with bull trout, which is an additional threat. At this point, it does not appear that brook trout is currently present in this segment of Fish Creek.

Fishing pressure is light, there is no anadromous fishery, and vehicle access is limited to the fringes of the watershed. However, the opportunity to fish in the high lakes probably keeps anglers interested in protecting Fish Creek as a fishing destination.

### Fish Habitat

Currently, aquatic and riparian habitat in the Fish Creek is generally in good condition, except in few localized areas of disturbance due to recreational activity low in the watershed, and residual effects from past timber harvest. Among streams that would aid the recovery of federal and state listed-fish, Fish Creek is a key area for survival and recovery of winter steelhead in the Clackamas River Basin. The river provides high-quality habitat for fish species indigenous to the region. Of particular significance is habitat for wild stocks considered unique, and populations of federally or state listed threatened or sensitive species.

Fish Creek is well known through the Pacific Northwest for the long-standing research program to evaluate the physical and biological response to a large-scale aquatic habitat restoration project implemented during the mid to late 1980s. Over 500 logs and boulder structures were placed in-stream. A one-hundred-year equivalent flood occurred in early February of 1996. Severe landslides and debris torrents were initiated by this major storm event resulted in significant channel changes and adjustments. Pre/post flood monitoring showed a significant increase in riffles and a reduction in pools habitat in Fish Creek post 1996 floods. A substantial number of in-stream log and boulder structures were washed out of the watershed. A tremendous decline in fish productivity was observed immediately post-flood. A stream survey in 2007 showed that habitat in Fish Creek does not meet standards for large wood and pools (Forest Service 2007). The survey from (mid-July to mid-August) measured stream temperatures that ranged from 10 to 19 Celsius. Water temperature of over 17 degrees Celsius may be tolerated by salmonids, but is not ideal.

**Figure 13. Native trout in Fish Creek**

## Free-flow Conditions

A stream gage near the mouth of Fish Creek was in operation from 1989 to 2006. This gage was reconstructed following the Riverside Fire in April 2021 to monitor and sample post-fire water quality, streamflow, and channel configuration. The site is expected to operate for a minimum of 5 years. Generally, peak flows for this basin occur in the winter and early spring months in response to heavy precipitation, runoff, and snowmelt, while base flows typically occur during late summer and early fall.

There are no longer any utilized road crossings over Fish Creek, but a short length of forest road parallels the creek at the downstream end of the designated segment. Nearly all of the roads in the watershed were decommissioned after the flood of 1996 due to irreparable damage, principally as a result of landslides. There are about five remnant bridges over the creek that were not removed during road decommissioning. Their condition and status are unknown, but its likely the abutments impinge on the floodplain. Naturally occurring barriers to navigation are present in the channel such as large and small log jams, recurring beaver dams, and small waterfalls in the upper reaches. There were also many large, in-stream wood structures emplaced in the later 1980s through the mid-1990s in an effort to restore and enhance fish habitat.

## Water Quality

In general, water quality within this segment is fairly good, but data are limited. A single sample was collected in July of 1998 at the gage site. The sample did not reveal any contaminants of note. Additional data was collected and compiled for a study of water quality in the Clackamas basin in the early 2000s. It corroborated data that had been collected by the local Forest Service district and compiled for the Aquatic and Riparian Effectiveness Monitoring Program, indicating that the State's 7-day maximum stream temperature standard for fish had been exceeded a number of times during late summer months in the

lower reaches of the segment. It is not listed, however, on the Oregon Department of Water Quality 303(d) list of impaired waters because a total maximum daily load for stream temperature was established (2006), and a Water Quality Restoration Plan has been developed by the Forest Service.

Sediment is not considered to be a pollutant in the segment. The terrain in the watershed, however, is inherently very disposed to mass wasting, and there are many debris flow-prone channels and earthflow features that are sources of naturally episodic large pulses of sediment. A post-flood aerial landslide inventory conducted in 1996 detected 236 landslides in the Fish Creek drainage, a large percentage of which were associated with weak geologic formations.

Additionally, timber harvest and road construction in past decades was extensive; there is a high likelihood that additional sediment has been contributed over time. About 62 percent of the landslides inventoried after the 1996 flood were associated with young plantations and roads, with 80 percent of the total count delivering debris and sediment to a stream. In response, the Forest Service decommissioned about 75 percent of the road system, effectively eradicating access to about 90 percent of the watershed.

# Middle Fork Hood River

Middle Fork Hood River is designated from the confluence of Clear and Coe Rivers' branches to the North section line of section 11, township 1 south, range 9 east, section 11, and is classified as scenic (see Appendix B: Maps of Final Wild and Scenic River Boundary).

## River Description

The Middle Fork Hood River has its origins in several glaciers on the north slope of Mount Hood. The Clear Branch, Coe Branch and Eliot Branch join to form the Middle Fork Hood River near the Parkdale Lava Beds. The river flows in a northerly direction, joins the West and the East Fork Hood River and eventually flows into the Columbia River near the town of Hood River, Oregon. The designated segment of the Middle Fork Hood River is located within the Lower Middle Fork Hood River and the Upper Middle Fork Hood River subwatersheds (12th-field HUC 170701050505 and 170701050504 respectively).

The river is bounded on the east side by the Parkdale Lava Beds, an excellent example of an A'a (pronounced "ah ah") type of lava flow which is typified by rough, jagged and cindery surfaces. Large deposits of stream and lake sediments at the upper end of the lava flow indicate that the river was once dammed by the lava flow. High-quality flows of this nature are rare for the region and can be considered a "textbook" example, which can be easily studied and interpreted.

## Landscape Character

The lava flow provides substantial scenic variety and very rare and unique rock forms. The combination of lava flows, adjacent stream, vegetation patterns, and in places long distance views of the Mt. Hood area provide for distinctive scenery. The recreation opportunity spectrum class featured is semi-primitive motorized with a naturally appearing character. Scenic segments shall provide semi-primitive non-motorized and/or semi-primitive motorized recreation opportunity spectrum settings (Forest Plan Standard and Guideline B1-007).

# River Values

## Outstandingly Remarkable Values

Geology and scenery are outstandingly remarkable values for the Middle Fork Hood River. The river is bound on the east by the Parkdale lava flow, which is nationally significant representing a unique opportunity for scientific study. The scenery is highly memorable and photographic due to the lava flow and unique vegetative patterns that result. Fisheries is also an outstandingly remarkable value because of a core population of bull trout, an Endangered Species Act-listed species. The heart of spawning and rearing habitat for this bull trout population is Laurance Lake and its two tributaries, which are just above the wild and scenic designation for the Middle Fork Hood River. The wild and scenic river serves as a critical link for this population to the Columbia River, which provides additional adult rearing and foraging habitat, as well as connections to populations in nearby basins.

**Figure 14. Middle Fork Hood River**

### *Geologic/Hydrologic*

The large stratovolcano cone of Mount Hood dominates the watershed. The cone was constructed of relatively recent lava flows and pyroclastic flow deposits on an eroded platform of older volcanic rocks. Mount Hood has undergone considerable glacial erosion. The glaciers that remain high on its flanks are mere remnants of what they once were. Beyond the base of the volcano, the older volcanic rocks form lower elevation ridges and drainages. The Middle Fork Hood River drainage begins high up, adjacent to the cone of the volcano, where numerous large-scale debris flows initiate in glacial deposits. Downstream, the Parkdale lava flow erupted in the paleo-channel of the drainage, causing the diversion of

the stream to the West, where active erosion is taking place. Large debris flow deposits at the upper end of the lava flow indicate that the river was once dammed by the lava flow.

The Parkdale lava flow provides an excellent example of an A'a type of flow which is typified by rough, jagged and cindery surfaces. Geologically young lava flows of this nature are rare in the region and considered a "textbook" example that can be easily studied and interpreted. The juxtaposition of large debris flows, and young lava flows is not found anywhere else within the region of comparison; and for this reason, geology is considered an outstandingly remarkable value.

### *Scenery*

The Middle Fork Hood River flows along the western edge of the Parkdale Lava Beds. This flow provides substantial scenic variety and very rare and unique rock forms. Vegetation patterns and stream characteristics are found in other locations in the region yet are still relatively unique.

**Figure 15. Middle Fork Hood River (river mile 7.5) with lava flow**

The views of lava flows and unique rock forms have been found to be visually unique within the region of comparison. Views and photo attractions are substantial with combination of lava flows, adjacent stream, vegetation, and in places with long distance views of the Mt. Hood area. The Middle Fork Hood River originates from several glaciers on the north slope of Mt. Hood. The Clear Branch, Coe Branch and Eliot Branch join to form the Middle Fork Hood River near the Parkdale Lava Beds. The river flows in a northerly direction, joins the West and the East Fork, and eventually flows into the Columbia River near

the town of Hood River, Oregon. Large deposits of stream and lake sediments at the upper end of the lava flow indicate that the river was once dammed by the lava flow. High-quality flows of this nature are rare for the region and can be considered a "textbook" example which can be easily studied and interpreted.

The lava flow provides an excellent example of successional stages taking place in the reestablishment of vegetative cover on the lava flow. The southern, or upper, end of the flow already has trees and other vegetation becoming reestablished. The northern, or lower, end of the flow is still virtually barren. The diversity throughout the lava flow provides a unique display of natural processes in action in one location.

The Middle Fork Hood River has unique and highly memorable views, which are uncommon within the region of comparison. The Parkdale Lava Flow contributes significantly to the scenery so that it is considered an outstandingly remarkable value.

### *Fisheries*

#### Fish Populations

Three Endangered Species Act-listed species (bull trout, coho salmon, and steelhead), and their designated critical habitat are present within this segment of Middle Fork Hood River and it is considered to play a part in the recovery of federally listed Lower Columbia River steelhead trout and Columbia River bull trout. This segment also includes Chinook designated critical habitat. The Middle Fork Hood River provides the majority of habitat for bull trout, and the Upper Middle Fork Hood River segment is considered the stronghold for the Hood River Basin population. In addition, there are native cutthroat trout, rainbow trout, sculpin, and likely lamprey present in the segment. Rainbow trout have been regularly stocked in Laurance Lake, just upstream of the segment, and are likely present in downstream Middle Fork Hood River reaches. The coastal cutthroat trout seem to be at healthy populations and have generally not been influenced by hatchery/stocked runs.

The Hood River has one core area population of bull trout within this segment. The interagency Hood River Bull Trout Working Group determined in recent years that there is only one bull trout core area in the Hood River Basin and that is the core area upstream of Clear Branch Dam. It has been determined that most, if not all bull trout observed downstream of Clear Branch Dam, and continuing down to the Columbia River, are fish that migrated or were entrained through Clear Branch Dam, and thus originated from the bull trout population that inhabits Laurance Lake, Clear Branch, and Pinnacle Creek, all above Clear Branch Dam. Specifically, below Clear Branch Dam bull trout are found in Clear Branch, Coe Branch, Eliot Branch, Bear Creek, Tony Creek, and the Middle Fork Hood River. Critical habitat has been designated throughout the Middle Fork Hood River watershed. Bull trout are considered a unique species because it is the only remaining natural population on forest, as well as Northwest Oregon. Current evidence suggests that reproduction is limited to the Middle Fork Hood River basin (Starcevich and Jacobs 2010). The population is considered very small, estimated to be less than 300 adults.

There are no current passage facilities in operation at Clear Branch Dam to safely move fish downstream or upstream over the facility. Although it is believed that there are some bull trout that are moving downstream past the dam via seasonal spill events, there are currently no efforts to capture those fish that survive and attempt to return to natal habitat upstream of Clear Branch Dam. The Middle Fork Irrigation District is planning to install fish passage facilities in the future. Once those facilities are in place, and more bull trout expand and utilize river segments below Clear Branch Dam, the habitat in the wild and scenic segment of the Middle Fork Hood River will become key habitat for the recovery of bull trout in the Hood River basin. Access to the Columbia River via this segment also allows for connections to other nearby basin populations, such as the Klickitat River and the Deschutes River.

Lower Columbia River steelhead in the Hood River Basin include both winter and summer runs, however only Winter steelhead are known to occur in the Middle Fork Hood River. Both winter and summer runs are supplemented by Hood River derived hatchery stock.

Spring Chinook salmon are present in this Middle Fork Hood River segment. The native Hood River spring Chinook run is extinct (Confederated Tribes of Warm Springs and Oregon Department of Fish and Wildlife 1991), but a hatchery program has reintroduced this naturalized run in the mid-1990s from Deschutes River stock, and supplementation continues to the present.

Coho salmon are present in this Middle Fork Hood River segment, which provides limited spawning and rearing habitat. Coho salmon are a minority anadromous species in the Hood River compared with Chinook salmon and steelhead. The number of returning adults varies widely, averaging 243 per year but ranging from 13 to 1020 in the period 1992 to 2009, and a large proportion of the escapement is made up of hatchery strays from other river systems (Reagan 2011).

Freshwater mussels are a species that is receiving increasing attention in the Pacific Northwest. The Xerces Society maintains a species distribution database for western freshwater mussels. Although the database has no records of freshwater mussel presence on the Mt. Hood National Forest, there is a record for western pearlshell from a tributary to Trout Creek near Dee. Trout Creek is a tributary to the East Fork Hood River just upstream of the East Fork Hood River/Middle Fork Hood River confluence. The record suggests that western pearlshell could occur on the Mt. Hood National Forest, and potentially in the Middle Fork of Hood River, although no observations have been reported (Blevins, personal communication 2018).

### Fish Habitat

This segment of Middle Fork Hood River provides habitat for Pacific Northwest (U.S. Forest Service Region 6) threatened, endangered and sensitive species. Several Federally listed (threatened) salmonid species and their critical habitat are present in the segment of Middle Fork Hood River, including Columbia River bull trout. The Middle Fork Hood River in this segment has little to no road access and, coupled with adjacent stream side areas composed of vertical cliff walls and rough lava rock flows, there are very few human visitors and associated impacts. In contrast, glacial streams, such as Coe Branch and Eliot Branch contribute naturally high turbidity and sediment levels, as well as regularly occurring large debris flows. The recent receding of glaciers on Mt. Hood has increased these flow frequencies in the last several decades.

The quality of the aquatic habitat within the wild and scenic river segment ranges from good to poor. Ecosystem processes, such as floodplain function, large wood recruitment, water quality (related to chemicals/nutrients), and streambank function, are mostly intact and functioning well. However, the use of Clear Branch, Coe Branch, and Eliot Branch for irrigation and hydropower development has impaired flow regimes and sediment routing, increased water temperatures, blocked fish migration, and limited channel function. As a result, salmon and trout spawning and rearing habitat in this segment is degraded from its historic condition but is still providing important habitat for listed fish species.

## Free-flow Conditions

The hydrograph is generally flashy with short duration, high volume floods which result from the steep watershed topography as well as rain-on-snow events. Peak flows generally occur during winter months while low flows typically occur during September or October. Many watershed tributaries have very low summer flows, while tributaries with glacial sources maintain higher summer flows. In addition to intense precipitation, outburst floods and debris flows periodically occur when natural dams created by moraines

at Mt. Hood's receding glaciers break. The U.S. Geological Survey National Water Information System does not operate a gage on the Middle Fork Hood River. There is however an Oregon Department of Fish and Wildlife gage located downstream of the designated segment on the mainstem Hood River. Oregon Department of Fish and Wildlife also collects spring and summer flow data in the lower Middle Fork Hood River and near the mouth of Tony Creek.

In the greater Hood River Basin, there is a lack of adequate streamflow during the summer months (Bureau of Reclamation 2015). This shortage is expected to be exacerbated by climate change as the basin's natural runoff is projected to increase during the fall and winter months and decrease during the spring and summer months when water uses are greatest; the main irrigation season is April 15th to October 1st with peak usage in July. Hood River basin streamflow relies heavily on snowmelt at the beginning of summer and Mount Hood glacial melt during August and September of each year. Warming temperatures in future years will increase the speed of snowpack and glacial melting. Also, glaciers and snowpack are projected to continue to decrease in size and volume. Currently, between 50 and 70 percent of flow during the irrigation season is provided from glacial melt. Once the Mount Hood glaciers fully recede, the basin will lose one of its largest water sources (Bureau of Reclamation 2015).

Upstream of the segment the Middle Fork Irrigation District manages one dam (Clear Branch Dam) and three irrigation diversions (on Coe Branch, Elliot Branch, and Clear Branch) that reduce instream flows and impact stream temperatures downstream. The impoundments result in changes to the natural sediment and flow regime, recreation, fish, and wildlife values within the designated segment of the Middle Fork Hood River. A flow stipulation below Clear Branch Dam was established by agreement with Oregon Department of Fish and Wildlife (1962) and amended in 1982. Within the bypass reach of the Coe diversion a two cubic feet per second flow was stipulated by Oregon Department of Fish and Wildlife (2009). To date there has not been a formal minimum flow rate stipulated below Coe or Eliot branch diversions.

Water stream flow analysis is being completed as part of the Clear Branch Dam Improvements project and may impact the free flow conditions. If there are impacts to free flow, these would be considered and addressed in the Section 7(a) review. More details on the Section 7 process can be found in the Interagency Wild and Scenic River Coordinating Council's technical paper Wild & Scenic Rivers Act: Section 7 (Diedrich, 2004).

## Water Quality

Water quality within the designated segment of the Middle Fork Hood River is fair. Stream temperature and sediment are the dominant water quality concerns, in part resulting from anthropogenic influences such as dams and roads. Recently, the Western Hood Subbasin Temperature total maximum daily load, which includes the East Fork Hood River and Middle Fork Hood River, was revised. This total maximum daily load is being revised to incorporate the current temperature standards adopted by the State of Oregon. The Oregon Department of Environmental Quality issued the final revised temperature total maximum daily load and submitted to Environmental Protection Agency for approval in February 2018. The segment is also considered water quality limited (303(d) listed) by the Oregon Department of Environmental Quality for iron and biological criteria.

The Clear Branch Dam on Laurance Lake adversely impacts downstream stream temperature in the spring and early summer (when the reservoir is full) by releasing water from near the lake's surface; cold water, however, is released from an outlet near the bottom of the reservoir for much of the summer. Alterations to the dam are currently being considered. The Forest Service has collected long-term stream temperature data from within the designated Middle Fork Hood River segment. The Oregon Department of Fish and

Wildlife, Middle Fork Irrigation District, and Hood River Watershed Group also have stream temperature data for the Middle Fork Hood River. Additionally, the Confederated Tribes of Warm Springs have long-term data at one site within the watershed.

# South Fork Clackamas River

The South Fork Clackamas River is a tributary of the Clackamas River, generally oriented south to north, on the western slope of the Cascade Range in northwest Oregon (see Appendix B: Maps of Final Wild and Scenic River Boundary). South Fork Clackamas River is designated from the confluence with the East Fork of the South Fork Clackamas to its confluence with the Clackamas River, and is classified as wild.

## River Description

The upper terminus of the South Fork Clackamas Wild and Scenic River is at the confluence with the East Fork of the South Fork Clackamas River. The lower terminus is at the river's mouth at the Clackamas River. This segment of the South Fork is mostly a 3rd and 4th-order perennial reach. Elevation of the termini range between about 1,900 and 600 feet above mean sea level. This segment lies within the South Fork Clackamas subwatershed (12th-field HUC 170900110404). The contributing watershed is mountainous, with a somewhat parallel drainage pattern comprised of several long named tributaries, the largest of which is Memaloose Creek. This segment is located primarily within the Clackamas Wilderness, which was designated in the Omnibus Act.

This wild and scenic river segment of the South Fork Clackamas has a very confined bedrock channel that is highly incised, with a moderate to high gradient. It flows within a narrow, cliffed canyon in which a 100-foot waterfall and old-growth trees along the river add to visual diversity. Seasonally, deer and elk are in the area, and spotted owls and bald eagles call the segment home. Most of the watershed, filled with Pacific silver fir, Douglas fir and western hemlock, is managed by the Forest Service. The entire segment is out of sight and inaccessible by road.

In September 2020, the Riverside Fire burned the entire proposed wild and scenic river corridor. Although it was a mixed severity burn, approximately 81 percent of the corridor had moderate soil burn severity and 88 percent had high tree mortality with 75 to 100 percent of the basal area being removed. Given the severity of fire in this corridor, it will take an estimate 5 to 50 years for the baseline conditions (described here) to fully recover. Also, personnel from the Forest Service and BLM have not been able to fully evaluate the damage to the South Fork Water Board infrastructure. Most of these features are carved from the steep canyon walls of the South Fork and Memaloose Creeks or constructed from steel and concrete with minor elements of perishable material (biodegradable, such as wood, fiber). Some of the perishable elements of these features may have been lost during the Riverside Fire; however, the main components of the site and its features are impervious to fire and remain intact. Further evaluation will be conducted when personnel can safely complete a site survey.

## Oregon Scenic Waterway Designation

South Fork Clackamas River from river mile 4 to the main stem of the Clackamas River was designated as part of the Clackamas River State Scenic Waterway through Oregon Administrative Rule 736-040-0044 in 1985. This description was updated in 2007; the designated waterway extends from "its confluence with an unnamed tributary near the western boundary of section 7, Township 5 South, Range 5 East, Willamette Meridian, downstream to the confluence of the South Fork Clackamas River with the Clackamas River" (Oregon Revised Statutes). This section is classified as a Scenic River Area.

The goals of Oregon's Scenic Waterways program are to: protect the free-flowing character of designated rivers; protect and enhance scenic and natural values, recreation, and fish and wildlife; promote expansion of the scenic waterways system; protect private property rights; and, encourage other agencies to act consistently with the goals of scenic waterways management. Designated Oregon Scenic Waterways are categorized into classification areas; the South Fork Clackamas River is designated as a Scenic River Area classification. Scenic River Areas are areas that meet the following criteria.

a. Those designated scenic waterways or segments thereof with related adjacent lands and shorelines still largely primitive and largely undeveloped, except for agriculture and grazing, but accessible in places by roads. Scenic River Areas may not include long stretches of conspicuous or well-traveled roads paralleling the river in close proximity, but may include extensive areas in agricultural use.

b. Scenic River Areas will be administered to maintain or enhance their high scenic quality, recreational value, fishery, and wildlife habitat, while preserving their largely undeveloped character and allowing continuing agricultural uses.

Related adjacent lands include all lands within a quarter mile of the bank of the designated waterway, similar to the wild and scenic river corridors. The highest and best uses of the waters within the scenic waterways are recreation, fish and wildlife uses. The state statute requires that "the free-flowing character of these waters shall be maintained in quantities necessary for recreation, fish and wildlife uses." The Oregon Water Resources Department determines appropriate flows associated with scenic waterways.

**Figure 16. South Fork Clackamas River**

## Landscape Character

The South Fork Clackamas River flows within a narrow, cliffed canyon in which a 100-foot waterfall and old-growth trees along the river add to visual diversity. The river corridor includes unique and highly memorable views of picturesque, forested waterfalls. Vegetation types include Pacific silver fir, Douglas

fir and western hemlock. The entire segment is out of sight and inaccessible by road and much of the corridor is located within the Clackamas Wilderness. The recreation opportunity spectrum class featured is roaded natural near the confluence with the Clackamas River due to the proximity to Highway 224. BLM administered lands feature middle country, which is equivalent to Forest Service semi-primitive motorized. Semi-primitive non-motorized is featured throughout the remainder of the corridor. The interactions between visitors is moderate to high. The corridor has a predominately natural character with more modified setting around the Oregon City Waterworks facilities. These deviations to the natural character are historically significant in the area, and while man-made, contribute, rather than detract, from the scenery in the area. Wild segments shall provide primitive non-motorized and/or semi-primitive non-motorized recreation opportunity spectrum settings (Forest Plan Standard and Guideline B1-006).

## River Values

### Outstandingly Remarkable Values

Scenery is an outstandingly remarkable value for the South Fork Clackamas River. The river flows through a narrow canyon with large rock outcrops and cliffs, a 100-foot waterfall in the lower part of the segment and old-growth trees along the river add to the visual diversity. This waterfall is highly memorable and often photographed. It is a destination for recreationalists throughout the region of comparison and beyond. Also, the South Fork Clackamas River is designated as an Oregon State Scenic Waterway. Historic resources are another outstandingly remarkable value for this river segment. The South Fork Water Board pipeline and associated features are unique with the region of comparison. These features served Oregon City and West Linn from 1915 through 1985 when they were decommissioned. The system was expanded with the help of one of Franklin Roosevelt's New Deal recovery programs, the Works Project Administration.

#### *Scenery*

The river flows through a narrow canyon with large rock outcrops and cliffs, a 100-foot waterfall in the lower part of the segment and old-growth trees along the river add to the visual diversity. Most of the watershed is filled with Pacific silver fir, Douglas fir and western hemlock. This lower section has been designated as an Oregon State Scenic Waterway. Today the river receives high use from the public, although no developed recreation sites currently exist. The South Fork Clackamas waterfalls have been recorded as highly memorable, with exemplary visual features including many photographs found online, in social media, and on other recreational related websites. The Oregon City Waterworks (South Fork Water Board) facilities are historically significant in the area, and while man-made, they contribute, rather than detract, from the scenery in the area.

The scenic resources in South Fork Clackamas River were identified as outstanding based on the evaluation criteria, and therefore scenery is an outstandingly remarkable value for this river. The river corridor includes unique and highly memorable views of forested waterfalls. South Fork Clackamas River provides unique views uncommon within the region of comparison, including not only picturesque waterfalls, but also man-made features from the historic South Fork Water Board facilities (see Figure 18 and Figure 28), which contribute to the unique views. There are indications the area is photographed by the visitors, and the scenic resources are unique for the area.

**Figure 17. South Fork Clackamas Falls on BLM administered lands**

### *Historic*

In 1913, the young cities of Oregon City and West Linn suffered a serious outbreak of typhoid from an increasingly polluted Willamette River, their sole source of water at the time. The incident spurred Oregon City's leaders to appoint a "Pure Mountain Water League" and directed it to locate a safer source of drinking water. The League settled on the pristine South Fork of the Clackamas River in the Cascade foothills. A South Fork Water Board was created to carry out this ambitious project. By the fall of 1915, the new water district had managed to lay 26 miles of 18-inch pipe from a site at the confluence of Memaloose Creek and the South Fork Clackamas all the way to Oregon City and West Linn. The new pipeline began to carry municipal water on October 7, 1915.

In 1939, the South Fork Water Board expanded the system with the help of one of Franklin Roosevelt's New Deal recovery programs, the Works Project Administration. This project extended a 24-inch pipeline upstream from the Memaloose Creek intake to a point upstream, above the 100-foot main falls on the South Fork. This project involved carving a series of three dramatic tunnels and a cantilevered pipeline through solid basalt cliffs. The new intake improved water pressure downstream, and this system continued to serve as the water supply for the two cities until a new filtration plant was constructed on the lower Clackamas River, in 1958. Both systems were used until 1985, when the South Fork pipeline was decommissioned. Since then, the network of roads, tunnels, plank walkways, log bridges and old pipeline has slowly been fading into the green rainforest of the South Fork canyon.

The water pipeline and associated features are unevaluated, but there is a high likelihood that they are eligible as an historic district. The area and sites were evaluated by Mt. Hood National Forest in 1983 and determined to be ineligible based largely on the fact that some features were not 50 years old at that time.


**Figure 18. Part of the South Fork Water Board Pipeline**

## Free-flow Conditions

There are no longer any stream gages on this segment of the South Fork Clackamas, but at one time, a gage was operated near the mouth where there used to be two diversions (operated by the South Fork Water Board) that served as a source for municipal use. One intake was on Memaloose Creek and the other on the South Fork. There are several gages in operation further downstream on the Clackamas River. Generally, peak flows for this basin occur in the winter and early spring months in response to heavy precipitation, runoff, and snowmelt, while base flows typically occur during late summer and early fall.

This river segment is considered free flowing and without impoundments. The South Fork Water Board has transferred or amended their water rights within the segment, and because they are no longer diverting water from the river, it is not considered regulated.

There are several noteworthy naturally occurring fish passage barriers, including a scenic 100-foot vertical waterfall just upstream from the confluence with Memaloose Creek, as well as several very large log jams further up the stream. There is also a smaller waterfall on Memaloose Creek near its confluence with the South Fork Clackamas.

### Water Quality

Water quality within this segment of the South Fork Clackamas River is generally good. Water quality was sampled for turbidity by the Water Board from 1970 to 1984 as required by municipal suppliers to monitor compliance with the Safe Drinking Water Act. Data indicated there were occasional exceedances of turbidity standards that periodically occurred in response to heavy storm runoff. Turbidity was also sampled for an 8 month period after the 36-Pit Wildfire in 2014. Data were not decisively conclusive, but suggested that there may have been a period of time during the following wet season when turbidity became somewhat elevated. Stream temperature has also been monitored at various intervals; data compiled for the Aquatic and Riparian Effectiveness Monitoring Program indicates that the State's 7-day maximum stream temperature standard for fish had been exceeded a number of times during late summer months downstream of the segment. It is not, however, on the Oregon Department of Water Quality 303(d) list of impaired waters because a total maximum daily load for stream temperature has been established (2006).

The steep terrain in the segment's gorge is susceptible in places to mass wasting, and there are debris flow-prone tributary channels that are periodically sources of sediment. Timber harvest and road construction in past decades were extensive in the contributing watershed, and there is a high likelihood that varying degrees of additional sediment has been contributed over time. Efforts to alleviate those effects began in the mid-1990s, which included closing and decommissioning roads. Since then, the Clackamas Wilderness was designated (2009), which should also diminish anthropogenic sediment sources as timber extraction, road construction, and motorized uses in the area are now prohibited.

# South Fork Roaring River

South Fork Roaring River is designated from the headwaters to its confluence with Roaring River, and is classified as wild. The South Fork Roaring River originates in the Rock Lakes Basin in the Roaring River Wilderness (see Appendix B: Maps of Final Wild and Scenic River Boundary).

## River Description

The area is in the Cascade Mountain Range in northwest Oregon. The entire 4.6-mile segment of the South Fork Roaring River from its headwaters to its confluence with the Roaring River is administered as a wild river. The river flows through a narrow, deeply incised canyon, which has large rock outcroppings and cliffs along portions of the canyon. The drainage is characterized by a variety of stream complexes including large log jams present in the upper river, large and small landslides, and small waterfalls alternating with large pools. This segment lies within the Roaring River subwatershed (12th-field HUC 170900110402).

Old-growth trees are predominant along the river, and the river itself flows over numerous cascades and through several pools. The corridor provides prime quality habitat for northern spotted owl, and owls are known to nest there. With almost no development within and around the corridor, habitat quality is considered excellent.

## Landscape Character

Old-growth trees are predominant along the river, and the river itself flows over numerous cascades and through several pools. There is very limited to no development within and around the corridor. The recreation opportunity spectrum class featured is semi-primitive non-motorized, with a high degree of natural character. Interactions between users is low. Wild segments shall provide primitive non-motorized

and/or semi-primitive non-motorized recreation opportunity spectrum settings (Forest Plan Standard and Guideline B1-006).

**Figure 19. South Fork Roaring River**

## River Values

### Outstandingly Remarkable Values

Botany is the outstandingly remarkable value for the South Fork Roaring River. The high-quality habitat for cold water corydalis, a Forest Service sensitive species that is critically imperiled in Oregon, within the corridor make it an outstandingly remarkable from a botanical standpoint.

#### *Botany (Other Value)*

This river corridor has habitat for cold water corydalis (*Corydalis aquae-gelidae*). Cold water corydalis can be found in late-successional riparian forest, mostly in areas not recently subjected to catastrophic floods (Goldenberg and Zobel 1999). This river corridor includes excellent examples of older-aged climax communities. They are in undisturbed condition and would remain undisturbed since this corridor is in designated wilderness. See the Botany (Other Value) section under the Collawash River discussion for more information on the species and its habitat. No sightings or occurrences of this species in the South Fork Roaring River are documented, but botany field surveys in this area are incomplete.

The high-quality habitat for cold water corydalis within South Fork Roaring River make this river outstandingly remarkable for botany. Cold water corydalis may be present in the river and is a river-related/river-dependent species.

### Free-flow Conditions

The designated segment of the South Fork Roaring River is located within the transient snow zone where snow accumulates and melts more than once per winter, often by rain-on-snow events. The subsequent high flows can occur in both midwinter and early spring while low flows generally occur in the late summer. Storms in between October and April are not uncommon. Peak and base flows seem to have remained relatively stable through time. No longer in operation, there used to be a U.S. Geological Survey gaging station at the confluence of the Clackamas and Roaring Rivers.

The designated South Fork Roaring River segment is located within the Roaring River Wilderness and is without constructed facilities that could impact its free-flowing condition.

### Water Quality

The designated segment of the South Fork Roaring River has limited access by roads and trails which has helped to maintain good water quality. The river is not on the Oregon Department of Environmental Quality 303(d) list as impaired by pollutants; however, the segment does have a total maximum daily load for temperature (2006).

Water quality monitoring data is limited. Water chemistry sampling (which did not include microbiological sampling) was conducted at the mouth of Roaring River in 1991. Grab samples were taken at four separate times in August and September. Water samples were analyzed for the full spectrum of organic and inorganic constituents. Results indicated a high level of water purity. In addition, trend monitoring in 1993 indicated low sediment levels. Repeated aquatic macro-invertebrate sampling was conducted at the mouth of the Roaring River in the early 1990s. Results indicated the river was “slightly impaired” because of a high percentage of sediment tolerant mayflies, a low percentage of intolerant mayflies, a very high percentage of taxa in the collector/gathers functional feeding group and a low percentage of taxa in the shredders functional feeding group. Modeled stream temperatures (from NorWest) are well below the state standard. Contamination from recreational use at dispersed sites along a segment of trail adjacent to headwater riparian areas could be a concern. However, no microbiological monitoring has been conducted and the extent and impacts are unknown.

## Zigzag River

Zigzag River is designated from the headwaters to the Mount Hood Wilderness Boundary and is classified as wild (see Appendix B: Maps of Final Wild and Scenic River Boundary).

### River Description

The Zigzag River arises from the base of Zigzag Glacier at approximately the 5,000-foot elevation on Mt. Hood. The segment is located entirely within the Mt. Hood Wilderness and lies within the Zigzag Canyon subwatershed (12th-field HUC 170800010202).

The river flows steeply over mud and pyroclastic flows through a sparsely vegetated area in a narrow canyon. The canyon rim itself and beyond is well forested. There are two waterfalls within the segment adding to the diversity of the river. Intrusive rocks within the corridor are responsible for the waterfalls and other structures. This type of geology is found on other volcanic peaks throughout the region, as well as other locations on Mt. Hood, but is limited essentially to the higher elevations of those peaks, making it relatively unique in comparison to other rivers in the region. The river itself is glacial in origin and has a relatively even flow throughout the year, though it varies during spring runoff and rainfall events.

Both the Pacific Crest National Scenic Trail (Pacific Crest Trail) and the Timberline Trail are located within the river corridor. The river contributes to these unique recreational experiences.

## Landscape Character

Vistas of Mt. Hood within the corridor are unique and desirable. The corridor also includes highly memorable and impressive canyon views. The Paradise Park area is known for wildflower displays during the summer months, and mountain vista views. The recreation opportunity spectrum class featured is semi-primitive non-motorized with a high degree of natural character. Interactions with visitors is high along the Pacific Crest Trail and Timberline trail, and low to moderate in the remainder of the corridor. Wild segments shall provide primitive non-motorized and/or semi-primitive non-motorized recreation opportunity spectrum settings (Forest Plan Standard and Guideline B1-006).

## River Values

### Outstandingly Remarkable Values

Recreation and scenery are outstandingly remarkable values for the Zigzag River. Both the Timberline Trail and Pacific Crest Trail are located within the corridor, and the river adds to the recreational experiences for hikers. These trails provide unique long-distance and circle-the-mountain experiences that are nationally recognized. Vistas of Mt. Hood within the corridor are unique and desirable and contribute to the experiences on these trails. The corridor also includes highly memorable and impressive canyon views. Macroinvertebrate is also an outstandingly remarkable value. There are only nine populations of the Scott's apatanian caddisfly (*Allomyia scotti*) known in the entire world, all of which are found on the Mt. Hood National Forest. The habitat for this species is present within the Zigzag River corridor.

#### *Recreation*

The river corridor is entirely within the Mt. Hood Wilderness, and uses are limited to wilderness-compliant activities, such as hiking, horseback riding, dispersed camping, photography, wildflower viewing, and nature viewing. The Timberline Trail and Pacific Crest Trail provide unique hiking opportunities and cross this river corridor. The river itself does not draw recreation use but adds to the recreation experience for those in the area.

There are no recreation facilities within the river corridor. There is direct access to the corridor from Forest Service Road 2639. Trail access is available via many trails and trailheads around Government Camp and Timberline Lodge.

The Timberline Trail is within the Mt. Hood Wilderness, and use is limited to the snow-free season, typically July to October, while there may be limited wintertime access by a small number of individuals. The use is light during weekdays, and portions of the area experience heavy use during the summer weekends, especially when the wildflowers are blooming. The Pacific Crest Trail is a 2,650-mile congressionally designated National Scenic Trail extending from Mexico to Canada, passing through California, Oregon, and Washington. Thousands of hikers and equestrians enjoy this international trail every year. Some trail users may only hike small sections, while others choose to take on the entire trail in one season. While the section of the trail in the Zigzag River corridor is one small part of the Pacific Crest Trail, it is used by visitors from the local area as well as international visitors who come to embrace the challenge, explore, and enjoy the spectacular vistas along this iconic trail.

**Figure 20. Zigzag River waterfalls**

The Pacific Crest Trail and Timberline Trail are popular attractants to this river corridor, while providing unique recreation opportunities for long distance hiking, and circle-the-mountain hiking opportunities, while the wildflowers and mountain vistas add to the experience of the area. Visitors travel from all over the region to experience the views provided by this area. International hikers or long distance hikers of the Pacific Crest Trail camp next to the river while passing along to their next destination. With such stunning views and hiking opportunities in the corridor, recreation is found to be an outstandingly remarkable value for the Zigzag River.

### *Scenery*

The Paradise Park area is known for wildflower displays during the summer months, and mountain vista views. The Pacific Crest National Scenic Trail crosses Zigzag River, where it also overlaps with the historic Timberline Trail. At this crossing, there is a unique opportunity to get a glimpse of Mt. Hood looking up the Zigzag River drainage. This unique experience, along with the seasonal variations of alpine wildflower blooms makes this area highly memorable. There are some waterfalls in the area, including Zigzag Falls, just above the trail crossing the river. The Forest Plan identified substantial scenic values, including geology contributing to scenic diversity of the river, along with the view up river towards the top of Mt. Hood. The snow brings seasonal variations to the landscape, but this may not be viewed by many in the winter months. The seasonal wildflowers bring color to the landscape during the summer months.

The scenic resources in Zigzag River were identified as outstanding based on the evaluation criteria, and therefore the scenery is an outstandingly remarkable value for this river. The area has unique and highly memorable high alpine mountain views from the river corridor. Zigzag River provides unique views from the Pacific Crest Trail, which are uncommon within the region of comparison. There are indications the area is photographed by the visitors, and the scenic resources are unique for the area.

**Figure 21. Small waterfalls on Zigzag River**

### *Macoinvertebrates (Other Value)*

Scott's apatanian caddisfly (*Allomyia scotti*) is a glacial relict species with a patchy distribution only recorded around Mt. Hood, Oregon; this species is endemic to Mt. Hood National Forest. This species was first collected in 1964 in the West Fork Salmon River (Wiggins 1973). From 2013 to 2016, an exhaustive survey was conducted around Mt. Hood from 3,157 to 6,257 feet elevation for larval Scott's apatanian caddisfly (Wanner and Arendt 2015; Wanner 2018). Seven new populations of Scott's apatanian caddisfly were recorded in Little Zigzag River, Sand Canyon Creek, Camp Creek, Still Creek, West Fork Salmon River, South Fork Iron Creek, a tributary to the Muddy Fork of the Sandy River, a tributary to McGee Creek, and in a tributary to the East Fork Hood River. No Scott's apatanian caddisfly were recorded within the Zigzag River; however, only one site was sampled during that recent survey due to the remote and steep terrain. Therefore, this rare species may exist within the designated segment of the Zigzag River.

The designated segment of the Zigzag River is within one mile of Scott's apatanian caddisfly populations in the Little Zigzag River. This species has patchy distributions from 3,494 to 4,738 feet elevation associated with spring and seeps that feed the Little Zigzag River. It is likely that some of the springs that feed the Zigzag River at these elevations do harbor Scott's apatanian caddisfly populations. Further studies should investigate perennial seeps and springs with stable hydrographs within the designated segment of the Zigzag River.

Habitat for the Scott's apatanian caddisfly is present in the designated segment of the Zigzag River, including springs and seeps within the known elevation range of this species. Due to the rarity of this species that is only endemic to Mt. Hood, the presence of Scott's apatanian caddisfly in the Zigzag River is an outstandingly remarkable value.

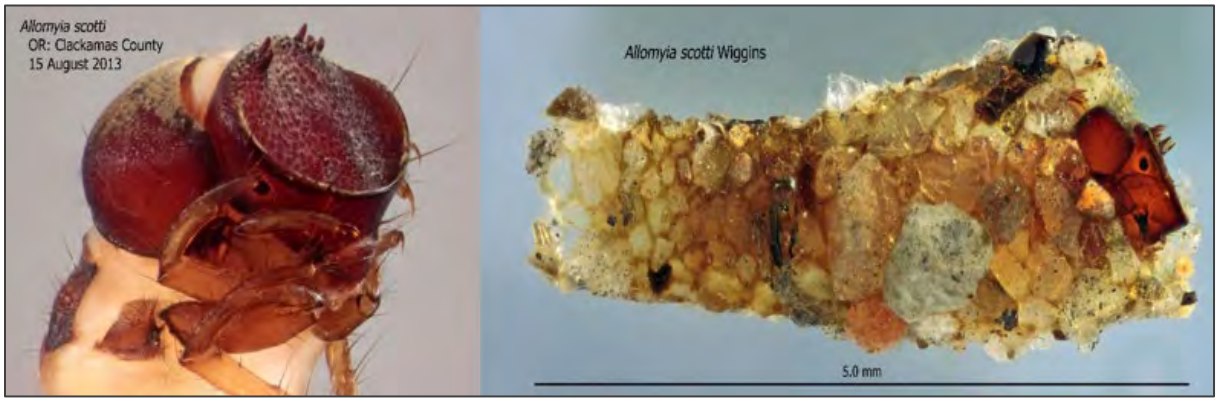


**Figure 22. Photos of apatanian caddisfly face and larva in casing (Photo credit: Dave Ruiter)**

## Free-flow Conditions

The Zigzag River is glacial in origin and has a relatively even flow throughout the year, though it varies during spring runoff and rain-on-snow events. It has a snowmelt hydrograph with peak flows between November and February. Peak flows also occur when jökulhlaup floods descend from the Zigzag Glacier. There is one U.S. Geological Survey gaging station about three miles downstream of the designated river segment.

The river flows steeply over mud and pyroclastic flows through a sparsely vegetated and narrow canyon. The designated segment of river is completely free flowing; while the Timberline Trail (trail #600) does cross the river, it does not constrain the flow.

## Water Quality

There is no ongoing water quality monitoring by Oregon Department of Environmental Quality occurring on the Zigzag River, however the 1988 Department of Environmental Quality non-point source assessment indicated concerns with glacial runoff, unstable channels, and loss of woody debris. These conditions, however, are assumed to be natural, given the river is within the Mount Hood Wilderness and of glacial origin. The only anthropogenic non-point source of pollution would be the Timberline Trail, but it does not appear to be a sediment source. The designated segment of the Zigzag River is not on the State 303(d) list for any pollutant. There is, however, a total maximum daily load for temperature for the Sandy Basin (2005).

Warming temperatures in future years could increase the speed of snowpack and glacial melting. Glaciers and snowpack could continue to decrease in size and volume. The climate change vulnerability assessment for National Forests and Grasslands in the Pacific Northwest (2013) assessed changes in

streamflow due to declining snowpack. Streamflow vulnerability is described relative to a change in magnitude of recharge at the start of July, August, and September. For the Zigzag River, the vulnerability assessments predicted recharge declines greater than 50 percent (in July). The assessment also indicated a 20 percent increase in peak stream flows by 2080.

# Land Uses, Infrastructure and Current Management

This section presents information known about the current uses and infrastructure along each river, including private lands and impoundments.

## Land Ownership within River Corridor

Fifteenmile Creek and South Fork Clackamas wild and scenic river corridors include in-holdings owned by State or private landowners. The other wild and scenic river corridors include only federal lands. The Collawash River, Eagle Creek, East Fork Hood River, Fish Creek, Middle Fork Hood River, South Fork Roaring River, and Zigzag River include only National Forest System lands administered by the Mt. Hood National Forest.

Fifteenmile Creek includes lands owned by the City of Dufur and private landowners (see Appendix B: Maps of Final Wild and Scenic River Boundary). The City of Dufur owns two parcels of lands along the bed and banks of Fifteenmile Creek. Potential future actions on these lands includes fuels reduction activities, which were considered in a Community Wildfire Protection Plan for Wasco County. No management actions have been completed since Fifteenmile Creek was designated, and no management actions are currently proposed. The private landowners do not own property adjacent to Fifteenmile Creek. These lands are undeveloped, and the Forest Service does not know of any future management plans.

South Fork Clackamas River includes federal lands administered by Mt. Hood National Forest and BLM Northwest Oregon District (see Appendix B: Maps of Final Wild and Scenic River Boundary). Portland General Electric (PGE) owns a parcel of land that is located at the confluence of South Fork Clackamas and Clackamas River (see Appendix B: Maps of Final Wild and Scenic River Boundary). It is located within the wild and scenic river corridors for both rivers. There are no developments on this parcel; no management actions have occurred; and no management actions are planned.

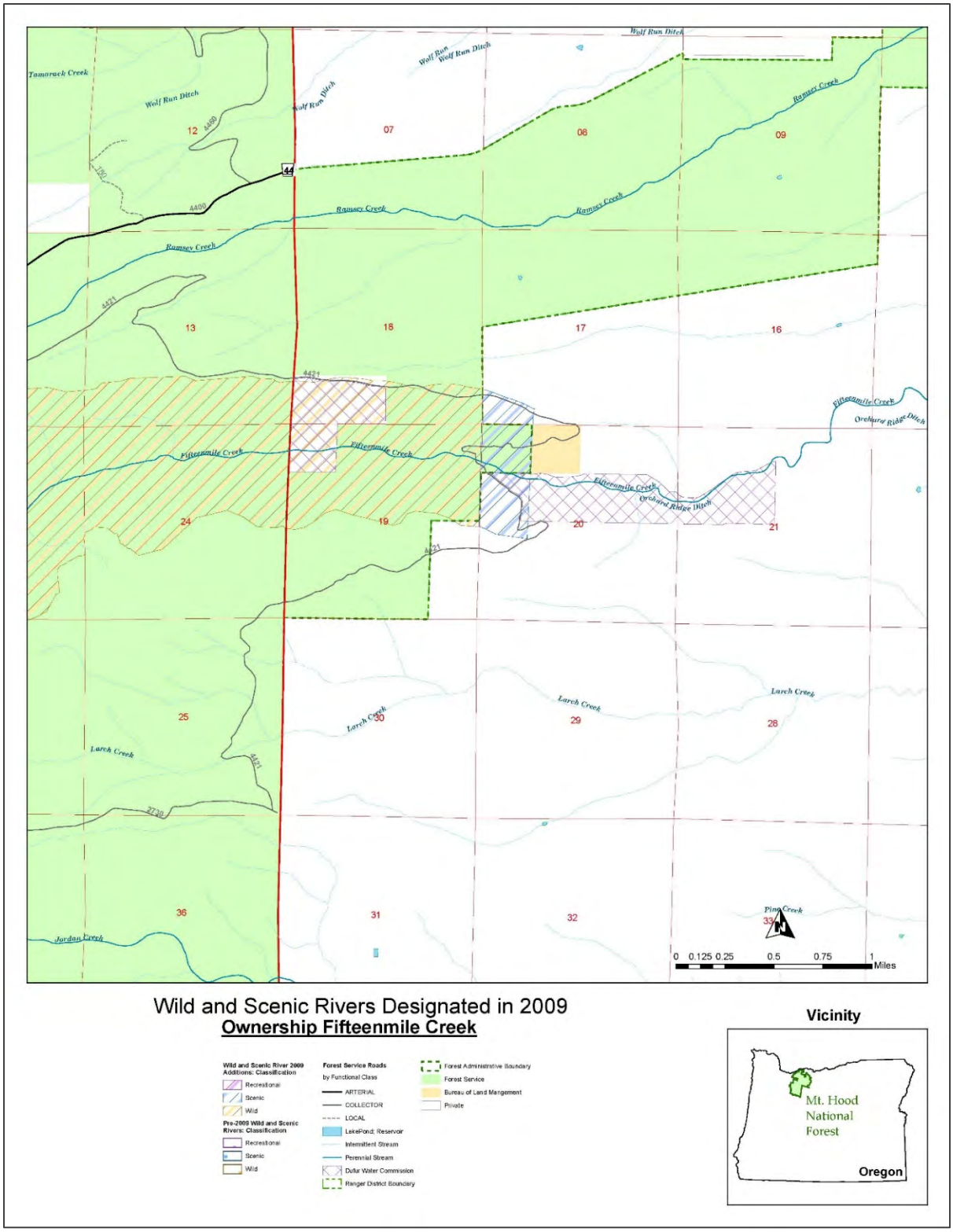


**Figure 23. Land ownership within Fifteenmile Creek**

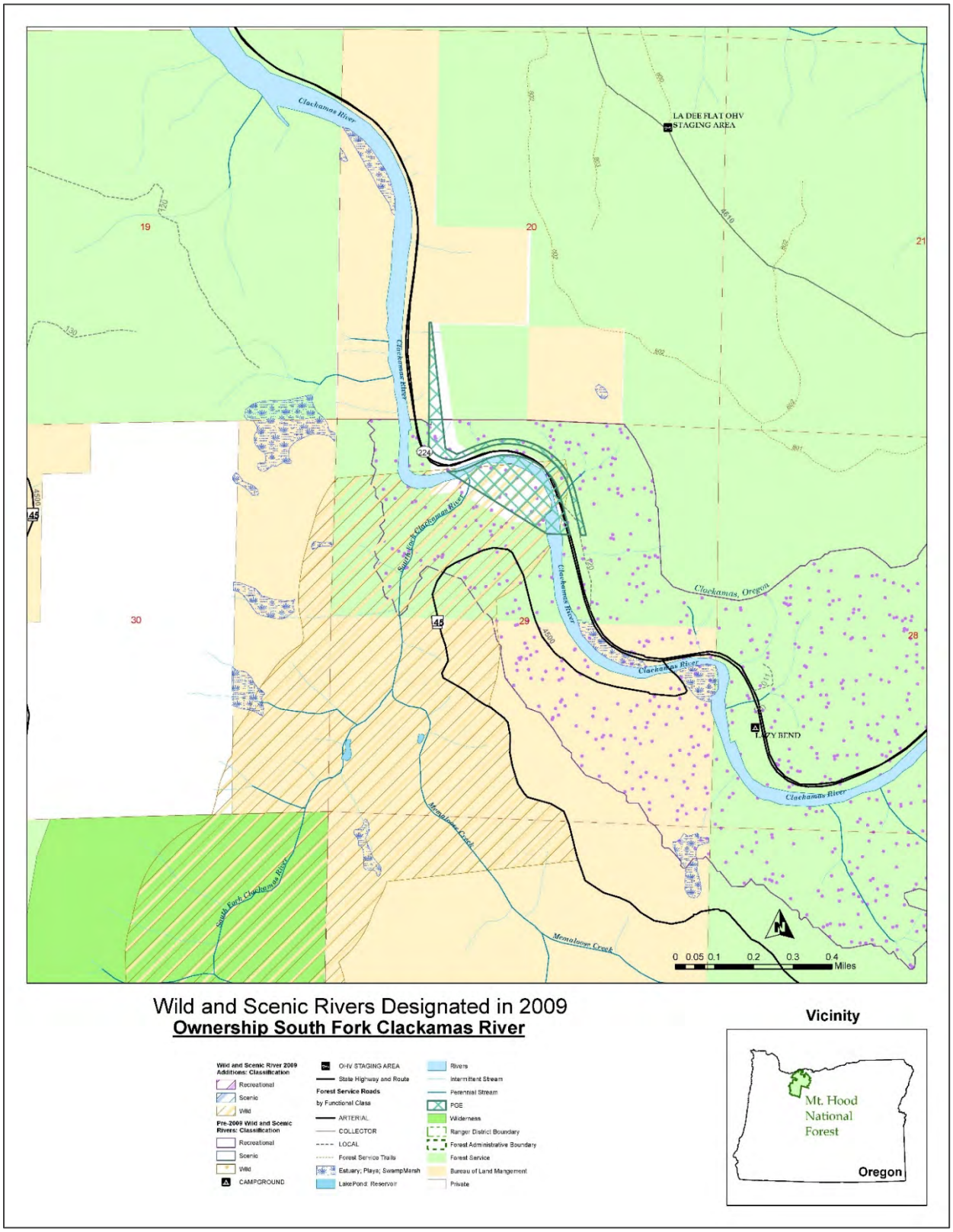


**Figure 24. Map of Portland General Electric lands within the South Fork Clackamas corridor**

# Existing Infrastructure and Activities

Section 2(b) of the Wild and Scenic Rivers Act requires each river in the national wild and scenic river system to be "classified, designated and administered" as wild, scenic or recreational. The classification system describes the type and intensity of development (shoreline developments and impoundments) in existence at the date of the river's designation. Existing management actions and proposed activities were reviewed and analyzed to ensure that they were consistent with the Wild and Scenic Rivers Act and were consistent with protecting and enhancing river values. The baseline developments, valid existing rights, and other management activities are summarized in the following sections. No future developments are planned on federal or other lands within the river corridors.

## Access and Structures

The following sections summarizing the access via road and trails, as well as infrastructure and overlapping designations in each river corridor at the time of designation in 2009. No changes to access or infrastructure have been made since these rivers were designated and the completion of this river management plan.

### Collawash River

There are 21.5 miles of roads in the Collawash River corridor, including segments 1 and 2. Forest Service Road 63 is adjacent to the river and accounts for 7.9 miles of the roads within the corridor. Approximately 0.06 miles of Forest Service trail #559 is located within the river corridor. Development in segment 2 includes two campgrounds, Raab and Little Fan Creek. Raab campground is a development scale 3 (see figure 25) and can accommodate 135 people at one time. Little Fan Creek is a development scale 2 and can accommodate 15 people at one time.

**Figure 25. View of Collawash River from Raab Campground**

There are two special use permits that operate within segment 2 of the Collawash River. First, there is a powerline that crosses the corridor that is maintained by Bonneville Power Administration. Second, the Raab campground is managed under a concessionaire permit.

Segment 1 of the Collawash River has no development and overlaps with the Bull of the Woods Wilderness. Also, the northern termini of the Collawash Wild and Scenic River overlaps with the Clackamas River wild and scenic river corridor. The Clackamas River is designated as a recreational wild and scenic river where the corridors overlap.

## Eagle Creek

There are 1.82 miles of existing roads in the river corridor. From the east, there is river access off Forest Service Road 36 and the 36-255 spur that ties into Forest Service Trail 501. From the south, Forest Service Trail 504 is accessible from Forest Service Road 4614. There are 7.1 miles of trail within the corridor, including Forest Service Trails 501, 504 and the 781.

The Eagle Creek river corridor is completely in the Salmon Huckleberry Wilderness, so there are no constructed features or improvements within the corridor.

**Figure 26. Tamanawas Falls Trailhead**

## East Fork Hood River

The north end of the river corridor follows Oregon State Highway 35 for approximately 9 miles. Several other roads split off Highway 35 or weave in and out of the corridor, for a grand total of 24.8 miles of roads. There are 19.3 miles of trails in the corridor as well, including both hiking (9.59 miles) and snowmobile trails (9.71 miles). Tamanawas Falls, one of the more popular trails, crosses the river and

includes a developed trailhead and parking area (see figure 26). Other notable trails include East Fork trail (Forest Service trail #650), Zigzag trail (#678) and Dog River trail (#675). Several sno-parks exist in the corridor including Little John Sno-Park, Pocket Creek Sno-Park and Teacup Sno-Park. Also, several developed campgrounds exist along the highway including Sherwood, Nottingham and Cloud Cap Saddle. Polallie Picnic Site is on the north end portion of the corridor. Sherwood and Nottingham campgrounds are managed as part of the Lost Lake Resort and included in the special use permit for the resort operations.

There are no overlapping designations within this wild and scenic river corridor.

## Fifteenmile Creek

There are 6.2 miles of road located in the Fifteenmile Creek wild and scenic river corridor. Access is somewhat limited. Fifteenmile Campground (see figure 27) and lower Fifteenmile trailhead are the only infrastructure in the corridor; both have very limited parking at each location. Several trails cross through the corridor, including Fifteenmile Creek trail (Forest Service trail #456) and Cedar Creek trail (#457). There are also several snowmobile trails (6.39 miles) located in the area. Roughly 11.5 miles of both summer and winter trails exist in the corridor.


**Figure 27. Entrance to Fifteenmile Campground**

The Natural Resource Conservation Service operates a SNOTEL site under a special use permit. Snow telemetry sites (SNOTEL) are used to monitor snowpack, precipitation, temperature, and other climatic conditions. Also, there is a fiber optic line for communications managed by Cascade Utilities through a special use permit within this corridor. There are no other special use permits within the river corridor.

The lower southwest corner of segment 1 lies entirely within the Badger Creek Wilderness, and parts of segment 2 and 3 are within the Mt. Hood National Recreation Area. The recreation area was designated to "to provide for the protection, preservation, and enhancement of recreational, ecological, scenic, cultural, watershed, and fish and wildlife values, there is established the Mount Hood National Recreation Area within the Mount Hood National Forest" (Public Law 111, Section 1204(a)).

### Fish Creek

There are 2 miles of road in the Fish Creek corridor. After the floods of 1996, there were approximately 19 miles of roads decommissioned in the area; therefore, access to the river corridor has been reduced significantly. Clackamas River Fish Creek trailhead and Fish Creek campground are the only two built infrastructures within the corridor located at the confluence of Fish Creek and Clackamas River. Although these improvements are within the Fish Creek wild and scenic river corridor, they provide access to the Clackamas River. Both were sustained significant damage as a result of the Riverside Fire in September 2020. The Forest is working on securing funding to restore this infrastructure. There are about 0.04 miles of Forest Service trail 715 that are within the corridor.

The northern termini of the Fish Creek Wild and Scenic River overlaps with the Clackamas River wild and scenic river corridor. The Clackamas River is designated as a recreational wild and scenic river where the corridors overlap.

### Middle Fork Hood River

No facilities exist in the corridor and it has very limited access. Only 0.78 miles of roads lie within the river corridor and there are no trails or constructed features or improvements.

The Parkdale Lava Beds occur within the wild and scenic corridor of the Middle Fork Hood River and are listed as a special interest area with a geologic emphasis in the Forest Plan (pages Four-151). The goal of special interest areas are to: "protect and, where appropriate, foster public recreational use and enjoyment of the important historic, cultural, and natural aspects of our national heritage;" and to "preserve and provide interpretation of unique geological, biological, and cultural areas for education, scientific, and public enjoyment purposes."

### South Fork Clackamas River

There are 1.8 miles of road in the corridor, including 0.15 miles of Oregon State Highway 224. Hillockburn trail (Forest Service trail #516) is the main access into the corridor, but only 0.57 miles of the trail lie within the corridor. The trail in total is a 3.2 mile round trip that leads down to the river and back. There is a small unofficial parking area for the trail located off Forest Service Road 45.

A portion of the river flows through the Clackamas Wilderness and both the north and south end of the river corridor lie within BLM administered lands. On the north BLM side near the confluence of the Clackamas River wild and scenic river corridor, infrastructure from waterlines dating back to the 1900s exists and attract visitors who hike in from Forest Service Road 45 (see figure 28). Also, the northern termini of the South Fork Clackamas Wild and Scenic River overlaps with the Clackamas River wild and scenic river corridor. The Clackamas River is designated as a recreational wild and scenic river where the corridors overlap.

There are two special use permits that are operational within this river corridor. There is a buried fiber optic line (C-800) that is managed by Cascade Utilities within this corridor. Also, there is a powerline managed by Portland General Electric under a Federal Energy Regulation Commission (FERC) license

that crosses the corridor. FERC hydroelectric power and facilities are located along the Clackamas River, but not the South Fork Clackamas. The powerline crossing is located at the confluence of the two rivers.

On BLM administered lands, this corridor overlaps with the South Fork Clackamas Waterfalls Extensive Recreation Management Area (see Appendix E: South Fork Clackamas Waterfalls Extensive Recreation Management Area Framework for more details). According to the BLM Northwestern and Coastal Oregon Resource Management Plan, Extensive Recreation Management Areas are administrative units that require specific management consideration to address recreation use, demand, or recreation and visitor services program investments (page 251). The BLM manages these areas to support and sustain the principal recreation activities and the associated qualities and conditions of the area. Management of these areas are commensurate with the management of other resources and resource uses.

**Figure 28. Tunnel leading to the lower falls along South Fork Clackamas River**

## South Fork Roaring River

Because this corridor is entirely within the Roaring River Wilderness, the corridor has no roads or improvements. The Frazier Turnaround Trailhead is the main access point to the Serene Lake Trail (Forest Service trail #512), which is the only trail located in the corridor (0.98 miles) and serves as the main access point to the river. The northwestern termini of South Fork Roaring River overlaps with the Roaring River wild and scenic river corridor. The Roaring River is classified as a wild river where the corridors overlap.

### Zigzag River

This river corridor lies completely in the Mount Hood Wilderness; therefore, no built infrastructure exists. There are several very popular trailheads just outside the wilderness boundary as well as the iconic Pacific Crest National Scenic Trail (see figure 29) which crosses through the river corridor on the north end. In total, there are 4.1 miles of trails in the river corridor. The historic and very popular Timberline Lodge lies just outside the corridor and serves as a main access point into the area.

**Figure 29. View of Zigzag Creek from the Pacific Crest Trail**

## Road Easements and Right-of-Ways

The South Fork Clackamas River and East Fork Hood River wild and scenic river corridors include state highways that are maintained by the Oregon Department of Transportation (ODOT). Roads and infrastructure in designated river corridors provide important transportation networks, but they may also threaten the values for which the wild and scenic rivers were designated, particularly their free-flowing condition, water quality and outstandingly remarkable values. It is important that the Forest Service (federal river administering agency) and ODOT work together to protect and enhance the wild and scenic river values and attributes, while maintaining a safe transportation system along Highway 224 and 35.

A small portion of Oregon State Highway 224 (0.15 miles) crosses the South Fork Clackamas wild and scenic corridor in the northern portion where the corridor overlaps with the Clackamas River wild and scenic river corridor. Oregon State Highway 35 is parallel to East Fork Hood River through much of the wild and scenic river corridor. Highway 35 extends from the intersection with Interstate 84 in Hood River to the intersection with U.S. Highway 26 near the peak of Mt. Hood. Highway 35 is approximately 40 miles long. Approximately 9 miles are located within the East Fork Hood River wild and scenic river corridor.

## Management of Highway 224

Because Highway 224 only crosses the South Fork Clackamas River wild and scenic river corridor in the section that overlaps the Clackamas River wild and scenic river corridor, the comprehensive river management plan for the Clackamas River (Forest Service, 1993a) provides the management direction needed for this highway. The Clackamas River comprehensive river management plan can be found on the Mt. Hood National Forest planning website. There are no road easements along Highway 224 within the wild and scenic river corridor.

Since the adoption of this management plan, Highway 224 was designated as a state and national scenic byway as part of the West Cascades Scenic Byway. The 220-mile long West Cascades Scenic Byway runs north to south, skirting the northern half of Oregon's Cascade Mountain Range. This designation offers some additional management direction when combined with the memorandum of understanding.

## Management of Highway 35

Currently, Highway 35 is not impacting or near the outstandingly remarkable values. As such, the management process and joint management within the wild and scenic river corridor will focus on the free-flowing and water quality values. The Wild and Scenic Rivers Act, section 12(c) directs the river administering agencies to cooperate with the Environmental Protection Agency to eliminate or diminish water pollution. Then, section 16(b) defines free-flowing as: “Existing or flowing in a natural condition without impoundment, diversion, straightening, rip-rapping, or other modification of the waterway.” Although some modifications (riprapping) may have existed on the date of designation, the intent of the Act is to protect rivers from modifications, such as unnatural armoring, that research shows can harm riverine ecosystems and downstream or opposing shorelines.

**Figure 30. Highway 35 adjacent to East Fork Hood River**

Both agencies implement best management practices when completing road maintenance and construction. Forest Service follows the National Best Management Practices for Water Quality Management on National Forest System Lands (U.S. Department of Agriculture 2012). Oregon Department of Transportation follows the Water Quality and Habitat Guide Best Management Practices (ODOT 2020); also known as the ‘Blue Book’. The best management practices are compatible and often

overlap between the two agencies. Oregon Department of Transportation follows both sets of best management practices when operating under a special use permit on National Forest System lands. These practices are designed to protect water quality.

Also, Highway 35 is part of the Mt. Hood Scenic Byway (the Fruit Loop), a national scenic byway designated by the Federal Highway Administration. This is a 100-mile route that skirts the mountain through fruit valleys and thick fir forest. This designation offers some additional management direction when combined with the memorandum of understanding and best management practices.

### *Road Projects*

Three types of projects occur along Highway 35: maintenance, emergency and construction or improvement projects.

- Maintenance projects occur routinely along Highway 35 (inside and outside the designated wild and scenic river corridor) to maintain a safe travel route along the state highway. These projects are coordinated between the two agencies to minimize environmental impacts and to ensure all applicable federal and state laws and regulations are being met. The Memorandum of Understanding between the State of Oregon Department of Transportation and Forest Service Pacific Northwest Oregon (2018) provides direction on maintenance projects between the agencies. This memorandum of understanding documents the cooperation between the two agencies to coordinate transportation activities of mutual interest involving state highways within the road easement or right-of-way on National Forest System lands.
- Emergency repairs will be required when critical infrastructure requires immediate repairs to restore a safe travel route for essential traffic, minimize the extent of ecological damage, or protect remaining facilities and infrastructure. These repairs may be required after a major flood, debris flow event, or wildfire. In such situations, emergency repairs should be done in a way that avoids environmental impacts and minimizes the need for subsequent permanent repairs. Oregon Department of Transportation should coordinate with the Forest Service as much as practicable during the emergency repairs, especially when there is a potential impact to the designated wild and scenic river or the river values (outstandingly remarkable values, free flow, or water quality).
- All construction and improvements projects within the East Fork Hood River wild and scenic river corridor would require site-specific environmental analysis under federal and state law. Any projects within bed or banks or that have the potential to adversely impact river values would also require a Section 7 review under the Wild and Scenic Rivers Act.

### *Management Process*

The management process included focuses on maintenance activities since those occur routinely and are foreseeable. The following process is agreed upon by both the Forest Service and Oregon Department of Transportation for the management of State Highway 35 within the East Fork Hood River wild and scenic river corridor. Potential maintenance projects within the river corridor that may impact river values include: sediment build-up below structures; riprap maintenance; hazard tree abatement; and, culvert repair, replacement and general maintenance. All planned maintenance projects along Highway 35 within the East Fork Hood River wild and scenic river corridor, including in-water projects, will be presented, and discussed, at the meetings between the Mt. Hood National Forest and Oregon Department of Transportation Region 1.

**Figure 31. Polallie Bridge over East Fork Hood River**

For in-water maintenance projects (projects occurring in bed or banks), the following process would be used during project development. This process is reviewed and updated as necessary by both agencies approximately every five years when the memorandum of understanding is reviewed. The current agreed upon process between the two agencies will be followed for the life of this management plan.

- The ODOT Maintenance Supervisor or District Manager would contact the ODOT Regional Environmental Coordinator for any in-water projects. The Regional Environmental Coordinator works with all regulatory or administering agencies, including the Forest Service, to ensure all requirements are met.
- The ODOT Regional Environmental Coordinator would contact the Forest Service Special Uses Permit Administrator. The permit administrator would coordinate with the Hood River District Ranger and other Forest Service employees as necessary to ensure that the project has considered and complies with all Wild and Scenic Rivers Act requirements.
- The Forest Service special uses permit administrator would provide feedback to the ODOT Regional Environmental Coordinator in a timely manner. If any modifications to the project are required to comply with the Wild and Scenic Rivers Act, these changes would be provided in writing by the Forest Service special uses permit administrator. Only after this coordination has occurred between the agencies would the maintenance project be implemented.

If a Section 7 review is required under the Wild and Scenic Rivers Act, the Forest Service Special Uses Permit Administrator or District Ranger would notify both the ODOT District Manager and Regional Environmental Coordinator as soon as possible. The project cannot be implemented until the Section 7 review is completed and approved by the Forest Service, Pacific Northwest Regional Forester. More details on the Section 7 process can be found in the Interagency Wild and Scenic River Coordinating Council's technical paper Wild & Scenic Rivers Act: Section 7 (Diedrich, 2004).

## Instream Infrastructure

Section 16(b) of the Wild and Scenic Rivers Act defines free-flowing as "existing or flowing in a natural condition without impoundment, diversion, straightening, rip-rapping, or other modification of the waterway. The existence, however, of low dams, diversion works and other minor structures at the time any river is proposed for inclusion in the national wild and scenic rivers system shall not automatically bar its consideration for such inclusion: Provided, that this shall not be construed to authorize, intend, or encourage future construction of such structures in components of the national wild and scenic rivers system."

Collawash River, East Fork Hood River, Fifteenmile Creek and Fish Creek were all designated Wild and Scenic Rivers after road and bridge infrastructure had been constructed. The remaining six rivers do not have known existing instream infrastructure associated with them.

- Figure 32 shows the location of the rip rap and bridges associated with road infrastructure along the Collawash River, which parallels National Forest Road 63. The rip rap is placed to protect the road prism integrity on the western banks of the river.
- Figure 33 shows the location of road infrastructure along the East Fork Hood River, which parallels Oregon State Highway 35 (as discussed in the previous section). The rip rap is placed to protect road prism integrity on the western banks of the river and campground integrity on the eastern banks.
- Figure 34 shows the location of road infrastructure along Fish Creek, which parallels National Forest Road 54. A concrete wall was placed on the eastern banks of the river. The wall does not protect the road nor does it impact the geomorphic integrity of the river.
- Figure 35 shows the road infrastructure along Fifteenmile Creek, where Forest Service Road 2730 crosses just below the Badger Creek Wilderness and Forest Service Road 4421, where the wild and scenic river corridor ends just above BLM lands.

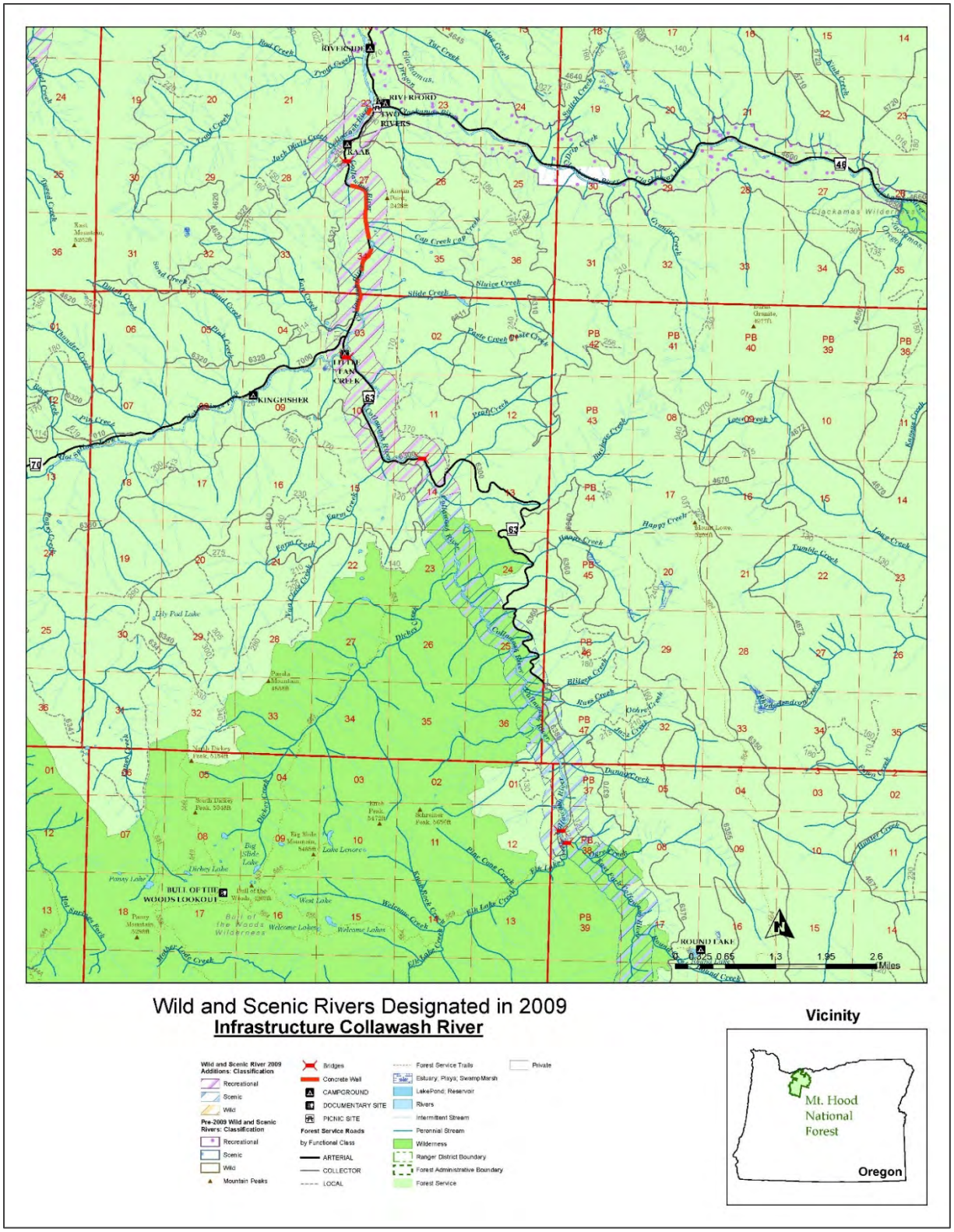


**Figure 32. Map of existing instream infrastructure along the Collawash River**

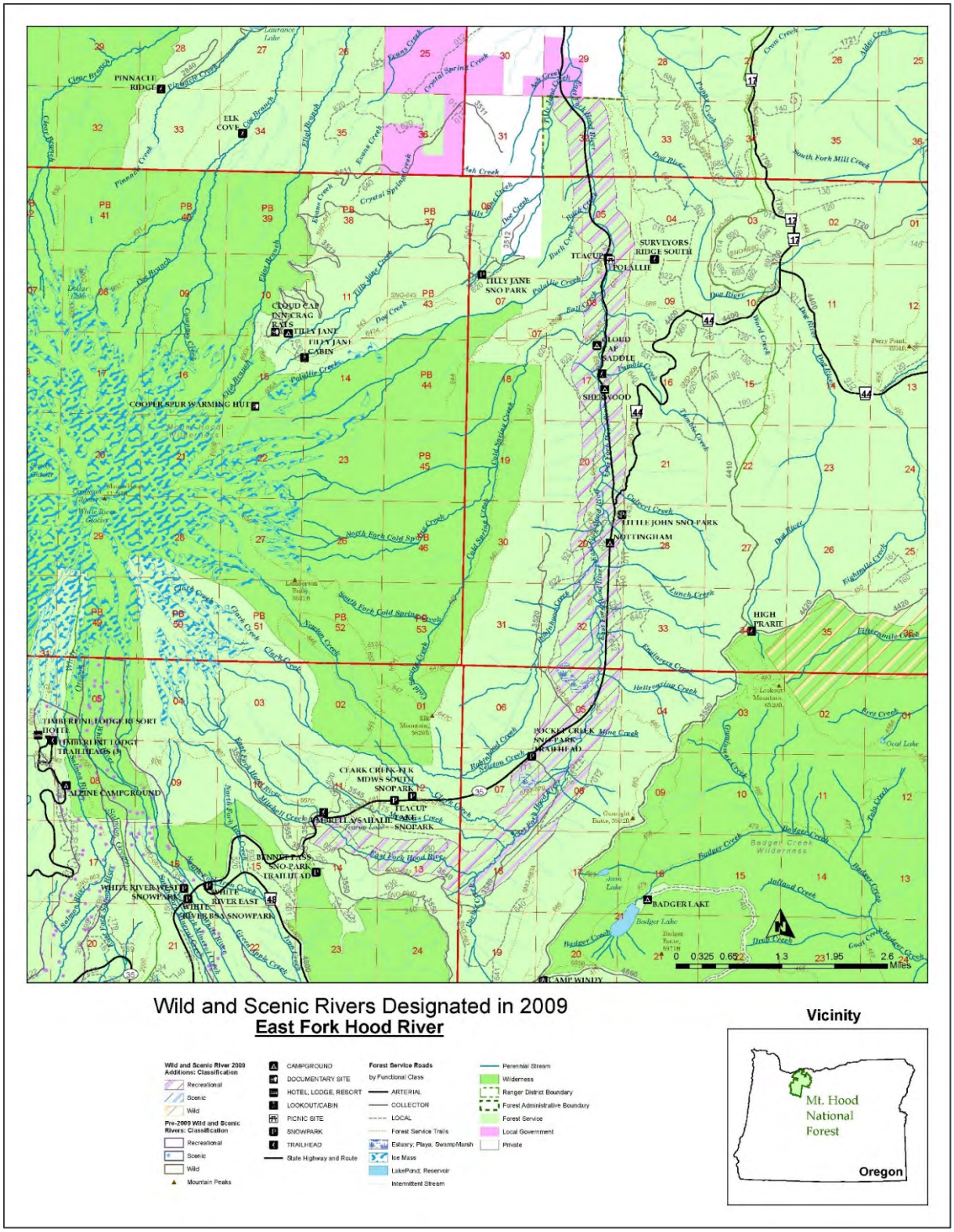


**Figure 33. Map of existing instream infrastructure along East Fork Hood River**

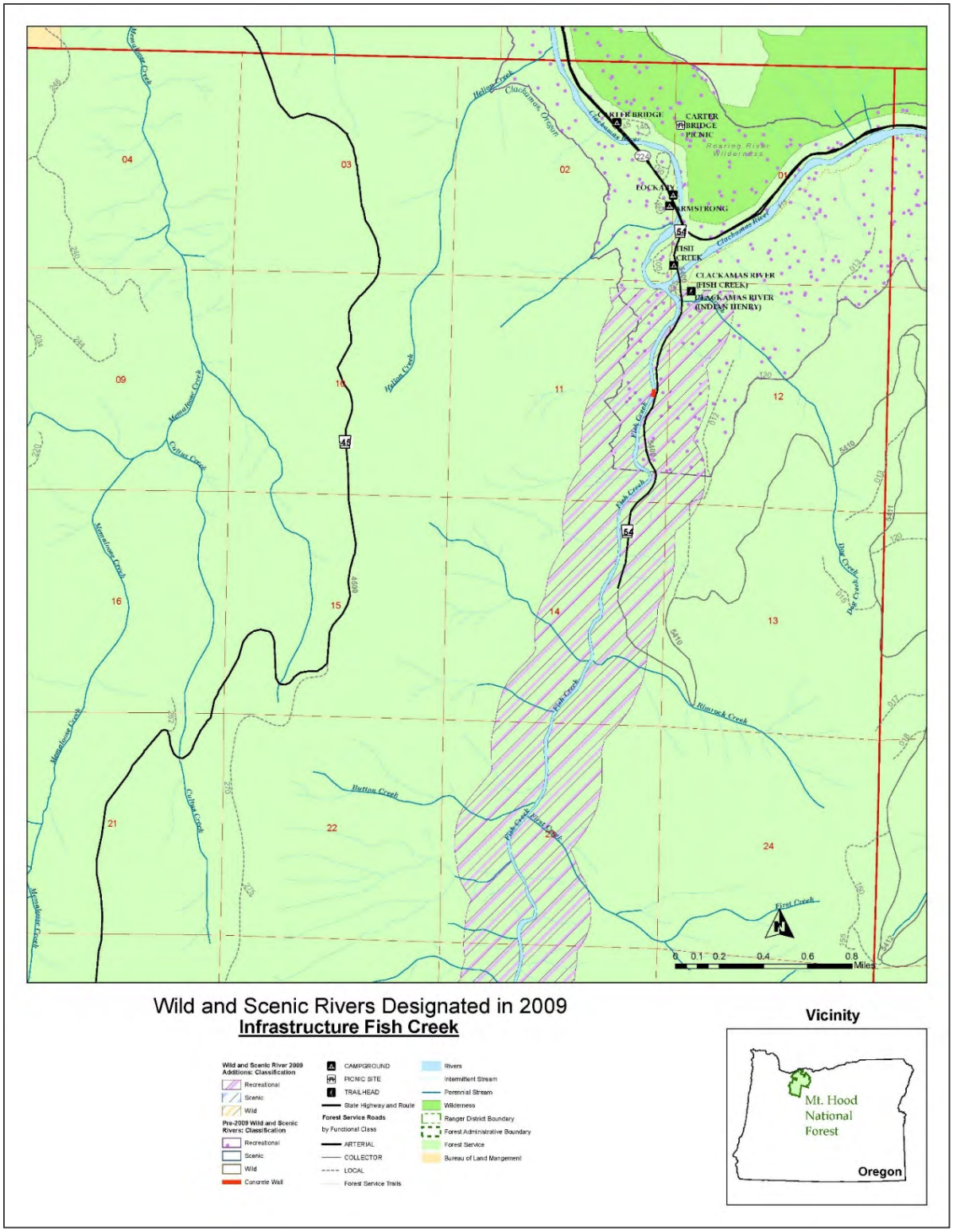


**Figure 34. Map of existing instream infrastructure along Fish Creek**

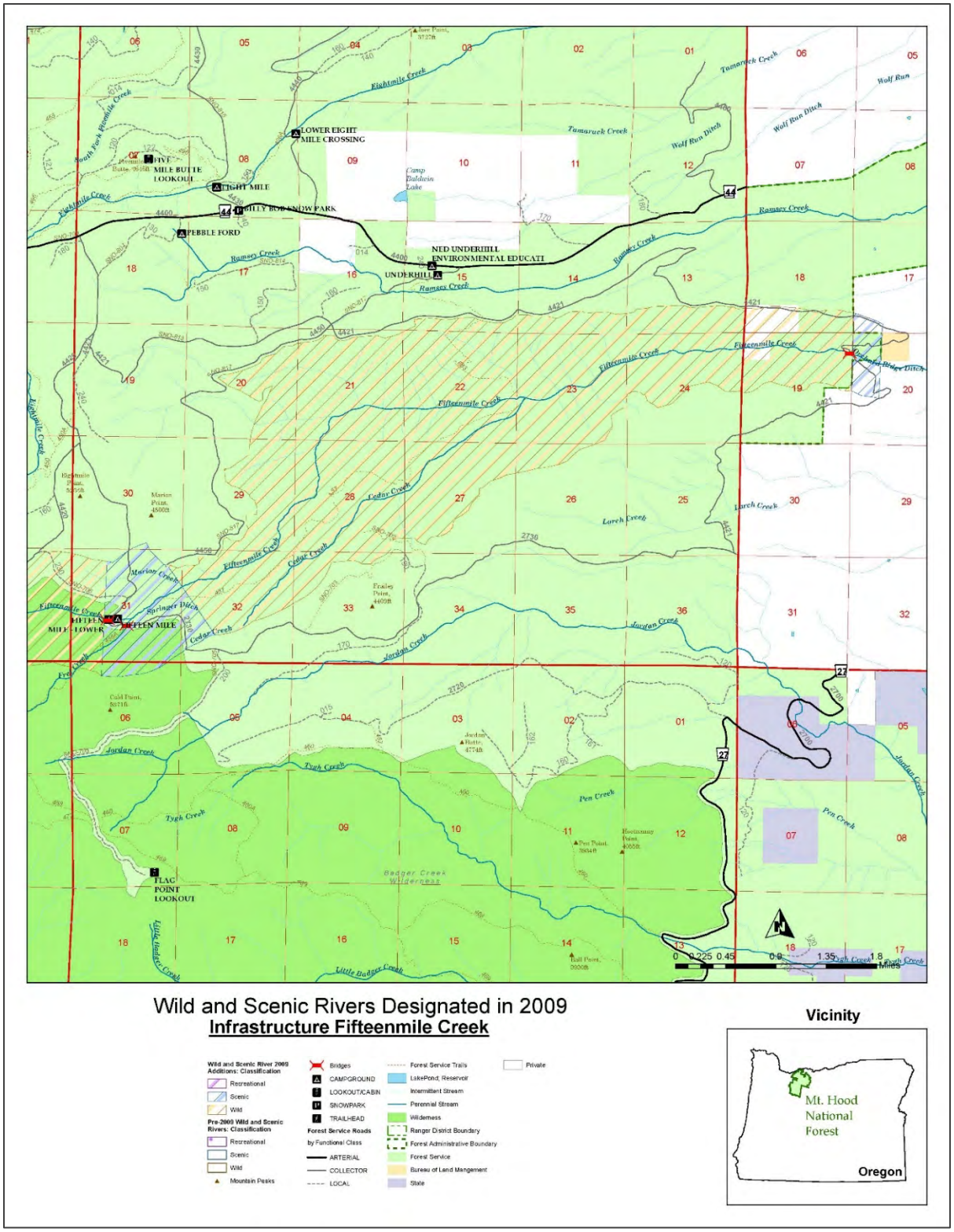


**Figure 35. Map of existing instream infrastructure along Fifteenmile Creek**

## Valid Existing Mineral Rights

Section 9(a) of the Wild and Scenic Rivers Act provides direction on mineral rights. Subject to valid existing rights (subject to existing mining claims and mineral leases), the minerals located on federal lands within the bed or banks or a quarter mile of the banks (or half mile for Fifteenmile Creek) of any designated wild river are withdrawn from all forms of appropriation under the mining laws and from the operation of the mineral leasing laws. This applies to the wild segments along the Eagle Creek, Fifteenmile Creek, South Fork Clackamas, South Fork Roaring River, and Zigzag Creek.

For the recreational and scenic segments, mining claimants may only obtain title to the mineral deposits and such rights to the use of the surface and surface resources as are reasonably required for prospecting or mining, subject to valid existing rights (subject to mining claims where the claimant has filed a proper patent application and paid the required fees prior to the river's designation). BLM and Forest Service use their existing regulations (43 CFR 3809 and 36 CFR 228, respectively) to meet, to the extent possible, the non-degradation standard of Section 10(a) (Diedrich 2002). The BLM generated a report from the Legacy Rehost 2000 system for active, pending, and closed mining claims within the wild and scenic river boundaries in October 2020. The report yielded no active claims within the river boundaries, and as such there are no valid existing rights within those identified areas.

## Range Allotments

The Friend Unit of the Badger Allotment overlaps with the Fifteenmile Creek wild and scenic river corridor segments 3 and 4 (see figure 36); there are no other range allotments that overlap with the wild and scenic river corridors. The current livestock management plan identifies 80 cow/calf pair under a five-pasture deferred rotation grazing system from May 15th to September 30th each year. The allotment is approximately 20,340 acres.

The Badger Allotment annual operating instructions for the 2020 Grazing Season includes the following: "Multiple Indicator Monitoring (MIM) will be implemented on Fifteenmile Stream in the Friend Unit. This will be a coordinated effort with the permittee, hydrologist, fish biologist, and range specialist to decide where to monument new sampling sites and how often to monitor. Additional management focus will be implemented in the Friend unit to comply with Wild and Scenic River policy." This monitoring has also been incorporated into the monitoring plan for this comprehensive river management plan (see Appendix F: Monitoring Plan) to ensure that river values are enhanced or protected throughout the river corridor. No current resource concerns were identified through this planning process.

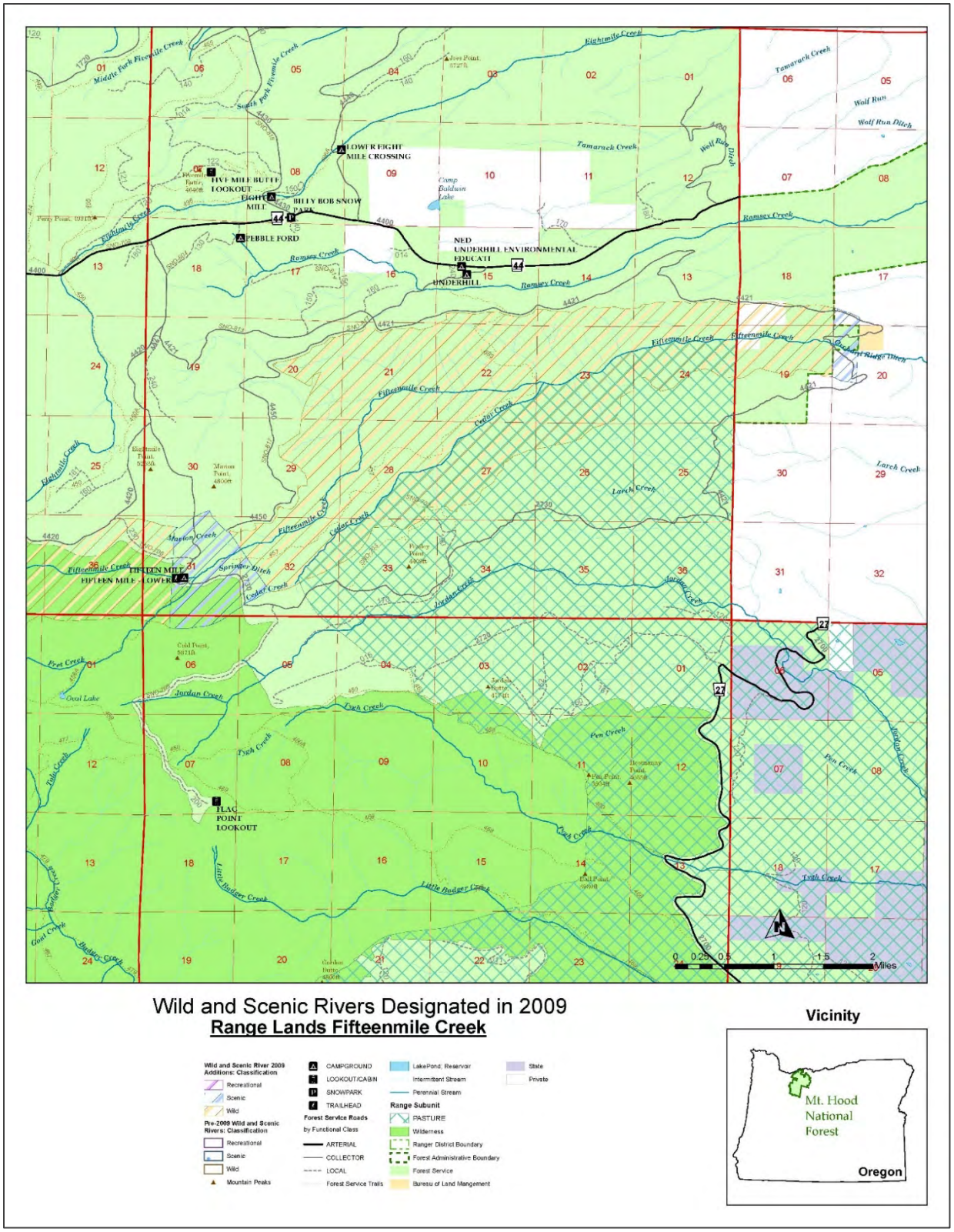


**Figure 36. Map of Overlap between the Badger Creek Allotment and Fifteenmile Creek Wild and Scenic River Corridor**

## Current Management Actions

The following summarizes the ongoing management activities that occur within the corridors and which are expected to continue. These activities are in addition to the Forest Service special uses summarized above. Any new management actions or project specific management actions would be evaluated to ensure they are consistent with the Wild and Scenic Rivers Act, and a Section 7 analysis would be completed for any project that may impact river values.

**Table 3. Summary of ongoing management activities in the wild and scenic river corridors**

| River Corridor | Management Action | Summary | NEPA Completed | Impacts to River Values |
|---|---|---|---|---|
| All | Invasive plant treatments | The invasive plant control program identifies potential noxious weeds treatments within wild and scenic river corridors. | Yes | Protect river values, particularly botany ORVs |
| All | Aquatic restoration | High quantity of impassible culverts and large woody debris were identified as potential management actions. | Yes | Enhance fisheries ORVs |
| All non-wilderness segments | Road and bridge maintenance | Maintain existing National Forest System roads and bridges | n/a | Protect water quality |
| All segments with trails | Trail maintenance | Maintain existing National Forest System trails and trailheads | n/a | Protect water quality |
| All segments with campgrounds | Campground maintenance | Routine maintenance of Forest Service developed campgrounds. | n/a | No negative impacts |
| East Fork Hood River | Highway 35 maintenance | Maintain Highway 35, as described in the Management of Highway 35 section. | Yes | Protect water quality |
| East Fork Hood River | Pete's Pile and Clinger Springs Management | Install interpretative signs to educate climbers about the rarity of violet suksdorfia and potential impacts from recreational activities. Continue fostering partnerships with the local climbing community. | n/a | Protect botany ORV |
| Fifteenmile Creek | Range management | No maintained improvements within the wild and scenic river corridor. Only routine use and maintenance occurring. See the Range Allotments section for more details. | Yes | No negative impacts |

# Existing Water Rights

The designation as a wild and scenic river "shall not be construed as a reservation of the waters of such streams for purposes other than those specified in the Act, or in quantities greater than necessary to accomplish these purposes" (Section 13(c)). As such, the existing and pending water rights that influence water flow within the designated wild and scenic river segments were reviewed as part of this process. Eagle Creek, South Fork Clackamas River, South Fork Roaring River, and Zigzag River segments do not include any existing or pending water rights.

The information summarized here was taken from the Oregon Water Resources Department Water Rights Information database (http://www.oregon.gov/owrd/pages/WR/wris.aspx).

## East Fork Hood River

The following summarizes existing water rights for withdrawal along the designated wild and scenic river segment. The water rights issued to the Forest Service are no longer used because the facilities no longer exist; however, these are still existing valid water rights. Since these water rights are not being used, they do not negatively impact the free flow conditions.

- A water right for 0.05 cubic foot per second on Mine Creek, a tributary of the East Fork Hood River, for the purposes of water supply for auto camp (an early campground) was issued to Mt. Hood National Forest on April 5, 1926.
- A water right for 0.02 cubic foot per second on Tumble Creek, a tributary of the East Fork Hood River, for the purposes of domestic use in public campground was issued to Mt. Hood National Forest on June 3, 1941.
- A water right for 0.02 cubic foot per second on Johnson Creek, a tributary of the East Fork Hood River, for the purposes of domestic use in Guard Station and public campground was issued to Mt. Hood National Forest on June 3, 1941.
- A water right for 0.22 cubic foot per second on unnamed spring, a tributary of the East Fork Hood River, for the purposes of ski facility and fire suppression was issued to Mt. Hood Meadows Development Corporation on February 9, 1973. This water right includes 0.21 cubic foot per second for ski facility and 0.01 cubic foot per second for a fire suppression system.

## Middle Fork Hood River

Water rights on the Middle Fork Hood River are used by the Middle Fork Irrigation District, including the Clear Branch Dam. The majority of the Middle Fork Irrigation District is located outside the designated wild and scenic river corridor; however, its operations and water rights may impact the water flow within the designated segment of the Middle Fork Hood River (see Figure 38).

The Middle Fork Irrigation District is considered a water resource project outside a wild and scenic river corridor. This irrigation district receives federal assistance from the Forest Service and Natural Resources Conservation District. The Clear Branch Dam and other irrigation district structures are located within the river's bed or banks upstream. Section 7(a) of the Wild and Scenic Rivers Act requires: "developments below or above a wild, scenic or recreational river area or on any stream tributary thereto which will not invade the area or unreasonably diminish the scenic, recreational, and fish and wildlife values present in the area on the date of designation of a river as a component of the National Wild and Scenic Rivers System." As such, the irrigation district water resource projects that influence water flow, including the current dam improvement project, are subject to Section 7 of the Wild and Scenic Rivers Act and will be summarized briefly here.

- The Middle Fork hydroelectric project, including the Clear Branch Dam, is exempt from Federal Energy Regulatory Commission (FERC) licensing due to its small size. A less than five megawatts exemption from licensing was issued to Middle Fork Irrigation District by FERC on April 6, 1984. The FERC exemption does not stipulate project flows.
- A water right for varying amounts on Middle Fork Hood River was issued to the Oregon Water Resources Department on August 12, 1991. Depending on the time of year, the right varies between 100 and 246 cubic feet per second, with the greatest use in May, June, and July. This right to use water is for water distribution for agricultural purposes.

- A flow stipulation below Clear Branch Dam was established by agreement with Oregon Department of Fish and Wildlife dated March 21, 1962, and amended in May 1982. A two cubic feet per second flow rate has been stipulated by Oregon Department of Fish and Wildlife in the bypass reach of the Coe diversion in 2009. There has not been a formal minimum flow rate stipulated below Coe or Eliot branch diversions.

**Figure 37. Middle Fork Hood River (river mile 10)**

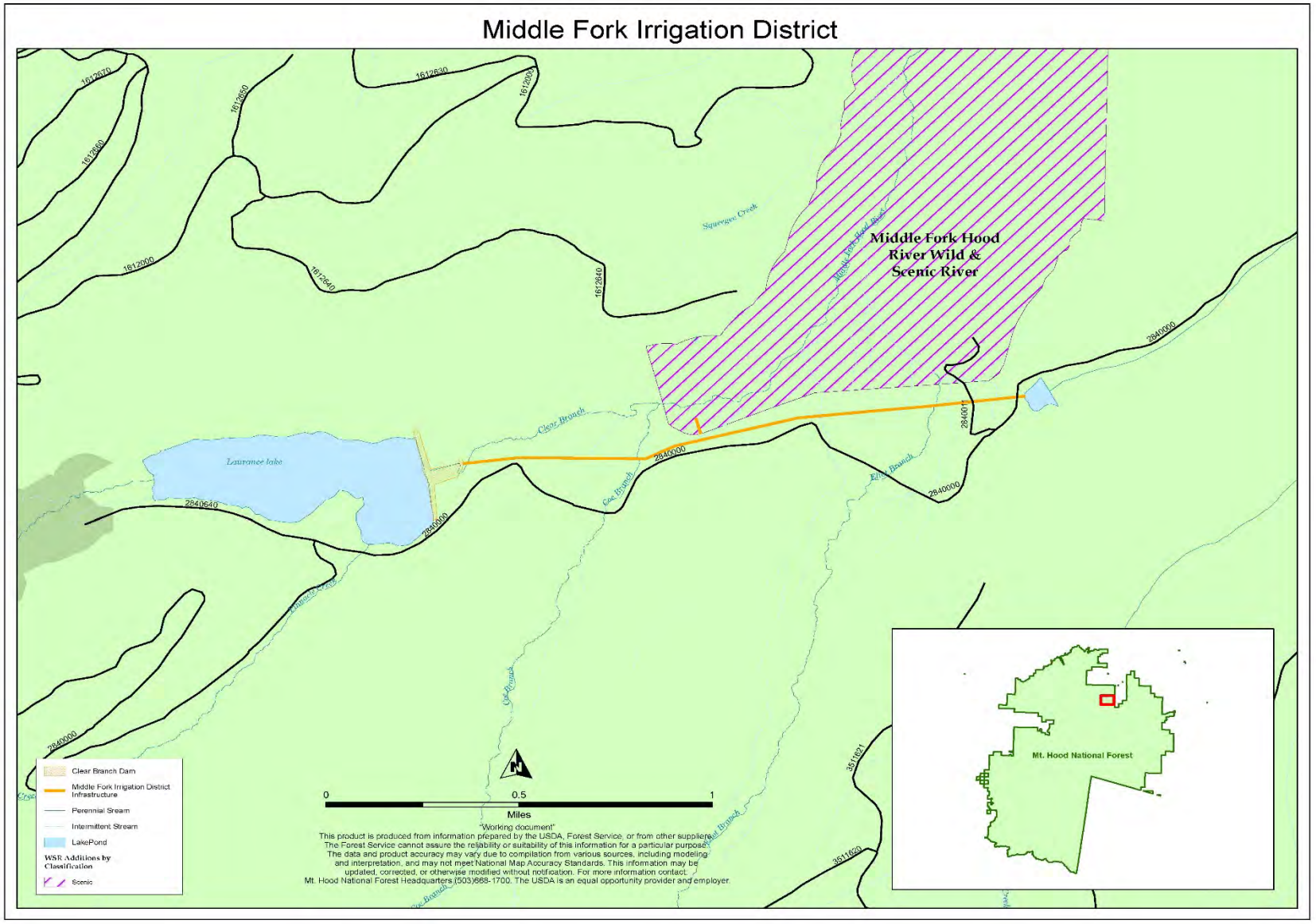


**Figure 38. Map of Middle Fork Irrigation District infrastructure and the Middle Fork Hood River wild and scenic river corridor**

## Beneficial Instream Use

The Collawash River, East Fork Hood River, Fifteenmile Creek, and Fish Creek include beneficial instream uses. Beneficial instream uses aid in the restoration and protection of stream flows to support ecosystem function and aquatic life. These beneficial instream uses protect and enhance the free flow conditions on designated wild and scenic rivers.

### Collawash River

Collawash River includes four instream water rights for the purposes of supporting aquatic life, including threatened and endangered fish species. All of these water rights were issued to the Oregon Water Resources Department in 1966 and are described in more details below.

- A water right for varying amounts on Collawash River, a tributary of the Clackamas River, was issued to the Oregon Water Resources Department on May 25, 1966. Depending on the time of year, the right varies between 75 and 250 cubic feet per second. This right to use the water is to maintain a beneficial instream flow for the purposes of supporting aquatic life.
- A water right for 10 cubic feet per second from August 1 to September 30 on East Fork Collawash River, a tributary of the Collawash River, was issued to the Oregon Water Resources Department on May 25, 1966. This right to use the water is to maintain a beneficial instream flow for the purposes of supporting aquatic life.
- A water right for 15 cubic feet per second from August 1 to September 30 on Elk Lake Creek, a tributary of the Collawash River, was issued to the Oregon Water Resources Department on May 25, 1966. This right to use the water is to maintain a beneficial instream flow for the purposes of supporting aquatic life.
- A water right for varying amounts on Hot Springs Fork Collawash River, a tributary of the Collawash River, was issued to the Oregon Water Resources Department on May 25, 1966. Depending on the time of year, the right varies between 15 and 75 cubic feet per second. This right to use the water is to maintain a beneficial instream flow for the purposes of supporting aquatic life.

### East Fork Hood River

Two water rights for instream beneficial use along East Fork Hood River are being considered by the Oregon Department of Water Resources based on priority dates. Both water rights are for the purposes of supporting aquatic life, including threated and endangered fish species. These water rights are described below.

- A water right is being considered for varying amounts on East Fork Hood River from river mile 6.2 to just above the confluence of Polallie Creek and East Fork Hood River. The Oregon Department of Fish and Wildlife applied for this right for the purposes of beneficial instream uses, and it is currently under review. Depending on the time of year, the right would vary between 110 and 175 cubic feet per second.
- A water right is being considered for varying amounts on East Fork Hood River just above the confluence of Polallie Creek and East Fork Hood River to the confluence of Cold Spring Creek and East Fork Hood River. The Oregon Department of Fish and Wildlife applied for this right for the purposes of beneficial instream uses, and it is currently under review. Depending on the time of year, the right would vary between 75 and 127 cubic feet per second.

### Fifteenmile Creek

There is one water right for instream beneficial use and another water right under consideration based on priority dates for the Fifteenmile Creek. Both water rights are for the purposes of supporting aquatic life, including federal and state-listed species. These water rights include the following.

- A water right for varying amounts on Fifteenmile Creek, a tributary of the Columbia River, was issued to the Oregon Water Resources Department on March 27, 1990. Depending on the time of year, the right varies between 4 and 20 cubic feet per second. This right to use the water is to maintain a beneficial instream flow for the purposes of supporting aquatic life.
- A water right is being considered for varying amounts on Fifteenmile Creek, a tributary of the Columbia River. The Oregon Department of Fish and Wildlife applied for this right for the purposes of beneficial instream uses, and it is currently under review. Depending on the time of year, the right would vary between 10 and 26 cubic feet per second.

### Fish Creek

Fish Creek includes three instream water rights for the purposes of supporting aquatic life, including threatened and endangered fish species. All of these water rights were issued to the Oregon Water Resources Department in 1966 and are described in more details below.

- A water right for varying amounts on Fish Creek, a tributary of the Clackamas River, was issued to the Oregon Water Resources Department on May 25, 1966. Depending on the time of year, the right varies between 15 and 60 cubic feet per second. This right to use the water is to maintain a beneficial instream flow for the purposes of supporting aquatic life.
- A water right for 3 cubic feet per second from August 1 to September 30 on Fish Creek, a tributary of the Clackamas River, was issued to the Oregon Water Resources Department on May 25, 1966. This right to use the water is to maintain a beneficial instream flow for the purposes of supporting aquatic life.
- A water right for varying amounts on Wash Creek, a tributary of Fish Creek, was issued to the Oregon Water Resources Department on May 25, 1966. Depending on the time of year, the right varies between 3 and 25 cubic feet per second. This right to use the water is to maintain a beneficial instream flow for the purposes of supporting aquatic life.

# Planning Context

## Wild and Scenic Rivers Act

Enacted in 1968, the Wild and Scenic Rivers Act (16 U.S.C. 1271-1278) preserves selected rivers and their immediate environments in free-flowing conditions in order to protect them for the benefit and enjoyment of present and future generations. The Act requires river-administering agencies and other federal agencies to protect and enhance the values for which the river was designated. The following statutory provisions highlight this “protect and enhance” mandate:

> Section 10(a): Each component of the national wild and scenic rivers system shall be administered in such manner as to protect and enhance the values which caused it to be included in said system without, insofar as is consistent therewith, limiting other uses that do not substantially interfere with public use and enjoyment of these values. In such administration primary emphasis shall be given to protecting its aesthetic, scenic, historic, archeologic, and scientific features. Management

> plans for any such component may establish varying degrees of intensity for its protection and development, based on the special attributes of the area.

The relevant sections of the Wild and Scenic Rivers Act are described throughout this management plan and provide the overarching planning context.

# 2009 Omnibus Public Land Management Act

Omnibus Public Land Management Act of 2009 (the Omnibus Act) was passed by Congress on March 30, 2009. Congress passed this act "to designate certain land as components of the National Wilderness Preservation System, to authorize certain programs and activities in the Department of the Interior and the Department of Agriculture, and for other purposes" (Public Law 111-11). This act added over 124,000 acres of wilderness, designated additional wild and scenic river segments, designated the Mt. Hood National Recreation Area, and designated several special resource management areas on Mt. Hood National Forest. Section 1203 of the Omnibus Act added nine wild, scenic, and recreational river segments (81 miles) to the National Wild and Scenic Rivers System through amendment to the Wild and Scenic Rivers Act. Relevant excerpts from this Omnibus Land Management Act are found in Appendix A: Excerpts from Public Law 111-11 and summarized in table 1.

# Management Plans and Agency Policy

The 2012 Planning Rule applicable to National Forest System lands requires that the land management plan include plan components for the "protection of designated wild and scenic river as well as management of rivers found eligible or determined suitable for the National Wild and Scenic River system to protect the values that provide the basis for their suitability for inclusion in the system" (36 CFR 219.10(b)(1)). BLM has a similar requirement under their land use planning rule 43 CFR 1600.

Both the Forest Service and BLM require that the management plan clearly identify designated segments within the plan area and include plan components, including standards or guidelines, which provide for management in accordance with the Wild and Scenic Rivers Act as well as the law that established that particular river segment. The management direction for each agency can be found in Forest Service Handbook 1909.12 and BLM Manual 6400.

## Mt. Hood Land and Resource Management Plan

The Mt. Hood Land and Resource Management Plan (Forest Plan), as amended, provides management direction for designated wild and scenic river corridors. Forest Management Goal #42 states: "Protect and enhance the river and river related values for designated and candidate (eligible) Wild and Scenic Rivers" (Forest Plan, page Four-5). In order to meet this goal, the Forest Plan provides desired conditions, standards, and guidelines for activities within the designated corridors and within one quarter mile of the ordinary high water mark for eligible river segments (see the Management Direction section for more details).

A programmatic amendment (amendment #23) to the Mt. Hood Land and Resource Management Plan (Forest Plan) modifies plan components including land use allocations (management areas) and standard and guideline B1-076. The land use allocations changes are outlined in table 4. This amendment makes the Forest Plan consistent with the Omnibus Public Land Management Act (123 Stat. 991, P.L. 111-11) of 2009, specifically the wild and scenic river designations on Mt. Hood National Forest. This amendment is

in addition to the administrative change completed in 2016[6]. The land use allocation would remain A1 for both Eagle Creek and South Fork Roaring River; no Forest Plan amendment is needed because the boundaries are not changing. All future projects and activities must be consistent with the amended plan.

**Table 4. Proposed Forest Plan amendment for land use allocations by river**

| Designated Segment | Classification | Land Use Allocation |
|---|---|---|
| Collawash River, Segment 1 | Scenic | B1 |
| Collawash River, Segment 2 | Recreational | B1 |
| East Fork Hood River | Recreational | B1 |
| Fifteenmile Creek, Segment 1 | Wild | A1 |
| Fifteenmile Creek, Segment 2 | Scenic | A1 |
| Fifteenmile Creek, Segment 3 | Wild | A1 |
| Fifteenmile Creek, Segment 4 | Scenic | A1 |
| Fish Creek | Recreational | B1 |
| Middle Fork Hood River | Scenic | B1 |
| South Fork Clackamas River | Wild | A1 |
| Zigzag River | Wild | A1 |

Table 5 shows the amendment to standard and guideline B1-076 within the Fifteenmile Creek corridor to allow existing snowmobile use to continue. Existing snowmobile routes include Forest Service Road 4420 and 2730, and cross country (off road) travel is permitted. This change is being made within the National Recreation Area (outside of designated wilderness) to be consistent with the designating legislation (2009 Omnibus Act). All other standards and guidelines for B1 lands would apply to all river corridors, regardless of classification (see Forest Plan, pages Four-211 to Four-217).

**Table 5. Proposed Forest Plan amendment for standard and guideline B1-076**

| Standard and Guideline | Existing Language | Proposed Amendment for Fifteenmile Creek (Additions are bolded) |
|---|---|---|
| B1-076 | Within wild river corridors, motorized recreational use shall not be allowed. | Within wild river corridors, **over snow vehicle** motorized recreational use **is the only motorized use permitted and must be outside of wilderness areas. All other motorized recreational use** shall not be allowed. **Over-snow vehicle use is only permitted as designated on the over-snow map.** |

All these lands are designated as Congressionally Reserved Areas under the Northwest Forest Plan. Most of the lands within the corridors are also within Riparian Reserves. Riparian Reserves include areas along rivers, streams, wetlands, ponds, lakes, and unstable or potentially unstable areas where the conservation of aquatic and riparian-dependent terrestrial resources receives primary emphasis. Riparian Reserves are designed to protect the health of the aquatic system and its dependent species (NFWP ROD, page 7). As

[6] A description and map of the Omnibus Bill Land Use Allocation Changes administrative change is available at: https://www.fs.usda.gov/main/mthood/landmanagement/planning

such, these lands would be managed under both the Riparian Reserve and Congressionally Reserved Areas standards and guidelines, given the extensive overlap.

The applicable Riparian Reserve widths are described as follows.

- *Fish-bearing streams* - Riparian Reserves consist of the stream and the area on each side of the stream extending from the edges of the active stream channel to the top of the inner gorge, or to the outer edges of the 100-year floodplain, or to the outer edges of riparian vegetation, or to a distance equal to the height of two site-potential trees, or 300 feet slope distance (600 feet total, including both sides of the stream channel), whichever is greatest.
- *Permanently flowing non fish-bearing streams* - Riparian Reserves consist of the stream and the area on each side of the stream extending from the edges of the active stream channel to the top of the inner gorge, or to the outer edges of the 100-year floodplain, or to the outer edges of riparian vegetation, or to a distance equal to the height of one site-potential tree, or 150 feet slope distance (300 feet total, including both sides of the stream channel), whichever is greatest.
- *Seasonally flowing or intermittent streams, wetlands less than 1 acre, and unstable and potentially unstable areas* - This category applies to features with high variability in size and site-specific characteristics. At a minimum, the Riparian Reserves must include:
    - The extent of unstable and potentially unstable areas (including earthflows),
    - The stream channel and extend to the top of the inner gorge,
    - The stream channel or wetland and the area from the edges of the stream channel or wetland to the outer edges of the riparian vegetation, and
    - Extension from the edges of the stream channel to a distance equal to the height of one site-potential tree, or 100 feet slope distance, whichever is greatest.

### Northwestern and Coastal Oregon Resource Management Plan

BLM's Northwestern and Coastal Oregon Resource Management Plan (2016) provides management direction on congressionally reserved lands and national conservation lands, which include wild and scenic rivers (RMP, pages 55 and 56). The management objectives for wild and scenic rivers include to "protect and enhance the free-flowing condition, water quality, and outstandingly remarkable values of eligible, suitable, and designated Wild and Scenic River corridors" (RMP, page 55). Other management direction applicable to the scenic and wild segments can be found in the next section of this management plan. This management direction applies to the BLM administered lands within the South Fork Clackamas River corridor.

## Management Direction

Management direction in this section consists of desired conditions and management standards and guidelines for both the Forest Service and BLM (certain segments), which are drawn from the Forest Plan and Resource Management Plan described in the previous section. They prioritize protecting and enhancing wild and scenic river values during the planning and implementation of resource management activities in the river corridor. The relevant management direction for both the Forest Service and BLM is available in Appendix C: Management Direction. Designation of wild and scenic rivers, however, neither prohibits development nor gives the Federal government control over private property.

Site-specific National Environmental Policy Act environmental analysis will be done for future actions proposed on National Forest System or BLM administered lands within the wild and scenic river corridors. All proposed projects would be checked for consistency with this comprehensive river management plan during the site-specific analysis.

# Desired Conditions

## National Forest System Lands

National Forest System lands are assigned a land use allocation, which is a management emphasis to particular land areas with the purpose of achieving the goals and objectives of that management area. The designed wild and scenic river corridors are within B1-Wild, Scenic & Recreational Rivers and A1-Reserved land use allocations on the Mt. Hood National Forest. Generally, the "A" land use allocations preclude regulated timber harvest while the "B" land use allocations allow timber harvest. When two sets of standards and guidelines are not consistent, the standards and guidelines which are most restrictive to vegetation and access management predominate (Forest Plan, page Four-133).

The A1 allocation is used for rivers classified as wild because this classification precludes regulated timber harvest. All other goals, desired conditions, and standards and guidelines apply to these river segments. Collawash River, East Fork Hood River, Middle Creek Hood River, and Fish Creek are managed using the B1 land use allocation, while Eagle Creek, Fifteenmile Creek, South Fork Clackamas River, South Fork Roaring River, and Zigzag River have been managed using the A1 land use allocation.

The goal of B1 lands are to "protect and enhance the resource values for which a river was designated into the Wild and Scenic Rivers System. The specific goals for Wild, Scenic, and Recreational classified river segments as described in the Forest Plan on page Four-208 are:

- **Wild** – Perpetuate a primitive recreation experience and protect the river corridor to maintain an essentially unmodified environment.
- **Scenic** – Maintain or enhance quality scenery and protect the essentially undeveloped character of the shoreline.
- **Recreational** – Provide opportunities for recreation activities and maintain visual quality of the river corridors.

### Desired Future Conditions

The major characteristics of the desired condition for all classifications are: Congressionally designated areas of National significance; and river corridors divided into wild, scenic, and recreational segments with each providing different opportunities. Also, examples of the following features are often located in the river corridors: deep, incised canyons and gorges, old growth forests, glacier-fed headwaters, outstanding views of majestic mountains and river canyons, and alpine and sub-alpine meadows (Forest Plan, page Four-209).

#### *Wild Segments*

The desired conditions include: the corridor is essentially free of recreation facilities and signs; access if generally by trail or water; the corridor is essentially an unmodified environment; motorized boats are not present; minimal evidence of recreational users; and, very low interaction between recreational users (Forest Plan, page Four-209).

### *Scenic Segments*

The desired conditions include: shorelines are typically undeveloped; characterized by a natural-appearing environment with high-quality scenery; accessed by roads and trails and seen from major travel routes paralleling the river; motorized boats are not present; low interactions between recreational users, but with evidence other recreational users are present; and, minimal on-site controls of recreational use patterns (Forest Plan, page Four-209 to Four-210).

### *Recreational Segments*

The desired conditions include: visible public roads parallel the river; developments such as campgrounds are c1oseby; access is by roads and trails; opportunities exist for a wide variety of river related recreation activities; characterized by a predominately natural appearing environment; dispersed motorized recreation activities such as car camping, motorcycle use, boating, and snowmobiling occur; and motorized boats may be present (Forest Plan, page Four-210).

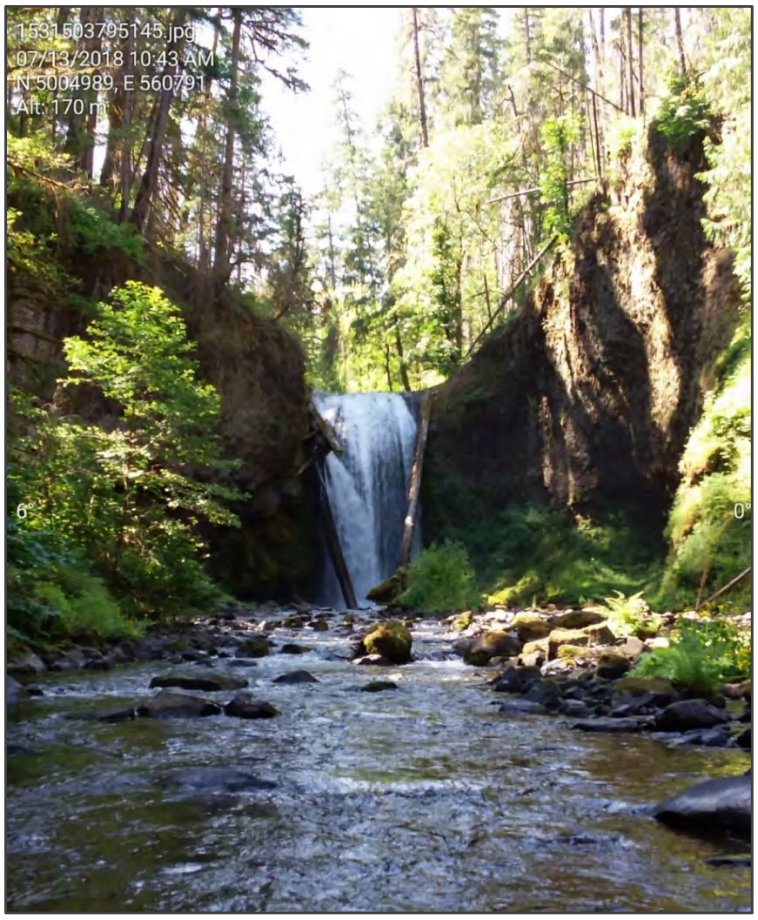


**Figure 39. Lower Falls on South Fork Clackamas River**

## BLM Administered Lands

The BLM administered lands along the South Fork Clackamas River are managed using the goals and management direction found within the Northwestern and Coastal Oregon Resource Management Plan. These are Congressionally Reserved Lands and National Conservation Lands and the management direction is found on pages 55 to 56 of the Resource Management Plan. The management objectives for these land use allocations are as follows.

- Conserve, protect, and restore the identified outstanding cultural, ecological, and scientific values of national conservation lands and other congressionally designated lands.
- Protect and enhance the free-flowing condition, water quality, and outstandingly remarkable values of eligible, suitable, and designated wild and scenic river corridors.[7]
- Provide protection to wild and scenic river corridors that are suitable for inclusion as components of the National Wild and Scenic Rivers System until Congress decides on designation.
- Provide protection to wild and scenic river corridors that are eligible but have not yet been studied for suitability as components of the National Wild and Scenic Rivers System pending suitability evaluations.

## Management Standards and Guidelines

The management standards in Appendix C: Management Direction prioritize protecting and enhancing wild and scenic river values during the planning and implementation of resource management activities in the river corridors. These standards and guidelines are from the Forest Plan, Northwest Forest Plan, and Resource Management Plan. They are intended to preserve the designated rivers' free-flowing condition and protect and enhance river values, including water quality and outstandingly remarkable values.

# Implementation and Monitoring

## Monitoring Plan

The Mt. Hood Forest Plan monitoring program was updated in May 2016 to be consistent with the 2012 Planning Rule (36 CFR 219). The questions in table 6 would be added to the monitoring program to address wild and scenic rivers (B1 land use allocation). Then, the monitoring questions in Appendix F: Monitoring Plan would be used to help answer these Forest Plan monitoring questions as indicators.

**Table 6. Additional questions for Mt. Hood Forest Plan Monitoring Program**

| Forest Plan Component | Monitoring Questions | Indicators |
|---|---|---|
| **(ii) The status of select ecological conditions including key characteristics of terrestrial and aquatic ecosystems** | | |
| Standards and Guidelines: B1-001, B1-004 and B1-005 | ii.e. Are the classifications, outstandingly remarkable values, free-flowing conditions, and water quality of designated wild and scenic river corridors being maintained or enhanced? | Comprehensive River Management Plan monitoring results and data. |
| **(v) The status of visitor use, visitor satisfaction, and progress toward meeting recreation objectives** | | |
| Desired condition: River corridors divided into wild, scenic, and recreational segments with each providing different opportunities. | v.e. Is the existing use within the user capacities identified for designated wild and scenic rivers? | Monitoring data and trends based on the user capacity indicators, triggers, and thresholds. |

[7] Wild and scenic river corridors include all river classifications – wild, scenic, and recreational.

The Northwest & Coastal Oregon BLM Resource Management Plan (August 2016) includes the following monitoring question:

> M36. Monitoring Question: Are the outstandingly remarkable values of designated Wild and Scenic river corridors (including those classified as Wild, Scenic, or Recreational) being maintained? (page 128)

No additional monitoring questions would be added to the Resource Management Plan. The monitoring questions listed in Appendix F: Monitoring Plan related to BLM lands within the South Fork Clackamas River wild and scenic river would be used to answer this overarching monitoring question.

If the triggers and thresholds are met, the management actions in the monitoring plan would be implemented to protect and enhance the river values. The management actions may require additional environmental analysis and would be subject to all relevant law, regulation, and policy for the relevant agency, including the National Environmental Policy Act. If long-term solutions are needed, then additional site-specific analysis maybe required to fully implement the change.

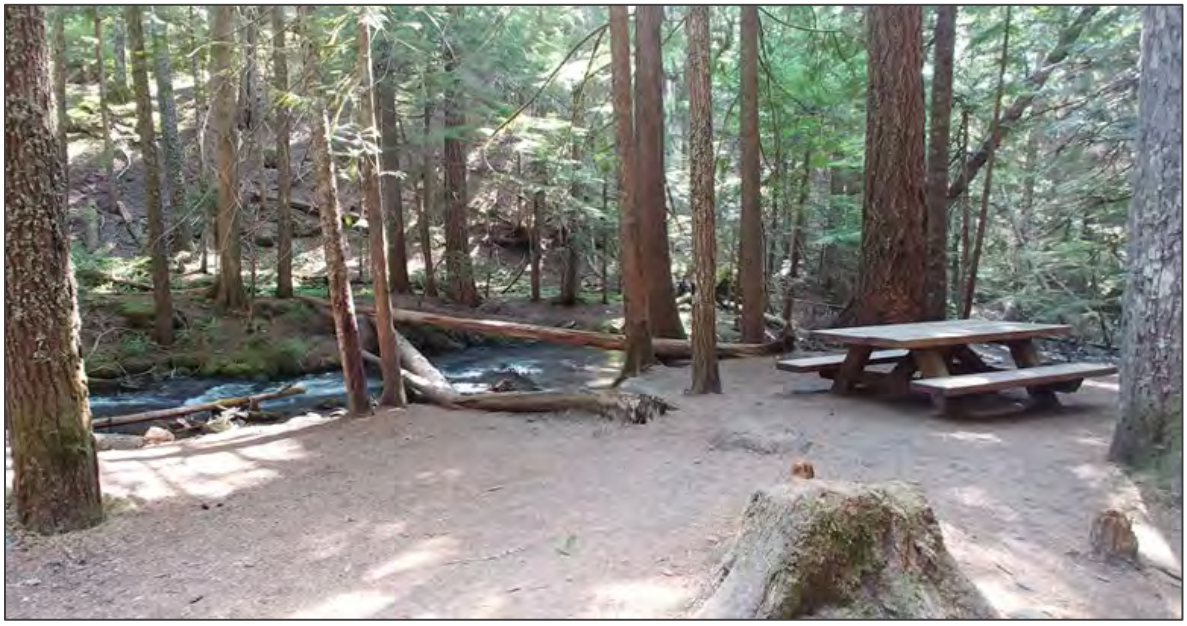

**Figure 40. Fifteenmile Creek campground**

## User Capacity

The Wild and Scenic Rivers Act directs that river-administering agencies address visitor use capacities to protect the free-flowing conditions, water quality, and outstandingly remarkable values of designated rivers (Section 3(d)(1)). The user capacity for the river is the kinds and amounts of uses the river can sustain to provide for use and enjoyment, while protecting and enhancing river values. The National Wild and Scenic Rivers System: Final Revised Guidelines for Eligibility, Classification and Management of River Areas (1982) define carrying capacity as:

> The quantity of recreation use which an area can sustain without adverse impact on the outstandingly remarkable values and free-flowing character of the river area, the quality of recreation experience, and public health and safety. To further meet the requirement of the act, the guidelines note that: Management plans will state the kinds and amounts of public use that the river can sustain without impact to the values for which it was designated.

User capacity can be described as a subset of the larger visitor use management framework. User capacity is an estimate and not always a definitive number. This is particularly true in situations where the amount of use is low and does not threaten desired conditions or river values. In these situations, capacity estimates yield visitor use numbers that are far higher than current amounts of use, thus decisions about capacity do not result in near-term management actions to regulate use levels. For a few of the nine rivers on the Forest, this is the case. More details on user capacity are available in Appendix G: User Capacity Estimates for Nine Wild and Scenic Rivers.

For most of the nine river segments, user capacity numbers are higher than current use. If monitoring trends indicate that river values could be threatened, then the results could trigger additional data collection and development of new user capacity number. There are a few exceptions on these nine rivers where use levels reported were at a moderate level and consequently the amount of analysis devoted to determining user capacity on those rivers was greater; however, capacity numbers for those segments are still higher than the current use.

Based on field work and data collection in the summer of 2018, existing data (including wilderness carrying capacity), and interdisciplinary knowledge and review, the user capacities in table 7 were developed for these rivers according to the requirements of the Wild and Scenic Rivers Act. The amount of investment devoted to determining user capacity varied by river, levels of use, and complexity and was commensurate with the consequence of the potential decisions to be made about managing visitor use.

**Table 7. Summary of estimated capacity (people per day) by river**

| River | Segment | Wilderness / Other Use | Overnight Use | Day Use | Total User Capacity |
|---|---|---|---|---|---|
| Collawash River | Segment 1 | n/a | 50 | 120 | **170** |
| Collawash River | Segment 2 | n/a | 305 | 330 | **635** |
| Eagle Creek | n/a | *Wilderness: 120 | n/a | n/a | **120** |
| East Fork Hood River | n/a | Climbing: 20 | Developed: 234<br>Dispersed: 180 | 1,394 | **1,828** |
| Fifteenmile Creek | 4 segments, capacity for all segments^ | ^^n/a | 82 | 120 | **202** |
| Fish Creek | n/a | n/a | 48 | 50 | **98** |
| Middle Fork Hood River | n/a | n/a | 3<br>(10 hunting season) | 50 | **53** |
| South Fork Clackamas River | n/a | ^^n/a | 6 | 24 | **30** |
| South Fork Roaring River | n/a | *Wilderness: 120 | n/a | n/a | **120** |
| Zigzag River | n/a | Wilderness: 177 | n/a | n/a | **177** |
| **Grand Total** | **--** | **--** | **--** | **--** | **3,463** |

*Includes both People and Recreational Livestock per day

^Due to the particular use types and activities occurring on Fifteenmile Creek, capacity numbers were not identified by segment. Collawash River had a different pattern of use and resource concerns; therefore, Collawash capacity numbers were identified by segment.

^^While both Fifteenmile and South Fork Clackamas contain designated Wilderness, encounter rates were not used to calculate capacity due to how the rivers weave in and out of Wilderness.

To monitor each river value, one or more key indicators are selected that will allow managers to keep attuned to changes in the ecosystem or social setting. For each key indicator, a threshold is set. This value determines the amount of change desired or that will be accepted before river management objectives are no longer being met. In this manner, indicators and thresholds provide managers with information to determine if the resource values, and opportunities they are managing, are actually being provided. The standards serve as triggers that cause predetermined management actions to be implemented when the limit is being approached. For each indicator and standard, a management action is identified and would be triggered if a particular threshold is reached. These can be found in Appendix G: User Capacity Estimates for Nine Wild and Scenic Rivers and User Capacity Report for Mt. Hood National Forest Wild and Scenic River Analysis (2020). Appendix G provides more details on how these numbers were determined, along with the user capacity numbers, indicators, thresholds, and measures.

## Future Management Actions

In order to help the Forest and BLM meet the Wild and Scenic Rivers Act requirements, several management actions (see table 8) will be implemented to address known impacts to river values, as well as potential management actions (see table 9). The management actions to address current issues (see table 8) are fully analyzed in the accompanying environmental assessment for this plan. In addition, potential management actions are described in the comprehensive river management plan. These management actions may be considered when the existing or future use starts to negatively impact the river values. These potential management actions will require additional development of a proposed action and site-specific environmental review.

**Table 8. Proposed management actions**

| River | River Value Enhanced or Protected | Proposed Management Action |
|---|---|---|
| Collawash River | Water quality | Install toilet(s) along the river to address fecal contamination at specific sites (where there is evidence of dispersed camping or other concentrated recreation use) in areas without sanitary facilities. |
| South Fork Clackamas River | Historic Outstandingly Remarkable Value | Develop and install interpretative signs to educate recreationalists on potential conflict between Townsend's big-eared bat health and use of the historic tunnels. |

**Table 9. Potential future management actions**

| River | River Value Enhanced or Protected | Potential Management Action |
|---|---|---|
| Collawash River | Water quality, free flow, and fisheries Outstandingly Remarkable Value | Bridge on Forest Service Road 6380-125 (segment 2) does not provide access to any facilities, trails, or open roads. Impacts of the bridge need to be evaluated. If undesirable impacts are occurring, determine if removing the bridge is feasible. |
| Eagle Creek | Recreation Outstandingly Remarkable Value | Evaluate parking and trailhead improvements to allow additional parking and safe turn arounds for horse trailers. The trailhead is located on BLM lands. |

| River | River Value Enhanced or Protected | Potential Management Action |
|---|---|---|
| East Fork Hood River | Botany Outstandingly Remarkable Value | Develop a climbing management plan that addresses strategies for human waste management, resource protection and erosion control. Address the unauthorized (social) trail through site-specific environmental analysis; ensure the trail relocation does not impact the violet suksdorfia. |
| Fish Creek | Water quality, free flow, and fisheries Outstandingly Remarkable Value | Two bridges on Fish Creek remain and do not provide access to any facilities, trails, or open roads. Impacts of the bridge need to be evaluated. If undesirable impacts are occurring, determine if removing the bridge is feasible. |
| Middle Fork Hood River | Geology Outstandingly Remarkable Value | Evaluate opportunities for interpretive site and access to the lava flow for people who frequently visit Laurence Lake. |
| South Fork Clackamas River | Historic Outstandingly Remarkable Value | Develop management plan for the tunnels in the water works project area. The most upstream tunnel is identified as a hibernacula for Townsend's big-eared bat. This project on is BLM lands. |
| South Fork Clackamas River | Scenic Outstandingly Remarkable Value | Develop South Fork Clackamas Waterfalls Extensive Recreation Management Area implementation level Recreation Area Management Plan and develop implementation level Travel Management Plan (including completing route designations for motorized access and non-motorized use) during district-wide travel management plan. This was included in the 2016 BLM Resource Management Plan. |

## Climate Change Considerations

Changes in future climate, such as changes in precipitation, temperature, and weather, need to be considered for management actions that apply to ecological systems and recreation uses within the designated wild and scenic rivers. Climate change is one of the major challenges to the Forest Service and BLM mission to sustain the health, diversity, and productivity of the Nation's forests and grasslands for present and future generations. The future vitality of the public's lands is at risk from climate change, which drives fire, insects, diseases, invasive species, drought, and other forces. The agency must manage forests and grasslands to adapt – that is, to accommodate the changes and new conditions imposed by climate shifts. But adaptation cannot be the single focus of our response to climate change; we must develop a balanced approach that also includes mitigating climate change, building partnerships across boundaries, and preparing employees to respond to climate-related issues by understanding and applying emerging science.

The designated wild and scenic rivers under this comprehensive river management plan will be managed to focus on properly functioning floodplains and riparian areas that filter and store water and sediments. The climate change vulnerability assessment of National Forests and Grasslands in the Pacific Northwest does not indicate changes in peak or low flows are likely to impact water quality. By maintaining channel integrity and retaining cool water, this management will have predictable, consistent value under any climate change scenario. Allowing fire to play its natural ecological role within any scenario will also be important, as is the retention of critical migration corridors, typically in or along waterways. If there is active fire suppression within the designated wild and scenic river corridors, the outstandingly remarkable values will be identified as value(s) at risk and protected, if possible, while maintaining fire fighter and human safety.

# Tribal and Agency Coordination

The following section summarizes authorities and responsibilities of the various governments and agencies with rights, responsibilities and/or authorities within the wild and scenic river corridors.

## Tribal Governments

The **Confederated Tribes of Warm Springs** have ceded lands within the designated wild and scenic river corridors. Ceded lands are those lands where the tribes ceded, relinquished, and conveyed to the United States all their right, title, and interest in the lands and country occupied by them at treaty signing or when reservations were established. Reserved rights to natural resources and lands extend far beyond the boundaries of the reservations. Provisions of the treaty ensured tribes could continue to fish at all usual and accustomed places, and to hunt and gather on all open and unclaimed lands. Federal lands such as the Mt. Hood National Forest and the Northwest Oregon BLM District are 'open and unclaimed' lands on which the tribes reserved treaty rights to hunt and gather.

Treaty rights encompass more than an ability to gather, hunt, or fish. The role of tribes in stewardship on the national forest is crucial to restoring, sustaining, and protecting the integrity of lands and resources, vital to the indigenous peoples' lifeways. In partnership with the Forest Service and BLM, tribes contribute traditional knowledge, technical expertise, and funding to restore and manage indigenous biomes for the long-term ecological health and resilience of these public lands.

The Mt. Hood National Forest and Bureau of Land Management have historically consulted with three federally recognized Tribes regarding proposed actions within the boundaries of the nine wild and scenic river corridors. These federally recognized Tribes are: Confederated Tribes of the Grand Ronde, Confederated Tribes of Siletz Indians, and the Confederated Tribes of the Warm Springs Reservation of Oregon.

Fifteenmile Creek, East Fork Hood River and the Middle Fork Hood River all fall within the lands ceded to the United States by the Confederated Tribes of Warm Springs under the 1855 Treaty with the Tribes of Middle Oregon. Under Article I of the Treaty, the Tribes reserved their right to hunt, fish, gather roots and berries, erect suitable houses for curing the same, and pasture stock on these usual and accustomed lands and unclaimed lands held in common with other citizens. These river segments are also part of the usual and accustomed lands of the Confederated Tribes of the Grand Ronde Community of Oregon. A number of ethnographic studies documents continued Tribal use of these areas, however, in a 2017 meeting between Tribal representatives and the Forest Service, the Forest Service was asked to not highlight documented traditional use areas or archaeological sites associated with pre European contact lifeways as outstandingly remarkable values.

Eagle Creek, South Fork Roaring River, Fish Creek, Collawash River, and South Fork Clackamas River are located ancestral lands of the Confederated Tribes of the Grand Ronde Community, Confederated Tribes of Siletz Indians, and Confederated Tribes of the Warm Springs Reservation of Oregon. Like the eastern rivers, a number of ethnographic studies document continued Tribal use of these areas, however, the Forest Service was asked to not highlight traditional use areas or archaeological sites associated with precontact lifeways as outstandingly remarkable values.

# Federal Agencies

## River Administering Agencies

The Mt. Hood National Forest manages all the National Forest System lands within these nine wild and scenic river corridors. The **Forest Service** is the agency charged with administering the Collawash River, Eagle Creek, East Fork Hood River, Fifteenmile Creek, Fish Creek, Middle Fork Hood River, South Fork Clackamas River, South Fork Roaring River, and Zigzag River Wild and Scenic Rivers. As such, the Forest Service provides the determination of effects to free flow, water quality, and outstandingly remarkable values for any water resources projects as described in Section 7 of the Wild and Scenic Rivers Act where the designated segments cross National Forest System lands.

The Northwest Oregon District manages all the **Bureau of Land Management** lands within the South Fork Clackamas River wild and scenic river corridor. Although not listed as a river administering agency in the 2009 Omnibus Public Land Management Act, BLM will function as the river administering agency on their lands. As such, BLM provides the determination of effects to free flow, water quality, and outstandingly remarkable values for any water resources projects as described in Section 7 of the Wild and Scenic Rivers Act where the designated segments cross BLM lands. BLM manages the locatable mineral claims on all federal lands within the nine wild and scenic river corridors.

## Other Federal Agencies

The **Environmental Protection Agency** develops and enforces regulations that implement environmental laws enacted by Congress, including those associated with the Federal Water Pollution Control Act, commonly called the Clean Water Act. The Environmental Protection Agency has the authority to implement pollution control programs. The Clean Water Act governs the discharge of dredged or fill material into “waters of the United States.” Environmental Protection Agency has the lead for establishing the environmental guidelines and criteria that must be met to receive a permit under Clean Water Act.

The **U.S. Army Corps of Engineers** regulates, through permits, the discharge of dredged or fill material into rivers and wetlands of the United States. The Corps also regulates structures and work in navigable waters. U.S. Army Corps permit applications for activities in wild and scenic rivers that are subject to the provisions of Section 7 of the Wild and Scenic Rivers Act.

As previously discussed in the Existing Water Rights section, the Middle Fork Irrigation District is considered a water resource project outside a wild and scenic river corridor. The Clear Branch Dam and other irrigation district structures are located within the Middle Fork Hood River’s bed or banks upstream and have the potential to affect free-flow and/or scenery, geology or fisheries outstandingly remarkable values present within the designated wild and scenic river segment. The **Natural Resource Conservation Service** is responsible for managing the Clear Branch Dam and is responsible for any necessary Section 7 reviews associated with the dam.

The Forest Service shares management responsibilities with the **National Marine Fisheries Service** and **U.S. Fish and Wildlife Service** for protecting Endangered Species Act-listed species and their associated habitat. Fisheries is an outstandingly remarkable value in the Fish Creek, Fifteenmile Creek and Collawash River corridors because of the presence and quality of habitat for listed salmonid species. Fisheries is also an outstandingly remarkable value in the Middle Fork Hood River due to a core population of bull trout. Wildlife is an outstandingly remarkable value in East Fork Hood River and

Fifteenmile Creek in part because of the presence and associated habitat of threatened and endangered wildlife species.

The Forest Service shares management responsibilities with the **Federal Highway Administration** to manage Oregon State Highways 35 and 224 as national scenic byways. National scenic highways recognize roads that have outstanding scenic, historic, cultural, natural, recreational, and archaeological qualities. These values were considered when identifying the outstandingly remarkable values for the East Hood River and South Fork Clackamas Rivers. See the Road Easements and Right-of-Ways section for more details.

Lastly, the **U.S. Geological Survey** maintains water flow gages on the Zigzag River and Fish Creek, and shares information gathered with the Forest Service. The gage on Fish Creek was installed to monitoring water quality, streamflow and channel configuration following the Riverside Fire. This gage will operate for a minimum of 5 years.

## State Agencies

South Fork Clackamas River from river mile 4 to the main stem of the Clackamas River was designated as part of the Clackamas River State Scenic Waterway through Oregon Administrative Rule 736-040-0044 in 1985 (see the South Fork Clackamas River, Oregon Scenic Waterway Designation section for more details). The **Oregon Parks and Recreation Department** administers the scenic waterways program. The goals of this program are similar to the Wild and Scenic Rivers Act, and collectively they work together to protect Oregon's special rivers.

**Oregon Water Resources Department** service the public by practicing and promoting responsible water management as part of their responsibilities. The Water Resources Department is the state agency charged with administration of the laws governing the allocation of surface water and groundwater resources. The existing water rights in these nine wild and scenic rivers are controlled by the Water Resources Department (see the Existing Water Rights section for more information).

**Oregon Department of Fish and Wildlife** has beneficial instream water rights. Collawash River, East Fork Hood River, Fifteenmile Creek, and Fish Creek include beneficial instream uses. Beneficial instream uses aid in the restoration and protection of stream flows to support ecosystem function and aquatic life. See the Beneficial Instream Use section for more details. Oregon Department of Fish and Wildlife also helps to maintain high-quality fisheries and wildlife habitat on the forest. Fisheries is an outstandingly remarkable value in the Fish Creek, Fifteenmile Creek, Collawash River, and Middle Fork Hood River corridors; and, wildlife is an outstandingly remarkable value in the East Fork Hood River and Fifteenmile Creek corridors. Lastly, Oregon Department of Fish and Wildlife maintains water flow gages on the East Fork Hood River, Fifteenmile Creek, and Middle Fork Hood River and shares information gathered with managing agencies.

**Oregon Department of Environmental Quality** oversees the federal Clean Water Act for the state and is responsible for water quality standards, assessment, and regulation. As such, the Department of Environmental Quality is responsible for identifying 303(d) streams (water quality limited) and developing total maximum daily loads for these streams. Eagle Creek, East Fork Hood River, Fifteenmile Creek, Fish Creek, and Middle Fork Hood River are 303(d) listed streams. The water quality section for each wild and scenic river segment describes why the stream is listed. In order to continue to protect and improve water quality, there is a memorandum of understanding between the State of Oregon Department of Environmental Quality and the Forest Service Pacific Northwest Region (Forest Service 2015).

**Oregon Department of Transportation (ODOT)** is responsible for managing the state highways and ensuring safe transportation along these routes. ODOT and Forest Service have shared responsibility for these roads when they are located on National Forest System lands. The management of these state highways on National Forest System lands is governed by the "State Highways Over National Forest Lands" memorandum of understanding (2018) between the Forest Service and ODOT. The purpose of the memorandum of understanding is "to document the cooperation between the parties to coordinate transportation activities of mutual interest involving state highways on, or accessing, lands managed by the U.S. Forest Service." The scope of this is limited to "construction activities, maintenance and operation of state highways within the road easement or right-of-way." This memorandum of understanding is reviewed and updated as needed annually. Highway 35 is located within the East Fork Hood River corridor, and Highway 224 is within the South Fork Clackamas River corridor. See the Road Easements and Right-of-Ways section for more details.

The **State Historic Preservation Office (SHPO)** is a state office with a federal mandate. Under Section 106 of the National Historic Preservation Act of 1966, as amended, and its implementing regulations at 36 CFR 800, federal agencies are required to consult with State Historic Preservation Office regarding the eligibility of historic and cultural properties for nomination to the National Register of Historic Places, and on determinations of effects from federal undertakings and management decisions.

## Local Agencies

The authority to regulate and control land use and development activities on private lands within the Fifteenmile Creek designated wild and scenic river corridors rests with local agencies, primarily **Wasco County**. Similarly, these responsibilities rest with the planning department for the **City of Dufur** lands. The Forest Service does not have the authority to zone or regulate uses on these private lands outside the bed and banks of designated rivers. Coordination between planning departments and the Forest is essential whenever applications for projects within bed-and-banks of designated rivers are submitted.

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# Appendix A: Excerpts from Public Law 111-11

**SECTION 1203. DESIGNATION OF STREAMS FOR WILD AND SCENIC RIVER PROTECTION IN THE MOUNT HOOD AREA.**

(a) WILD AND SCENIC RIVER DESIGNATIONS, MOUNT HOOD NATIONAL FOREST.—

(1) IN GENERAL.—Section 3(a) of the Wild and Scenic Rivers Act (16 U.S.C. 1274(a)) is amended by adding at the end the following:

(171) SOUTH FORK CLACKAMAS RIVER, OREGON.—The 4.2-mile segment of the South Fork Clackamas River from its confluence with the East Fork of the South Fork Clackamas to its confluence with the Clackamas River, to be administered by the Secretary of Agriculture as a wild river.

(172) EAGLE CREEK, OREGON.—The 8.3-mile segment of Eagle Creek from its headwaters to the Mount Hood National Forest boundary, to be administered by the Secretary of Agri- culture as a wild river.

(173) MIDDLE FORK HOOD RIVER.—The 3.7-mile segment of the Middle Fork Hood River from the confluence of Clear and Coe Branches to the north section line of section 11, town- ship 1 south, range 9 east, to be administered by the Secretary of Agriculture as a scenic river.

(174) SOUTH FORK ROARING RIVER, OREGON.—The 4.6-mile segment of the South Fork Roaring River from its headwaters to its confluence with Roaring River, to be administered by the Secretary of Agriculture as a wild river.

(175) ZIG ZAG RIVER, OREGON.—The 4.3-mile segment of the Zig Zag River from its headwaters to the Mount Hood Wilderness boundary, to be administered by the Secretary of Agriculture as a wild river.

(176) FIFTEENMILE CREEK, OREGON.—

(A) IN GENERAL.—The 11.1-mile segment of Fifteenmile Creek from its source at Senecal Spring to the southern edge of the northwest quarter of the northwest quarter of section 20, township 2 south, range 12 east, to be administered by the Secretary of Agriculture in the following classes:

(i) The 2.6-mile segment from its source at Senecal Spring to the Badger Creek Wilderness boundary, as a wild river.

(ii) The 0.4-mile segment from the Badger Creek Wilderness boundary to the point 0.4 miles down- stream, as a scenic river.

(iii) The 7.9-mile segment from the point 0.4 miles downstream of the Badger Creek Wilderness boundary to the western edge of section 20, township 2 south, range 12 east as a wild river.

(iv) The 0.2-mile segment from the western edge of section 20, township 2 south, range 12 east, to the southern edge of the northwest quarter of the northwest quarter of section 20, township 2 south, range 12 east as a scenic river.

(B) INCLUSIONS.—Notwithstanding section 3(b), the lateral boundaries of both the wild river area and the scenic river area along Fifteenmile Creek shall include an average of not more than 640 acres per mile measured from the ordinary high water mark on both sides of the river.

(177) EAST FORK HOOD RIVER, OREGON.—The 13.5-mile segment of the East Fork Hood River from Oregon State High- way 35 to the Mount Hood National Forest boundary, to be administered by the Secretary of Agriculture as a recreational river.

(178) COLLAWASH RIVER, OREGON.—The 17.8-mile segment of the Collawash River from the headwaters of the East Fork Collawash to the confluence of the mainstream of the Collawash River with the Clackamas River, to be administered by the Secretary of Agriculture in the following classes:

(A) The 11.0-mile segment from the headwaters of the East Fork Collawash River to Buckeye Creek, as a scenic river.

(B) The 6.8-mile segment from Buckeye Creek to the Clackamas River, as a recreational river.

(179) FISH CREEK, OREGON.—The 13.5-mile segment of Fish Creek from its headwaters to the confluence with the Clackamas River, to be administered by the Secretary of Agriculture as a recreational river.''.

(2) EFFECT.—The amendments made by paragraph (1) do not affect valid existing water rights.

**SEC. 1204. MOUNT HOOD NATIONAL RECREATION AREA.**

(a) DESIGNATION.—To provide for the protection, preservation, and enhancement of recreational, ecological, scenic, cultural, watershed, and fish and wildlife values, there is established the Mount Hood National Recreation Area within the Mount Hood National Forest.

(b) BOUNDARY.—The Mount Hood National Recreation Area shall consist of certain Federal land managed by the Forest Service and Bureau of Land Management, comprising approximately 34,550 acres, as generally depicted on the maps entitled ''National Recreation Areas—Mount Hood NRA'', ''National Recreation Areas—Fifteenmile Creek NRA'', and ''National Recreation Areas—Shellrock Mountain'', dated February 2007.

(c) MAP AND LEGAL DESCRIPTION.—

(1) SUBMISSION OF LEGAL DESCRIPTION.—As soon as practicable after the date of enactment of this Act, the Secretary shall file a map and a legal description of the Mount Hood National Recreation Area with—

(A) the Committee on Energy and Natural Resources of the Senate; and

(B) the Committee on Natural Resources of the House of Representatives.

(2) FORCE OF LAW.—The map and legal description filed under paragraph (1) shall have the same force and effect as if included in this subtitle, except that the Secretary may correct typographical errors in the map and the legal description.

(3) PUBLIC AVAILABILITY.—The map and legal description filed under paragraph (1) shall be on file and available for public inspection in the appropriate offices of the Forest Service.

(d) ADMINISTRATION.—

(1) IN GENERAL.—The Secretary shall—

(A) administer the Mount Hood National Recreation Area—

(i) in accordance with the laws (including regulations) and rules applicable to the National Forest System; and

(ii) consistent with the purposes described in subsection (a); and

(B) only allow uses of the Mount Hood National Recreation Area that are consistent with the purposes described in subsection (a).

(2) APPLICABLE LAW.—Any portion of a wilderness area designated by section 1202 that is located within the Mount Hood National Recreation Area shall be administered in accordance with the Wilderness Act (16 U.S.C. 1131 et seq.).

(e) TIMBER.—The cutting, sale, or removal of timber within the Mount Hood National Recreation Area may be permitted—

(1) to the extent necessary to improve the health of the forest in a manner that—

(A) maximizes the retention of large trees—

(i) as appropriate to the forest type; and

(ii) to the extent that the trees promote stands that are fire-resilient and healthy;

(B) improves the habitats of threatened, endangered, or sensitive species; or

(C) maintains or restores the composition and structure of the ecosystem by reducing the risk of uncharacteristic wildfire;

(2) to accomplish an approved management activity in furtherance of the purposes established by this section, if the cutting, sale, or removal of timber is incidental to the management activity; or

(3) for de minimus personal or administrative use within the Mount Hood National Recreation Area, where such use will not impair the purposes established by this section.

(f) ROAD CONSTRUCTION.—No new or temporary roads shall be constructed or reconstructed within the Mount Hood National Recreation Area except as necessary—

(1) to protect the health and safety of individuals in cases of an imminent threat of flood, fire, or any other catastrophic event that, without intervention, would cause the loss of life or property;

(2) to conduct environmental cleanup required by the United States;

(3) to allow for the exercise of reserved or outstanding rights provided for by a statute or treaty;

(4) to prevent irreparable resource damage by an existing road; or

(5) to rectify a hazardous road condition.

(g) WITHDRAWAL.—Subject to valid existing rights, all Federal land within the Mount Hood National Recreation Area is withdrawn from—

(1) all forms of entry, appropriation, or disposal under the public land laws;

(2) location, entry, and patent under the mining laws; and

(3) disposition under all laws relating to mineral and geothermal leasing.

(h) TRANSFER OF ADMINISTRATIVE JURISDICTION.—

(1) IN GENERAL.—Administrative jurisdiction over the Federal land described in paragraph (2) is transferred from the Bureau of Land Management to the Forest Service.

(2) DESCRIPTION OF LAND.—The land referred to in paragraph (1) is the approximately 130 acres of land administered by the Bureau of Land Management that is within or adjacent to the Mount Hood National Recreation Area and that is identified as ‘‘BLM Lands’’ on the map entitled ‘‘National Recreation Areas—Shellrock Mountain’’, dated February 2007.

# Appendix B: Maps of Final Wild and Scenic River Boundary

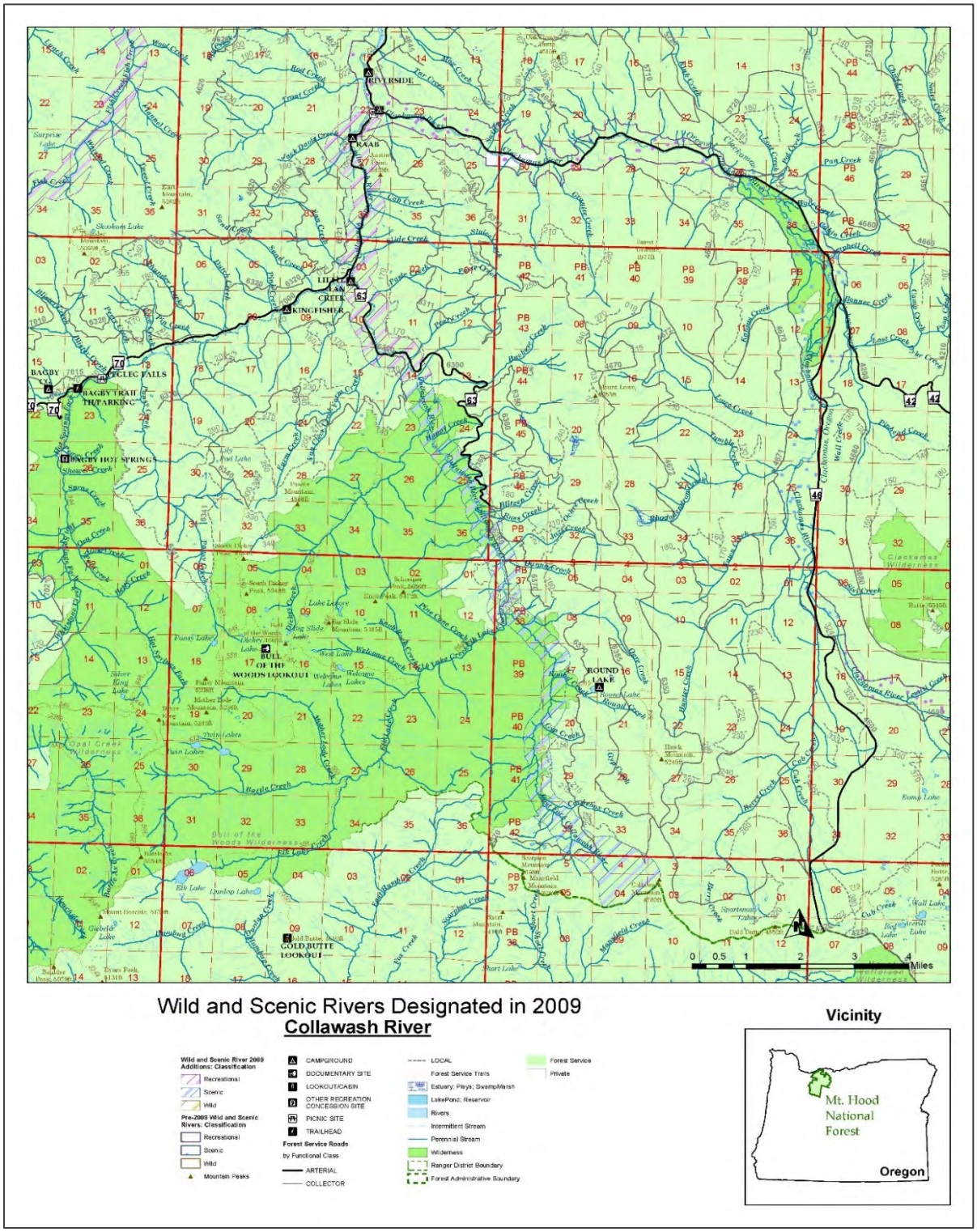


**Figure 41. Collawash River final Wild and Scenic River boundary**

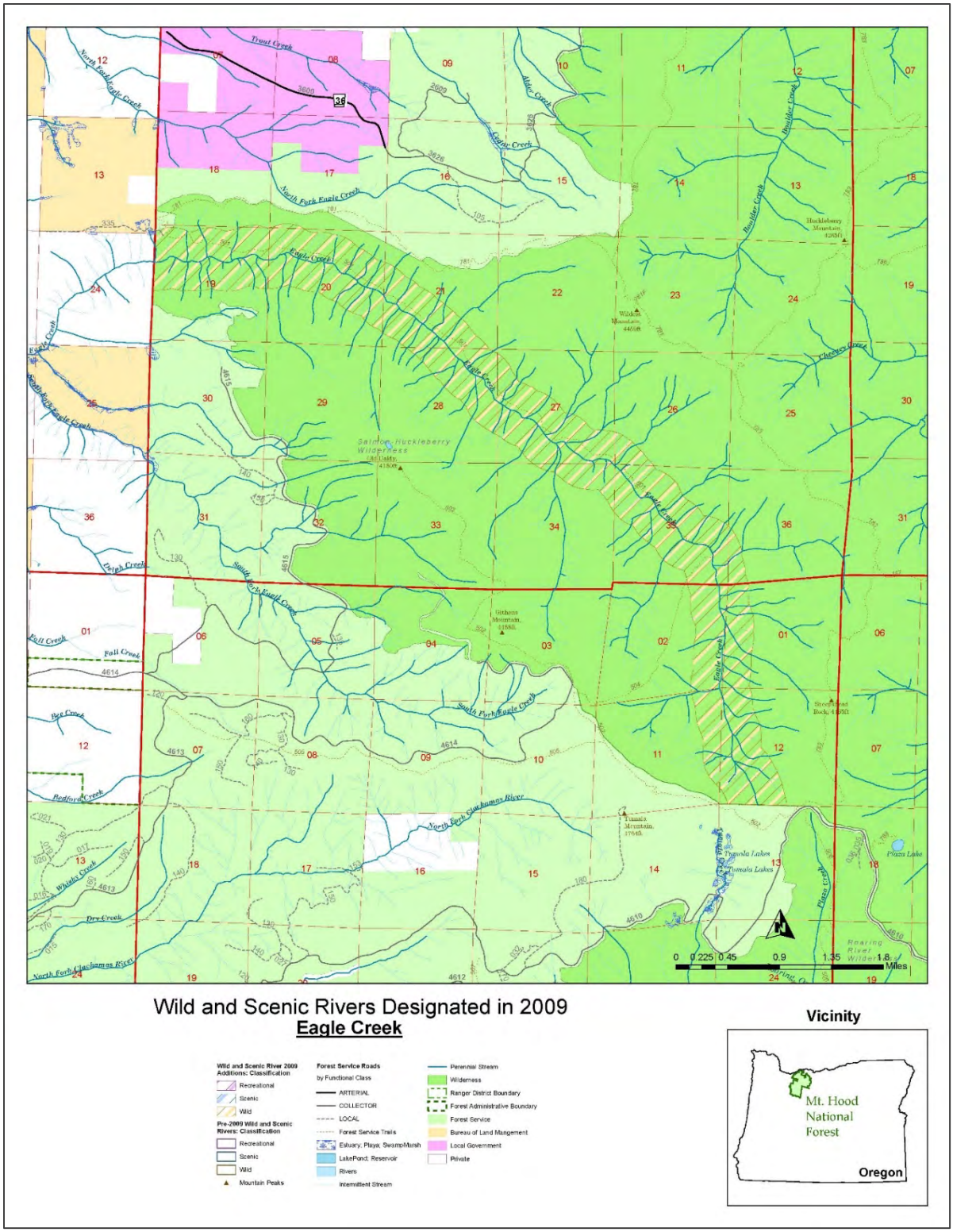


**Figure 42. Eagle Creek final Wild and Scenic River boundary**

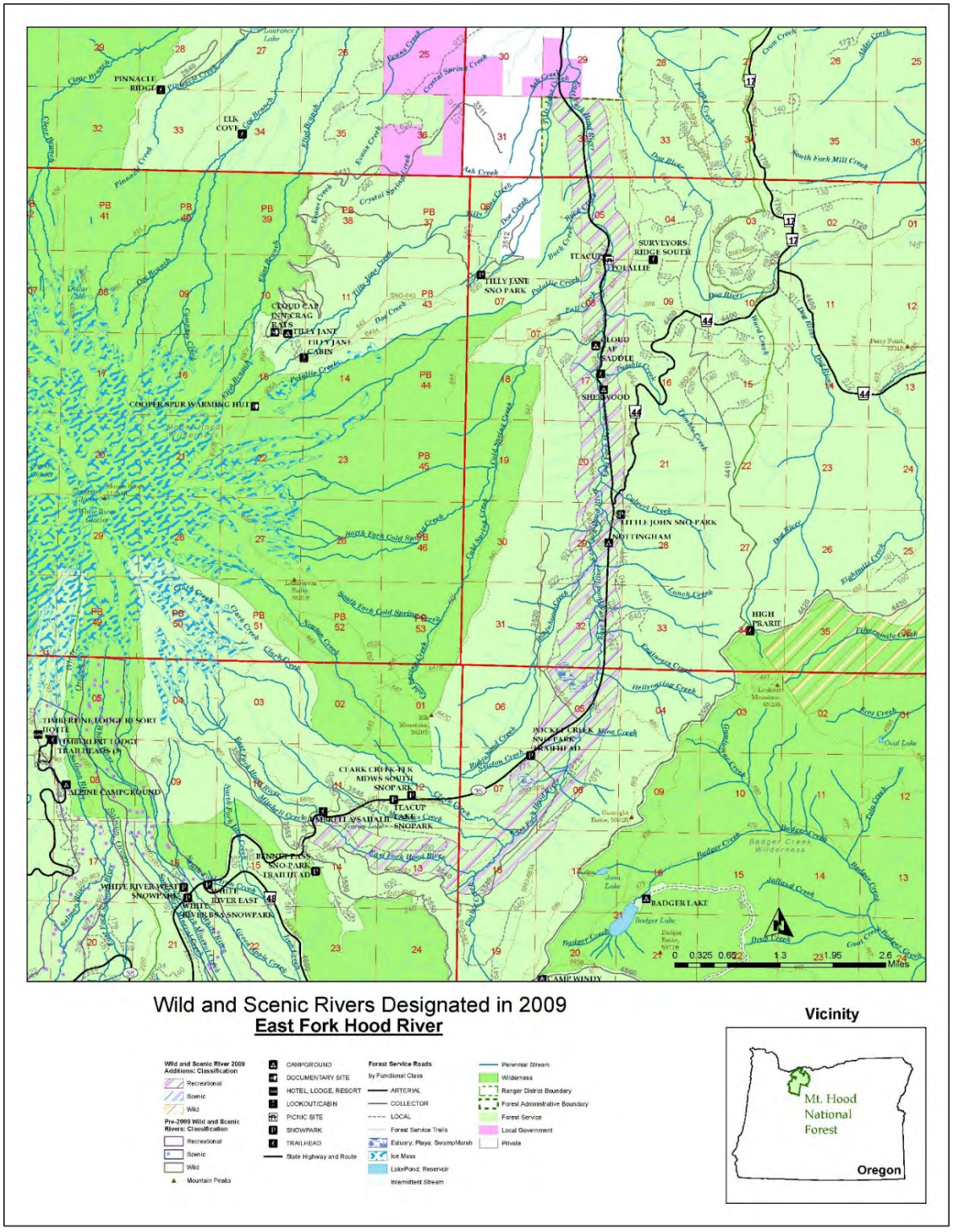


**Figure 43. East Fork Hood River final Wild and Scenic River boundary**

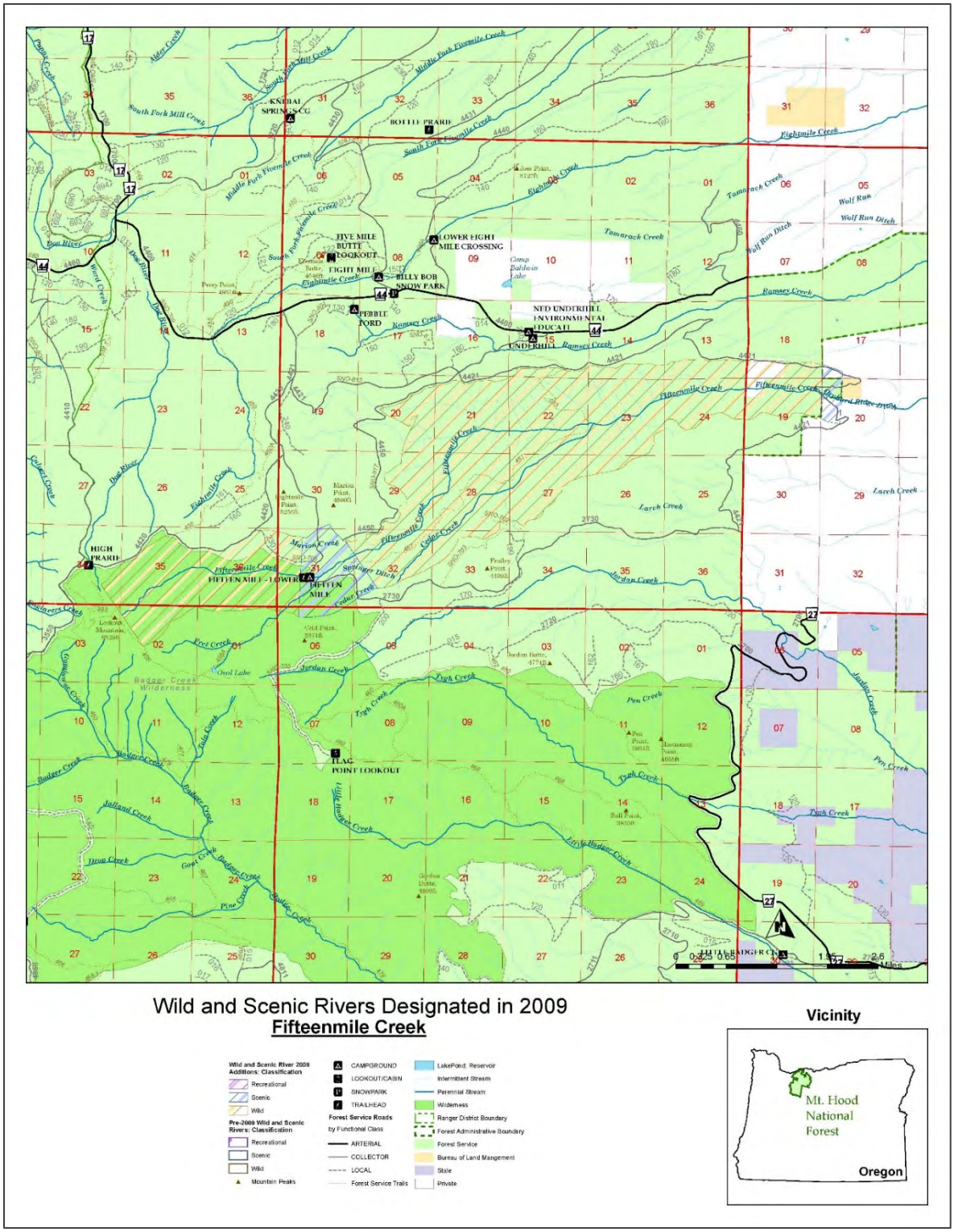


**Figure 44. Fifteenmile Creek final Wild and Scenic River boundary**

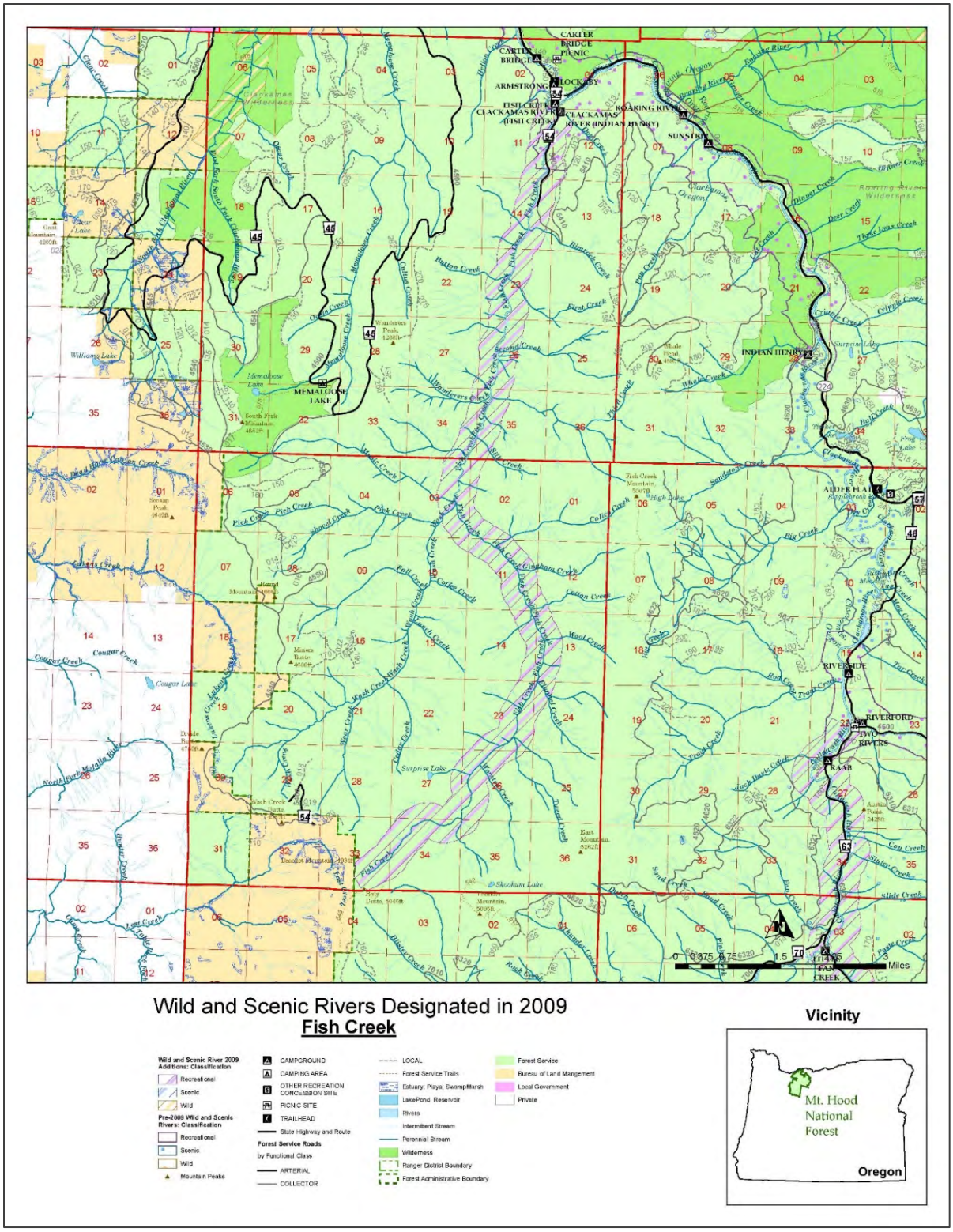


**Figure 45. Fish Creek final Wild and Scenic River boundary**

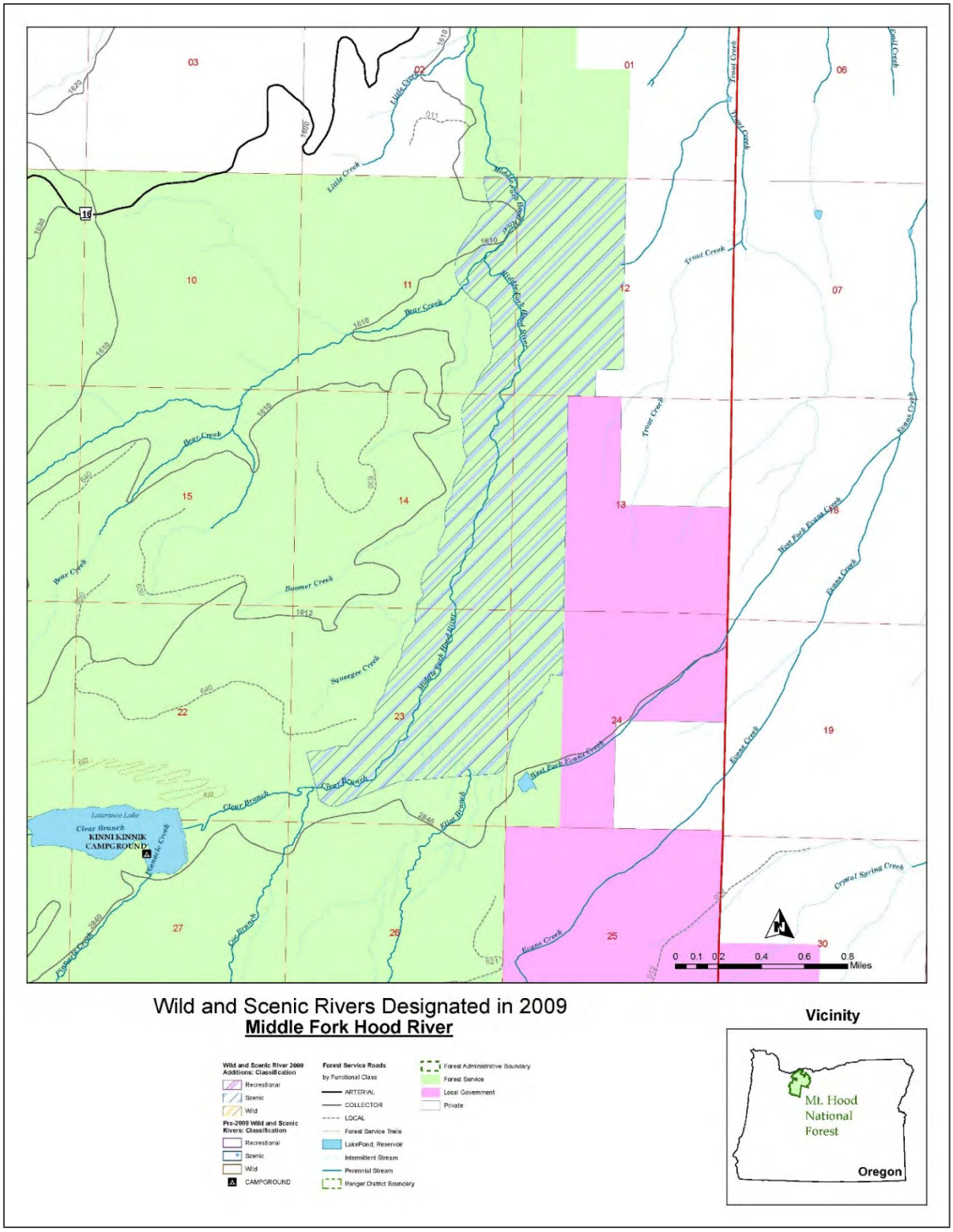


**Figure 46. Middle Fork Hood River final Wild and Scenic River boundary**

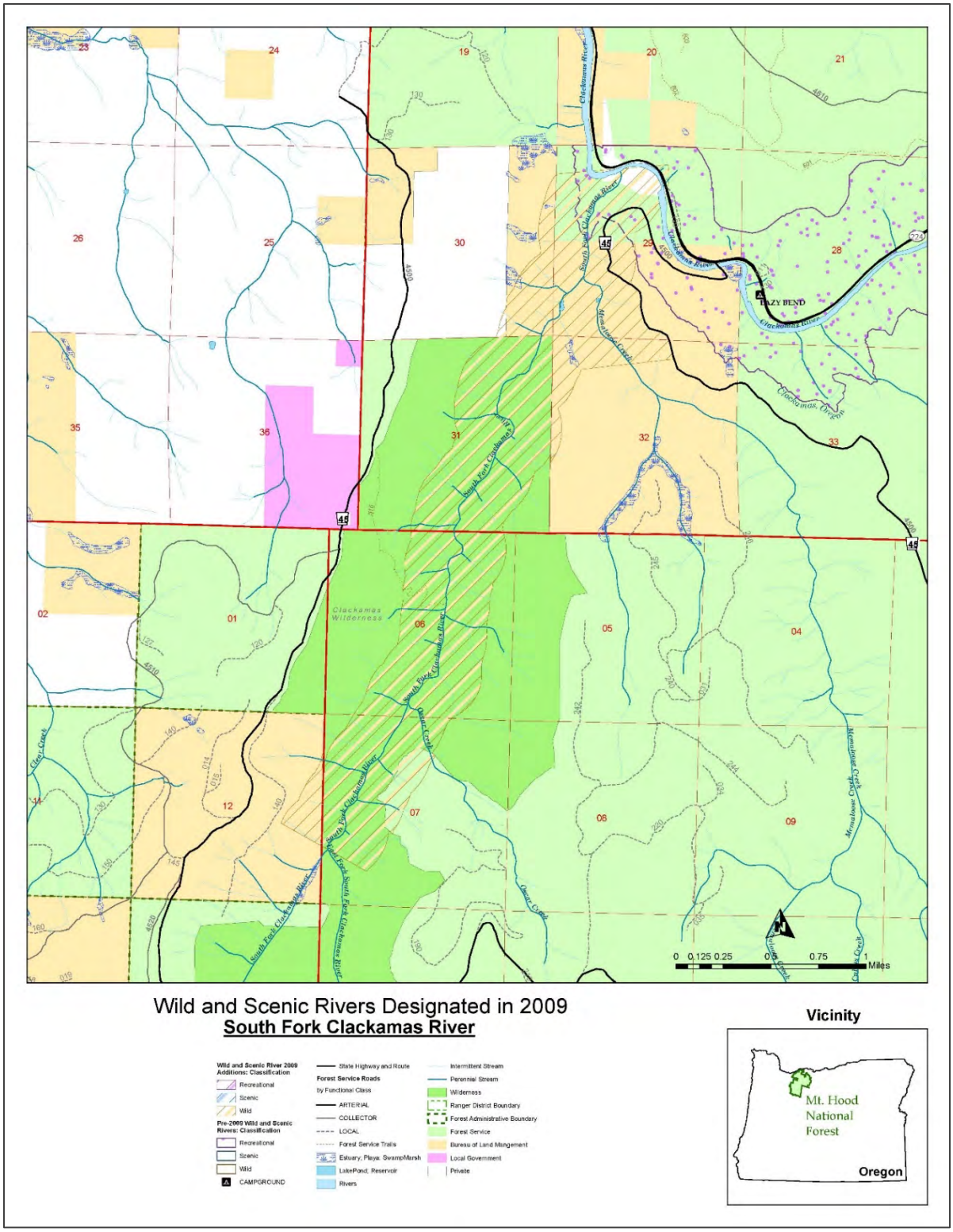


**Figure 47. South Fork Clackamas River final Wild and Scenic River boundary**

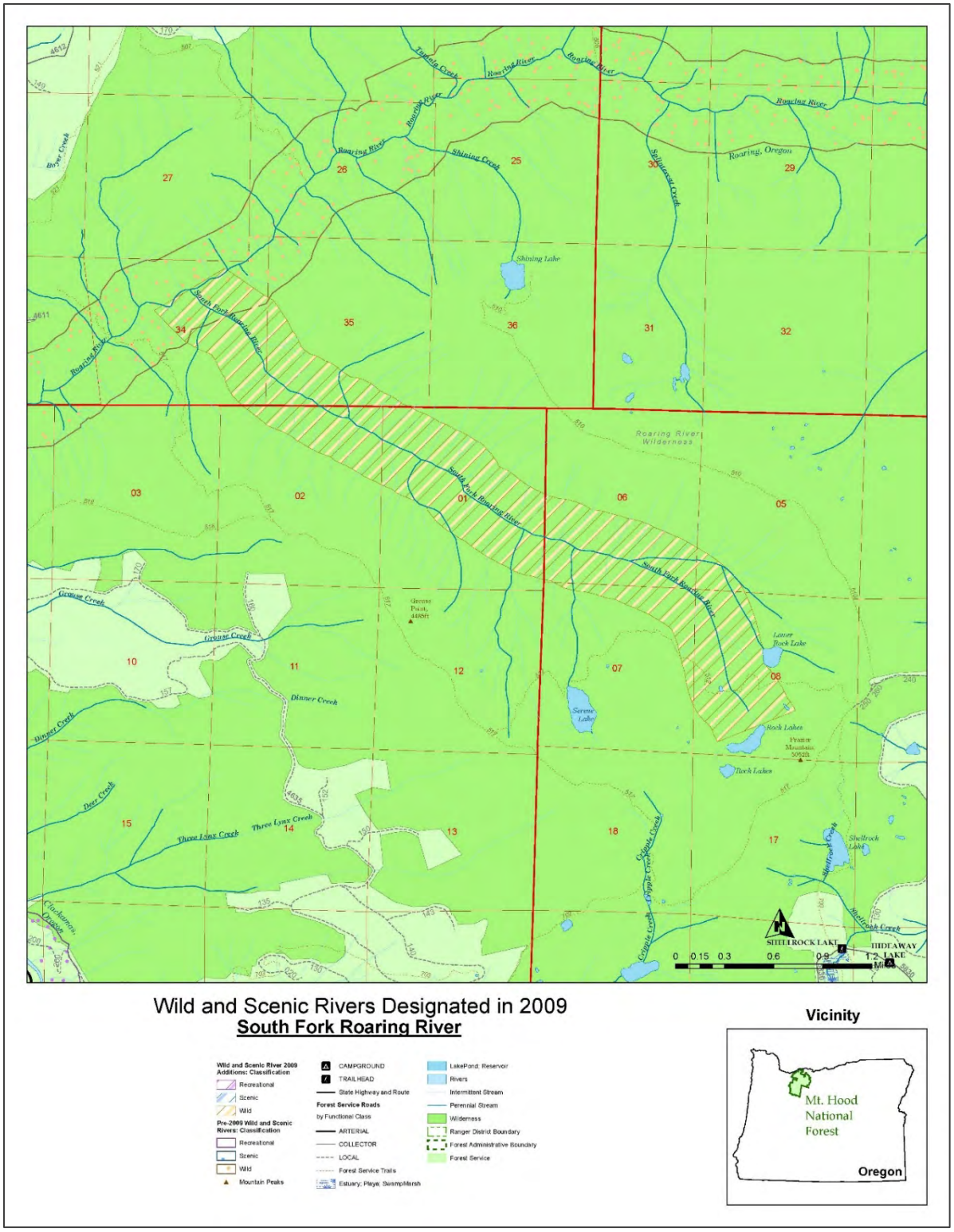


**Figure 48. South Fork Roaring River final Wild and Scenic River boundary**

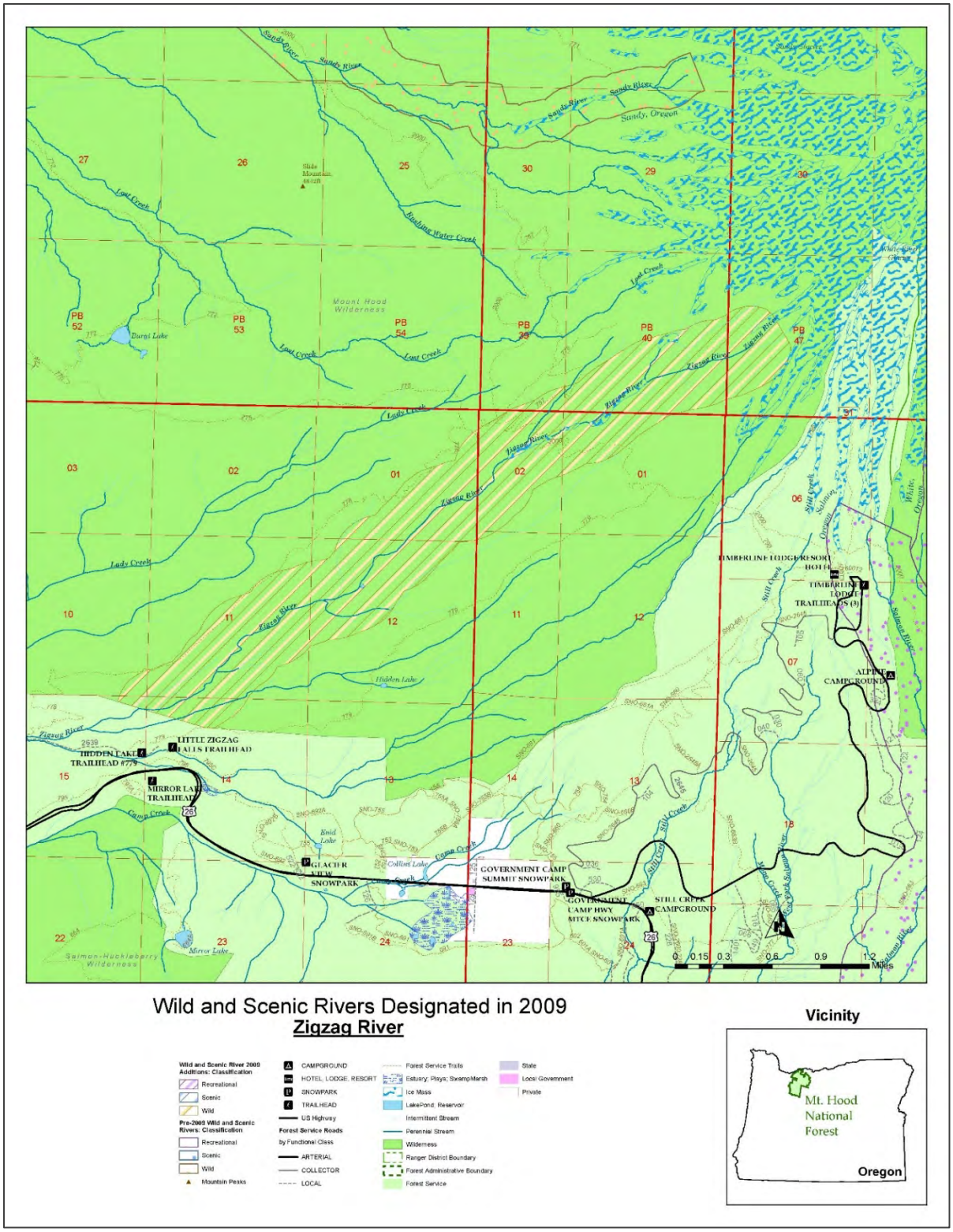


**Figure 49. Zigzag River final Wild and Scenic River boundary**

# Appendix C: Management Direction

## Forest Plan Wild, Scenic & Recreation Rivers Land Use Allocation

The following management direction applies to the B1 land use allocation for designated wild, scenic, and recreational river segments (page Four-208 through Four-217). The standards and guidelines for the A1-Reserved land use allocations are the same as those listed here for B1. They are given a different land use allocation because regulated timber harvest is not permitted in the A1 allocation. The Forest Plan is available on the forest website: https://www.fs.usda.gov/main/mthood/landmanagement/planning.

### Designated Wild, Scenic, and Recreational Rivers Standards and Guidelines

The intent of the following Standards and Guidelines is to protect and enhance the outstandingly remarkable values for which each river was designated and to protect the free-flowing characteristics.

A. General

1. All management activities in the river corridors shall protect and/or enhance the identified outstandingly remarkable values. (FSH 1909.12, Chapter 8, 7/87). The outstandingly remarkable values shall be identified via environmental analysis for river specific implementation management plans. River-specific plans shall be consistent with Management Area management direction. B1-001, B1-002, B1-003

2. The free-flowing characteristics of the river shall be protected (PL 90-542 Wild and Scenic Rivers Act 1968). B1-004

3. River characteristics necessary to support the existing classification of Wild Scenic or Recreational shall be protected during all management activities [Federal Register, Vol. 47, No. 173 9/82 (Interagency Guidelines)]. B1-005

4. Management activities shall be consistent with prescribed Recreation Opportunity Spectrum (ROS) classes (FSM 2311.1).

    a. Wild segments shall provide primitive non-motorized and/or semi-primitive non-motorized ROS settings. B1-006

    b. Scenic segments shall provide semi-primitive non-motorized and/or semi-primitive motorized ROS settings. B1-007

    c. Recreational segments shall provide roaded natural ROS settings. B1-008

B. Specific Resource Values

1. Dispersed Recreation Facility and Site Construction, Administration and Management

    a. Dispersed recreation improvements (e.g., trails) shall be provided to:

        1) Minimize site degradation in wild and scenic segments.

        2) Provide for comfort and convenience of users in recreational segments.

3) Provide a minimum of convenience in scenic segments. B1-009

b. River recreational use levels should be managed to maintain the prescribed ROS classes. B1-010

c. Recreational livestock use should be allowed in all segments provided river banks, riparian vegetation, and scenic quality are protected from adverse impacts. B1-011

d. Recreational livestock may be tied, grazed, or held overnight or for extended periods of time within the near foreground areas (i.e. 100 feet) of campsites, trails, and key interest areas. B1-012

1) Utilization of current year's vegetation growth should not exceed 30 percent (see Forestwide Range Management Standards and Guidelines). B1-013

2) No more than 5 percent of an activity area should be in a detrimental soil condition from the combined impact of compaction, puddling and displacement (see Forestwide Soil Productivity Standards and Guidelines). B1-014

3) Exposed mineral soil around campsites, trails, and key interest areas should not exceed 25 percent of the activity area. B1-015

2. Developed Recreation Facility and Site Construction Administration and Management

a. Developed recreation improvements shall be provided to:

1) Minimize site degradation in wild and scenic segments.

2) Provide for comfort and convenience of users in recreational segments.

3) Provide a minimum of convenience in scenic segments. B1-016

b. No new developed recreational sites shall be planned for wild segments. Existing developed recreation sites may be converted to dispersed sites. New developed sites may be allowed in both scenic and recreational segments. B1-017, B1-018, B1-019

c. Developed sites of more than 20 units should be discouraged in Scenic river corridors. B1-020

3. Wilderness

Where B1 river corridors extend into A2 Wilderness Management Areas A2 prescriptions predominate.

4. Visual Resource Management

All management activities shall achieve the following visual quality objectives (VQO). B1-021

a. The VQO for wild segments shall be Preservation as seen from the river, river banks, and trails within the B1 river corridor. A VQO of Retention may be allowed for recreation facilities. B1-022, B1-023

b. The VQO for scenic segments shall be Retention as seen from the river, river banks, US and State highways, Forest highways and roads, trails and recreation facilities within the B1 river corridor. A VQO of Partial Retention may be allowed for structural facilities. B1-024, B1-025

c. The VQO for recreationa1 segments shall be Partial Retention as seen from the river, river banks, US and State highways, Forest highways and roads, trails and recreation facilities within the B1 river corridor. Modification may be allowed for structural facilities. B1-026, B1-027

d. Exceptions to the above VQOs may occur within "designated viewsheds" (see Forestwide Visual Resource Management Standards and Guidelines regarding designated viewshed VQOs). B1-028

e. See Forestwide Visual Resource Management Standards and Guidelines for VQOs prescribed for trails.

5. Cultural Resources Management

   See Forestwide Cultural Resources Standards and Guidelines.

6. Wildlife and Fisheries

   a. Habitat improvement practices should be limited to those which are necessary for the protection, conservation, rehabilitation, or enhancement of river area resources. B1-029

   b. Habitat improvement projects should not introduce non-native species that could significantly change the natural ecosystem. B1-030

   c. Habitat improvement structures should mimic regular occurring natural events (as opposed to catastrophic); e.g. trees falling in and across the river, boulders falling in or moving down the river course, minor bank sloughing, erosion or undercutting, island building and opening or closing of existing secondary channels. B1-031

   d. Habitat improvement structures shall not create unusually hazardous conditions or substantially interfere with existing, or reasonably anticipated, recreational use of the river such as fishing, kayaking, canoeing, rafting, tubing, or swimming. B1-032

7. Range Management

   a. Existing commercial livestock grazing may be permitted provided river banks and riparian vegetation are protected from adverse impacts (see Forestwide Range Standards and Guidelines regarding forage utilization). B1-033

   b. Permits may be re-issued on vacant allotments if river related resource values are not compromised. Allotment Management Plans shall be consistent with Management Area management direction. B1-034, B1-035

   c. Range improvements may occur in any river classification to protect or enhance river-related values. B1-036

   d. Corrals and loading chutes should not be permitted. B1-037

8. Timber Management

a. Within wild river segments, regulated timber harvest shall be prohibited. Unregulated timber harvest and salvage activities may occur only for insect or disease control, fire, natural catastrophe, disasters, public safety or under specified conditions on valid mining claims (FSM 2354.421). B1-038, B1-039

b. Within scenic river segments, regulated timber harvest should occur and shall be designed to restore protect or enhance the ROS setting and/or achieve the prescribed VQO throughout the river corridor. See Forestwide Timber Management Standards and Guidelines regarding even-age and un-even age timber management. B1-040, B1-041

c. Within recreational segments, regulated timber harvest should occur; silvicultural prescriptions should protect or enhance river values. B1-042, B1-043

    1) Uneven age management should be considered in portions of be river corridor visible from the river, river banks, US and State Highways, Forest roads, trails and recreation facilities within be B1 river corridor. B1-044

    2) Even-age management may occur if visual quality objectives can be met. Even-age management should be considered in portions of be corridor which cannot be seen from be river, river banks, highways, roads, trai1s, and recreation facilities within the B1 river corridor. B-045, B1-046

d. Timber salvage activities to harvest windthrown, insect attacked, fire damaged, diseased trees, or other similar natural tree mortality for protection of the Forest, Forest visitors or river related resource values shall be permitted in scenic and recreational segments. All river banks shall be protected during logging activities. B1-047

9. Soil, Water and Air Quality

    a. Water quality shall be maintained or enhanced (See Forestwide Water Standards and Guidelines). B1-048

    b. Watershed management and improvement projects may be permitted. B1-049

    c. All wild scenic and recreational rivers segments shall be managed to remain in a free-flowing and unpolluted state. B1-050

10. Minerals and Energy Management

    a. Mineral development under the mining 1872 Mining Law and mineral leasing laws shall not be permitted within 1/4 mile of wild segment river banks. Provisions shall be made for valid existing mining and leasing rights. B1-051, B1-052

    b. Locatable minerals shall be recommended for withdrawal from development under the mining law (1872 Mining Law) within the B1 corridor for scenic and recreational river segments. Provision shall be made for valid existing mining rights. B1-053, B1-054

    c. All new dams major water diversions and hydroelectric power facilities shall be prohibited. B1-055

    d. Leasable mineral (e.g. geothermal) permits shall include a “No Surface Occupancy stipulation” for that portion of the permit potentially affecting river resource values. B1-056

e. Common variety mineral (e.g. sand and gravel) development shall not be permitted within any river segments. An existing permit on the White River upstream from Highway 35 shall be an exception. B1-057, B1-058

f. Plans of Operation for mineral exploration and development shall include reasonable, operationally feasible requirements to minimize conflicts with recreational activities and to protect the character of the landscape within the river corridor. B1-059

   1) Surface occupancy if allowed shall be designed to have the least possible effect on river related values. B1-060

   2) Site disturbance from mineral activities shall be rehabilitated within 3 years following project completion. B1-061

   3) During project operation, disturbed soils shall be stabilized prior to the autumn high rainfall season. B1-062

g. All mineral exploration and development shall be done in a manner to protect river resource values. B1-063

11. Geology

    See Forestwide Geology Standards and Guidelines.

12. Lands and Special Uses

    a. National Forest System lands within river corridors shall be retained. See Forestwide Lands Program Standards and Guidelines. B1-064

    b. Existing special uses including recreation and non-recreation uses, may be allowed to continue where consistent with Management Area management direction. Special uses that do not meet Management Area direction shall be terminated or phased out. B1-065, B1-066

    c. New special use permits may be issued within all segments when consistent with the Management Area management direction. B1-067

    d. Construction of new utility and/or transmission lines (e.g. gas lines, geothermal and water pipelines, and electrical transmission lines) should not be allowed within any river segment. B1-068

    e. Applications for licenses from be Federal Energy Regulatory Commission to construct any impoundment, water conduit, reservoir, powerhouse, transmission line, or other associated hydroelectric facility within any designated river segment shall be recommended for denial. B1-069

    f. All non-hydroelectric dams not presently authorized by the Forest Service shall be prohibited. B1-070

13. Transportation System/Facilities; Travel and Access Management

    a. Within wild river corridors, new roads shall not be constructed and existing roads may be phased out and rehabilitated. B1-071, B1-072

b. Within scenic segments, new roads and associated facilities and structures are discouraged, but may be constructed when no other reasonable alternative for necessary access exists. B1-073, B1-074

c. Within recreational segments, new roads may be constructed. B1-075

d. Within wild river corridors, *over snow vehicle* motorized recreational use *is the only motorized use permitted outside of wilderness areas. All other motorized recreational use* shall not be allowed. *Over-snow vehicle use is only permitted as designated on the over-snow map.* B1-076 (pending amendment #23)

e. All off-road (off highway) routes and trails shall be designated on a map. B1-077, B1-078, B1-079

    1) Motorized water craft shall be prohibited within scenic segments, but may occur within recreational segments. B1-080, B1-081

f. Areas, roads, and segments of rivers opened to vehicle use shall be designated on a map. Administrative use of motorized vehicles shall be allowed in all river segments. B1-082, B1-083

g. Mountain bicycle use should be accepted on designated trails. B1-084

h. Pedestrian and equestrian use should be encouraged. B1-085

14. Fire Prevention and Suppression

    a. Off-road vehicle travel within the designated river corridors shall not be permitted except for emergency fire suppression purposes. B1-086

    b. Use of tractors to construct firelines may be permitted only in emergency fire suppression situations. Fireline locations shall consider protection of river related resource values. B1-087, B1-088

    c. Fire retardant drops should be directed to minimize entry of chemicals into water courses and to protect river values. B1-089

    d. See Forestwide Forest Protection Standards and Guidelines.

15. Wood Residue Management

    a. See Forestwide Soils Productivity Wildlife and Forest Diversity Standards and Guidelines regarding coarse woody debris.

    b. Prescribed burning may occur to protect or enhance river-related values. B1-090

16. Integrated Pest Management

    See Forestwide Timber Management Standards and Guidelines regarding Integrated Pest Management.

# Northwest Forest Plan

The Aquatic Conservation Strategy, Riparian Reserves and Congressionally Reserved Areas all apply to the designated wild and scenic river corridors on National Forest System lands. The Riparian Reserve standards and guidelines (page C-31 to C-38) apply to the extent that they are consistent with the legislative direction for the Congressionally Reserved Areas (page C-8). In this case, most of the lands within the wild and scenic corridors on National Forest System lands would be managed under both the Riparian Reserve and Congressionally Reserved Areas standards and guidelines given the extensive overlap. The Riparian Reserves are a key component of the Aquatic Conservation Strategy (page B-11). The Northwest Forest Plan is available on the forest website: https://www.fs.usda.gov/main/mthood/landmanagement/planning.

## Congressionally Reserved Areas Standards and Guidelines

Management of these lands follows direction written in the applicable legislation or plans. Direction from these standards and guidelines also applies where it is more restrictive or provides greater benefits to late-successional forest related species unless the application of these standards and guidelines would be contrary to legislative or regulatory language or intent.

## Riparian Reserves

As a general rule, standards and guidelines for Riparian Reserves prohibit or regulate activities in Riparian Reserves that retard or prevent attainment of the Aquatic Conservation Strategy objectives. Watershed analysis and appropriate NEPA compliance is required to change Riparian Reserves boundaries in all watersheds.

### Timber Management

TM-1. Prohibit timber harvest, including fuelwood cutting, in Riparian Reserves, except as described below. Riparian Reserve acres shall not be included in calculations of the timber base.

a. Where catastrophic events such as fire, flooding, volcanic, wind, or insect damage result in degraded riparian conditions, allow salvage and fuelwood cutting if required to attain Aquatic Conservation Strategy objectives.

b. Salvage trees only when watershed analysis determines that present and future coarse woody debris needs are met and other Aquatic Conservation Strategy objectives are not adversely affected.

c. Apply silvicultural practices for Riparian Reserves to control stocking, reestablish and manage stands, and acquire desired vegetation characteristics needed to attain Aquatic Conservation Strategy objectives.

### Roads Management

RF-1. Federal, state, and county agencies should cooperate to achieve consistency in road design, operation, and maintenance necessary to attain Aquatic Conservation Strategy objectives.

RF-2. For each existing or planned road, meet Aquatic Conservation Strategy objectives by:

a. minimizing road and landing locations in Riparian Reserves.

b. completing watershed analyses (including appropriate geotechnical analyses) prior to construction of new roads or landings in Riparian Reserves.

c. preparing road design criteria, elements, and standards that govern construction and reconstruction.

d. preparing operation and maintenance criteria that govern road operation, maintenance, and management.

e. minimizing disruption of natural hydrologic flow paths, including diversion of streamflow and interception of surface and subsurface flow.

f. restricting sidecasting as necessary to prevent the introduction of sediment to streams.

g. avoiding wetlands entirely when constructing new roads.

RF-3. Determine the influence of each road on the Aquatic Conservation Strategy objectives through watershed analysis. Meet Aquatic Conservation Strategy objectives by:

a. reconstructing roads and associated drainage features that pose a substantial risk.

b. prioritizing reconstruction based on current and potential impact to riparian resources and the ecological value of the riparian resources affected.

c. closing and stabilizing, or obliterating and stabilizing roads based on the ongoing and potential effects to Aquatic Conservation Strategy objectives and considering short-term and long-term transportation needs.

RF-4. New culverts, bridges and other stream crossings shall be constructed, and existing culverts, bridges and other stream crossings determined to pose a substantial risk to riparian conditions will be improved, to accommodate at least the 100-year flood, including associated bedload and debris. Priority for upgrading will be based on the potential impact and the ecological value of the riparian resources affected. Crossings will be constructed and maintained to prevent diversion of streamflow out of the channel and down the road in the event of crossing failure.

RF-5. Minimize sediment delivery to streams from roads. Outsloping of the roadway surface is preferred, except in cases where outsloping would increase sediment delivery to streams or where outsloping is unfeasible or unsafe. Route road drainage away from potentially unstable channels, fills, and hillslopes.

RF-6. Provide and maintain fish passage at all road crossings of existing and potential fish-bearing streams.

RF-7. Develop and implement a Road Management Plan or a Transportation Management Plan that will meet the Aquatic Conservation Strategy objectives. As a minimum, this plan shall include provisions for the following activities:

a. inspections and maintenance during storm events.

b. inspections and maintenance after storm events.

c. road operation and maintenance, giving high priority to identifying and correcting road drainage problems that contribute to degrading riparian resources.

d. traffic regulation during wet periods to prevent damage to riparian resources.

e. establish the purpose of each road by developing the Road Management Objective.

## Grazing Management

GM-1. Adjust grazing practices to eliminate impacts that retard or prevent attainment of Aquatic Conservation Strategy objectives. If adjusting practices is not effective, eliminate grazing.

GM-2. Locate new livestock handling and/or management facilities outside Riparian Reserves. For existing livestock handling facilities inside the Riparian Reserve, ensure that Aquatic Conservation Strategy objectives are met. Where these objectives cannot be met, require relocation or removal of such facilities.

GM-3. Limit livestock trailing, bedding, watering, loading, and other handling efforts to those areas and times that will ensure Aquatic Conservation Strategy objectives are met.

## Recreation Management

RM-1. New recreational facilities within Riparian Reserves, including trails and dispersed sites, should be designed to not prevent meeting Aquatic Conservation Strategy objectives. Construction of these facilities should not prevent future attainment of these objectives. For existing recreation facilities within Riparian Reserves, evaluate and mitigate impact to ensure that these do not prevent, and to the extent practicable contribute to, attainment of Aquatic Conservation Strategy objectives.

RM-2. Adjust dispersed and developed recreation practices that retard or prevent attainment of Aquatic Conservation Strategy objectives. Where adjustment measures such as education, use limitations, traffic control devices, increased maintenance, relocation of facilities, and/or specific site closures are not effective, eliminate the practice or occupancy.

RM-3. Wild and Scenic Rivers and Wilderness management plans will address attainment of Aquatic Conservation Strategy objectives.

## Minerals Management

MM-1. Require a reclamation plan, approved Plan of Operations, and reclamation bond for all minerals operations that include Riparian Reserves. Such plans and bonds must address the costs of removing facilities, equipment, and materials; recontouring disturbed areas to near pre-mining topography; isolating and neutralizing or removing toxic or potentially toxic materials; salvage and replacement of topsoil; and seedbed preparation and revegetation to meet Aquatic Conservation Strategy objectives.

MM-2. Locate structures, support facilities, and roads outside Riparian Reserves. Where no alternative to siting facilities in Riparian Reserves exists, locate them in a way compatible with Aquatic Conservation Strategy objectives. Road construction will be kept to the minimum necessary for the approved mineral activity. Such roads will be constructed and maintained to meet roads management standards and to minimize damage to resources in the Riparian Reserve. When a road is no longer required for mineral or land management activities, it will be closed, obliterated, and stabilized.

MM-3. Prohibit solid and sanitary waste facilities in Riparian Reserves. If no alternative to locating mine waste (waste rock, spent ore, tailings) facilities in Riparian Reserves exists, and releases can be prevented, and stability can be ensured, then:

a. analyze the waste material using the best conventional sampling methods and analytic techniques to determine its chemical and physical stability characteristics.

b. locate and design the waste facilities using best conventional techniques to ensure mass stability and prevent the release of acid or toxic materials. If the best conventional technology is not sufficient to prevent such releases and ensure stability over the long term, prohibit such facilities in Riparian Reserves.

c. monitor waste and waste facilities after operations to ensure chemical and physical stability and to meet Aquatic Conservation Strategy objectives.

d. reclaim waste facilities after operations to ensure chemical and physical stability and to meet Aquatic Conservation Strategy objectives.

e. require reclamation bonds adequate to ensure long-term chemical and physical stability of mine waste facilities.

MM-4. For leasable minerals, prohibit surface occupancy within Riparian Reserves for oil, gas, and geothermal exploration and development activities where leases do not already exist. Where possible, adjust the operating plans of existing contracts to eliminate impacts that retard or prevent the attainment of Aquatic Conservation Strategy objectives.

MM-5. Salable mineral activities such as sand and gravel mining and extraction within Riparian Reserves will occur only if Aquatic Conservation Strategy objectives can be met.

MM-6. Include inspection and monitoring requirements in mineral plans, leases or permits. Evaluate the results of inspection and monitoring to effect the modification of mineral plans, leases and permits as needed to eliminate impacts that retard or prevent attainment of Aquatic Conservation Strategy objectives.

## Fire/Fuels Management

FM-1. Design fuel treatment and fire suppression strategies, practices, and activities to meet Aquatic Conservation Strategy objectives, and to minimize disturbance of riparian ground cover and vegetation. Strategies should recognize the role of fire in ecosystem function and identify those instances where fire suppression or fuels management activities could be damaging to long-term ecosystem function.

FM-2. Locate incident bases, camps, helibases, staging areas, helispots and other centers for incident activities outside Riparian Reserves. If the only suitable location for such activities is within the Riparian Reserve, an exemption may be granted following review and recommendation by a resource advisor. The advisor will prescribe the location, use conditions, and rehabilitation requirements. Use an interdisciplinary team to predetermine suitable incident base and helibase locations.

FM-3. Minimize delivery of chemical retardant, foam, or additives to surface waters. An exception may be warranted in situations where overriding immediate safety imperatives exist, or, following review and recommendation by a resource advisor, when an escape would cause more long-term damage.

FM-4. Design prescribed burn projects and prescriptions to contribute to attainment of Aquatic Conservation Strategy objectives.

FM-5. Immediately establish an emergency team to develop a rehabilitation treatment plan needed to attain Aquatic Conservation Strategy objectives whenever Riparian Reserves are significantly damaged by wildfire or a prescribed fire burning outside prescribed parameters.

Other - In Riparian Reserves, the goal of wildfire suppression is to limit the size of all fires. When watershed and/or landscape analysis, or province-level plans are completed and approved, some natural fires may be allowed to burn under prescribed conditions. Rapidly extinguishing smoldering coarse woody debris and duff should be considered to preserve these ecosystem elements. In Riparian Reserves, water drafting sites should be located and managed to minimize adverse effects on riparian habitat and water quality, as consistent with Aquatic Conservation Strategy objectives.

## Lands

LH-1. Identify in-stream flows needed to maintain riparian resources, channel conditions, and fish passage.

LH-2. Tier 1 Key Watersheds: For hydroelectric and other surface water development proposals, require in-stream flows and habitat conditions that maintain or restore riparian resources, favorable channel conditions, and fish passage. Coordinate this process with the appropriate state agencies. During relicensing of hydroelectric projects, provide written and timely license conditions to the Federal Energy Regulatory Commission (FERC) that require flows and habitat conditions that maintain or restore riparian resources and channel integrity. Coordinate relicensing projects with the appropriate state agencies.

For all other watersheds: For hydroelectric and other surface water development proposals, give priority emphasis to in-stream flows and habitat conditions that maintain or restore riparian resources, favorable channel conditions, and fish passage. Coordinate this process with the appropriate state agencies. During relicensing of hydroelectric projects, provide written and timely license conditions to FERC that emphasize in-stream flows and habitat conditions that maintain or restore riparian resources and channel integrity. Coordinate relicensing projects with the appropriate state agencies.

LH-3. Locate new support facilities outside Riparian Reserves. For existing support facilities inside Riparian Reserves that are essential to proper management, provide recommendations to FERC that ensure Aquatic Conservation Strategy objectives are met. Where these objectives cannot be met, provide recommendations to FERC that such support facilities should be relocated. Existing support facilities that must be located in the Riparian Reserves will be located, operated, and maintained with an emphasis to eliminate adverse effects that retard or prevent attainment of Aquatic Conservation Strategy objectives.

LH-4. For activities other than surface water developments, issue leases, permits, rights-of-way, and easements to avoid adverse effects that retard or prevent attainment of Aquatic Conservation Strategy objectives. Adjust existing leases, permits, rights-of-way, and easements to eliminate adverse effects that retard or prevent the attainment of Aquatic Conservation Strategy objectives. If adjustments are not effective, eliminate the activity. Priority for modifying existing leases, permits, rights-of-way and easements will be based on the actual or potential impact and the ecological value of the riparian resources affected.

LH-5. Use land acquisition, exchange, and conservation easements to meet Aquatic Conservation Strategy objectives and facilitate restoration of fish stocks and other species at risk of extinction.

## General Riparian Area Management

RA-1. Identify and attempt to secure in-stream flows needed to maintain riparian resources, channel conditions, and aquatic habitat.

RA-2 Fell trees in Riparian Reserves when they pose a safety risk. Keep felled trees on-site when needed to meet coarse woody debris objectives.

RA-3. Herbicides, insecticides, and other toxicants, and other chemicals shall be applied only in a manner that avoids impacts that retard or prevent attainment of Aquatic Conservation Strategy objectives.

RA-4. Locate water drafting sites to minimize adverse effects on stream channel stability, sedimentation, and in-stream flows needed to maintain riparian resources, channel conditions, and fish habitat.

### Watershed and Habitat Restoration

WR-1. Design and implement watershed restoration projects in a manner that promotes long-term ecological integrity of ecosystems, conserves the genetic integrity of native species, and attains Aquatic Conservation Strategy objectives.

WR-2. Cooperate with federal, state, local, and tribal agencies, and private landowners to develop watershed-based Coordinated Resource Management Plans or other cooperative agreements to meet Aquatic Conservation Strategy objectives.

WR-3. Do not use mitigation or planned restoration as a substitute for preventing habitat degradation.

### Fish and Wildlife Management

FW-1. Design and implement fish and wildlife habitat restoration and enhancement activities in a manner that contributes to attainment of Aquatic Conservation Strategy objectives.

FW-2. Design, construct and operate fish and wildlife interpretive and other user-enhancement facilities in a manner that does not retard or prevent attainment of Aquatic Conservation Strategy objectives. For existing fish and wildlife interpretative and other user-enhancement facilities inside Riparian Reserves, ensure that Aquatic Conservation Strategy objectives are met. Where Aquatic Conservation Strategy objectives cannot be met, relocate or close such facilities.

FW-3. Cooperate with federal, tribal, and state wildlife management agencies to identify and eliminate wild ungulate impacts that are inconsistent with attainment of Aquatic Conservation Strategy objectives.

FW-4. Cooperate with federal, tribal, and state fish management agencies to identify and eliminate impacts associated with habitat manipulation, fish stocking, harvest and poaching that threaten the continued existence and distribution of native fish stocks occurring on federal lands.

### Research

RS-1. A variety of research activities may be ongoing and proposed in Key Watersheds and Riparian Reserves. These activities must be analyzed to ensure that significant risk to the watershed values does not exist. If significant risk is present and cannot be mitigated, study sites must be relocated. Some activities not otherwise consistent with the objectives may be appropriate, particularly if the activities will test critical assumptions of these standards and guidelines; will produce results important for establishing or accelerating vegetation and structural characteristics for maintaining or restoring aquatic and riparian ecosystems; or the activities represent continuation of long-term research. These activities should be considered only if there are no equivalent opportunities outside of Key Watersheds and Riparian Reserves.

RS-2. Current, funded, agency-approved research, which meets the above criteria, is assumed to continue if analysis ensures that a significant risk to Aquatic Conservation Strategy objectives does not exist. Research Stations and other Forest Service and BLM units will, within 180 days of the signing of the Record of Decision adopting these standards and guidelines, submit a brief project summary to the Regional Ecosystem Office of ongoing research projects that are potentially inconsistent with other

standards and guidelines but are expected to continue under the above research exception. The Regional Ecosystem Office may choose to more formally review specific projects, and may recommend to the Regional Interagency Executive Committee modification, up to and including cancellation, of those projects having an unacceptable risk to Key Watersheds and Riparian Reserves. Risk will be considered within the context of the Aquatic Conservation Strategy objectives.

## Aquatic Conservation Strategy Objectives

Forest Service and BLM-administered lands within the range of the northern spotted owl will be managed to:

1. Maintain and restore the distribution, diversity, and complexity of watershed and landscape-scale features to ensure protection of the aquatic systems to which species, populations and communities are uniquely adapted.

2. Maintain and restore spatial and temporal connectivity within and between watersheds. Lateral, longitudinal, and drainage network connections include floodplains, wetlands, upslope areas, headwater tributaries, and intact refugia. These network connections must provide chemically and physically unobstructed routes to areas critical for fulfilling life history requirements of aquatic and riparian-dependent species.

3. Maintain and restore the physical integrity of the aquatic system, including shorelines, banks, and bottom configurations.

4. Maintain and restore water quality necessary to support healthy riparian, aquatic, and wetland ecosystems. Water quality must remain within the range that maintains the biological, physical, and chemical integrity of the system and benefits survival, growth, reproduction, and migration of individuals composing aquatic and riparian communities.

5. Maintain and restore the sediment regime under which aquatic ecosystems evolved. Elements of the sediment regime include the timing, volume, rate, and character of sediment input, storage, and transport.

6. Maintain and restore in-stream flows sufficient to create and sustain riparian, aquatic, and wetland habitats and to retain patterns of sediment, nutrient, and wood routing. The timing, magnitude, duration, and spatial distribution of peak, high, and low flows must be protected.

7. Maintain and restore the timing, variability, and duration of floodplain inundation and water table elevation in meadows and wetlands.

8. Maintain and restore the species composition and structural diversity of plant communities in riparian areas and wetlands to provide adequate summer and winter thermal regulation, nutrient filtering, appropriate rates of surface erosion, bank erosion, and channel migration and to supply amounts and distributions of coarse woody debris sufficient to sustain physical complexity and stability.

9. Maintain and restore habitat to support well-distributed populations of native plant, invertebrate, and vertebrate riparian-dependent species.

# Northwestern and Coastal Oregon Resource Management Plan

The Resource Management Plan includes the following management direction on Congressionally Reserved Lands and National Conservation Lands, which includes wild and scenic rivers, on pages 55 and 56. The Resource Management Plan also includes direction for Riparian Reserves, which also apply to South Fork Clackamas River, on pages 68 to 70. The Resource Management Plan is available on the BLM planning website here: https://www.blm.gov/or/plans/rmpswesternoregon/.

## Congressionally Reserved Lands and National Conservation Lands

### Management Direction

- Conduct management actions, including but not limited to fuels treatments, invasive species management, riparian or wildlife habitat improvements, forest management, and trail construction, in Wild and Scenic River corridors only if consistent with designated or tentative classifications and if any reductions in outstandingly remarkable values would be temporary and outstandingly remarkable values would be protected or enhanced over the long term.
- During wildfire management operations, use strategies and tactics that would protect the outstandingly remarkable values and classifications (or tentative classifications) within Wild and Scenic River corridors, except where the wildfire is deemed a threat to human safety or private property, or where use is essential for wildfire control, as determined by the Incident Commander.

Then, the following is the management direction applicable to wild and scenic river corridors that is found in the resource programs throughout the resource management plan.

### Lands, Realty, and Roads – Management Direction (pages 81-82)

- Retain lands in Land Tenure Zone 1 (Zone 1) under BLM administration. Lands in Zone 1 include existing and future:
  - Designated and suitable wild and scenic river corridors.
- Right-of-way exclusion areas include (see Map D-1):
  - Designated and suitable wild and scenic rivers classified as wild; and
  - Visual resource management class I areas.

In right-of-way exclusion areas, do not grant rights-of-way, except when mandated by law.

- Right-of-way avoidance areas include (see Map D-1):
  - Designated and suitable wild and scenic rivers classified as scenic and recreational; and
  - Visual resource management class II areas not included in right-of-way exclusion areas.

In right-of-way avoidance areas, grant rights-of-way only if the BLM determines that the right-of-way proposals are compatible with the protection of the values for which the land use was designated, or when no feasible alternative route or designated right-of-way corridor is available as applicable with BLM laws and policy.

## Minerals – Management Direction (pages 85-86)

### *Leasable Minerals: Oil, Gas, or Coalbed Natural Gas Resources*

- Apply site-specific stipulations, such as no surface occupancy or conditional surface uses, based on resource protection needs in:
    - Designated and suitable wild and scenic river segments (where not already closed by legislation).

### *Locatable Minerals*

- Recommend for withdrawal from locatable mineral entry:
    - Designated and suitable wild and scenic river segments (where not already closed by legislation).

### *Salable Minerals*

- Areas closed to salable mineral material disposal include (see Map E-1):
    - Designated and suitable wild and scenic river segments (where not already closed by legislation).

## Recreation and Visitor Services (page 88)

- Manage Special Recreation Management Areas and Extensive Recreation Management Areas, identified in Appendix G of the Record of Decision, in accordance with their planning frameworks.

## Sustainable Energy – Management Direction (page 90)

- Exclude from sustainable energy development areas that are part of national conservation lands (for example, wilderness areas, wilderness study areas, wild and scenic rivers, and national historic and scenic trails), areas of critical environmental concern, and district-designated reserve – lands managed for their wilderness characteristics.

### *Sustainable Energy, Wind Energy Development – Management Direction (page 91)*

- Site development will include practices as needed to reduce or avoid impacts to other resource uses. Appropriate practices will be applied based on site-specific conditions and include, but are not limited to, the following:
    - Exclude designated areas that are part of national conservation lands (for example, wilderness areas, wilderness study areas, wild and scenic rivers, and national historic and scenic trails) and areas of critical environmental concern from wind energy site monitoring and testing and development.

## Visual Resource Management – Management Direction (page 94)

- Visual resource management class I includes:
    - Designated and suitable wild and scenic rivers that are classified as wild.

      Manage visual resource management class I areas in accordance with natural ecological changes. Prohibit activities that would lower the visual resources inventory class of visual resource management class I areas. The level of change to the characteristic landscape will be very low and will not attract attention. Changes will repeat the basic elements of form, line, color, texture, and scale found in the predominant natural features of the characteristic landscape.

- Visual resource management class II includes:

- ♦ Designated and suitable wild and scenic rivers that are classified as scenic.

  Manage visual resource management class II areas for low levels of change to the characteristic landscape. Management activities will be seen but will not attract the attention of the casual observer. Changes will repeat the basic elements of form, line, color, texture, and scale found in the predominant natural features of the characteristic landscape.

- Visual resource management class III includes:
  - ♦ Designated, suitable, and eligible wild and scenic rivers that are classified as recreational;

    Manage visual resource management class III areas for moderate levels of change to the characteristic landscape. Management activities will attract attention but will not dominate the view of the casual observer. Changes will repeat the basic elements of form, line, color, texture, and scale found in the predominant natural features of the characteristic landscape.

## Riparian Reserve

South Fork Clackamas River includes a Riparian Reserve for a perennial stream. The distance of the Riparian Reserve is "one site-potential tree height distance from the ordinary high water line or from the outer edge of the channel mitigation zone for low-gradient alluvial shifting channels, whichever is greatest, on each side of the stream.

### Management Direction

- Prohibit timber salvage, except when necessary to protect public safety, or to keep roads and other infrastructure clear of debris.
- Maintain access to roads and facilities by removing hazard trees and blowdown from roads and facilities. Retain such logs as down woody material within adjacent stands or move for placement in streams for fish habitat restoration, unless removal of logs, including through commercial harvest, is necessary to maintain access to roads and facilities.
- Allow yarding corridors, skid trails, road construction, stream crossings, and road maintenance and improvement where there is no operationally feasible and economically viable alternative to accomplish other resource management objectives.
- Where trees are cut for yarding corridors, skid trails, road construction, maintenance, and improvement in the Inner Zone or Middle Zone, retain cut trees in adjacent stands as down woody material or move cut trees for placement in streams for fish habitat restoration, at the discretion of the BLM. Where trees are cut for yarding corridors, skid trails, road construction, maintenance, and improvement in the Outer Zone or in Riparian Reserves associated with features other than streams, retain cut trees in adjacent stands as down woody material, move cut trees for placement in streams for fish habitat restoration, or sell trees, at the discretion of the BLM. For any trees that are both ≥ 40" DBH and that the BLM identifies were established prior to 1850, retain cut trees in the adjacent stand as down woody material. The BLM identification of trees established prior to 1850 may be based on any of a variety of methods, such as evaluation of bark, limb, trunk, or crown characteristics, or increment coring, at the discretion of the BLM.
- Where trees are cut for right-of-way permits in the Inner Zone or Middle Zone, retain cut trees in adjacent stands as down woody material or move cut trees for placement in streams for fish habitat restoration, at the discretion of the BLM and consistent with valid existing rights. Where trees are cut for right-of-way permits in the Outer Zone or in Riparian Reserves associated with features other than streams, retain cut trees in adjacent stands as down woody material, move cut trees for placement in

streams for fish habitat restoration, or sell trees to the right-of-way permittee, at the discretion of the BLM and consistent with valid existing rights. For any trees that are both ≥ 40" DBH and that the BLM identifies were established prior to 1850, retain cut trees in the adjacent stand as down woody material. The BLM identification of trees established prior to 1850 may be based on any of a variety of methods, such as evaluation of bark, limb, trunk, or crown characteristics, or increment coring, at the discretion of the BLM.

- Use site-specific BMPs (RMP Appendix C) to maintain water quality during land management actions, including discretionary actions of others crossing BLM-administered lands.
- In new recreational developments, install sanitation systems that maintain water quality (e.g., sealed vault or similar).
- Do not operate ground-based machinery for timber harvest within 50 feet of streams (slope distance), except where machinery is on improved roads, designated stream crossings, or where equipment entry into the 50-foot zone would not increase the potential for sediment delivery into the stream.
- Do not operate ground-based machinery for timber harvest on slopes > 35 percent. Mechanical equipment with tracks (e.g., excavators, loaders, forwarders, and harvesters) may be used on short pitch slopes of greater than 35 percent but less than 45 percent when necessary to access benches of lower gradient (length determined on a site-specific basis, generally less than 50 feet (slope distance)).
- During silvicultural treatment of stands, retain existing—
    - Snags ≥ 6" DBH
    - Down woody material ≥ 6" in diameter at the large end and > 20 feet in length except for safety, operational, or fuels reduction reasons. Retain snags ≥ 6" DBH cut for safety or operational reasons as down woody material, unless they would also pose a safety hazard as down woody material.
- Implement sudden oak death (SOD) eradication activities that do not exceed (at the HUC 10 watershed scale)—
    - The removal of > 30 percent canopy cover over a contiguous 0.5 mile stream length or removal of > 50 percent canopy cover over a contiguous 0.25 mile stream length for small perennial streams (active channel width < 27 feet) where a 4,600-foot separation of non-treatment between sequential contiguous treatments would be maintained;
    - The removal of > 50 percent canopy cover over a contiguous 0.5 mile stream length for medium-large perennial streams (active channel width > 27 feet) where a 4,600-foot separation of non-treatment between sequential contiguous treatments would be maintained; and
    - A limit of 3 miles of treatment for any 5-year period and 3 percent of the total Federal perennial stream miles.
- Implement SOD eradication activities that exceed these limitations only consistent with existing ESA consultation documents that address SOD eradication activities in the decision area.
- Cut or tip individual live trees and move for fish habitat restoration.
- Cut or tip individual live trees directly into the stream channel for fish habitat restoration.
- Tree tipping: When conducting commercial thinning in any portion of the Outer Zone in a stand in all watershed classes, cut or tip from 0 to 15 square feet of basal area per acre of live trees, averaged across the Riparian Reserve portion of the treated stand. Leave cut or tipped trees on site or yard,

deck, and make cut or tipped trees available for fish habitat restoration. The cut or tipped trees can be of any size and come from any zone.

- Promote beaver habitat restoration where the presence of beaver and their associated dams would improve fish and aquatic habitat.
- Along ponds and wetlands < 1 acre and constructed water impoundments of any size, treat vegetation as needed for habitat restoration, access, or safety.
- For constructed water impoundments and constructed ponds:
    - Follow inspection guidelines for BLM infrastructure (e.g., dams and spillway structures), and implement maintenance and repair as needed.
    - Dredge constructed water impoundments as necessary to maintain capacity.
    - Maintain vegetation, access, and plumbing associated with sources of water for fire management purposes for all types of firefighting equipment (e.g., engines, aircraft, and tenders).

# Appendix D: Evaluation Process and Criteria for Outstandingly Remarkable Values

The River Values Report describes the values for which each river was added to the National Wild and Scenic Rivers System, which include free flow, water quality and outstandingly remarkable values—collectively referred to as river values. The report determined and documented which scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values within each wild and scenic river segment meet the standard for outstandingly remarkable values. The report documents the evaluation of resource conditions and river values at the time that Congress designated these rivers as a wild and scenic river and updates these conditions and values to present condition. This includes a description of values that were not identified as outstandingly remarkable values.

It is important to identify the outstandingly remarkable values because the Wild and Scenic Rivers Act requires the administering agency to "protect and enhance" the river's free-flowing condition, water quality and its outstandingly remarkable values. Protecting and enhancing the free-flow condition, water quality, and outstandingly remarkable values become the basis for managing the wild and scenic river corridor. In addition, these river values will be the cornerstone of a Comprehensive River Management Plan, which will be completed over the next three to five years.

The outstandingly remarkable values evaluation took into consideration all features, which are directly river-related, and helped to provide a holistic approach to investigating the relationship of river features. There are three components to the river values evaluation process: 1) determine the region of comparison; 2) establish the evaluation criteria for each outstandingly remarkable value; and, 3) confirm or determine the outstandingly remarkable values for each segment.

## Region of Comparison

The region of comparison is the Middle Cascades, from Mt. Adams to Mt. Jefferson, including the mountain peaks. Because of the closeness of the Portland-Vancouver metropolitan area to the forest, users from this area to The Dalles are considered local users for this evaluation. Local users also include the local communities surrounding the forest, such as Sandy, Welches, Estacada, Government Camp, Hood River, and Dufur. Also, the Confederated Tribes of Grand Ronde and the Confederated Tribes of Warm Springs are considered important local users of the forest. Users coming from other locations in Oregon and southwestern Washington are considered regional users.

## Outstandingly Remarkable Values

### Recreation and Scenery Values

The nine rivers represent an amazing example of Cascade crest drainages, which highlight both west- and east-side ecosystems. The rivers tumble down from the upper slopes of Mt. Hood and associated mountains and ridgelines. On the western slopes of the Cascade crest, the rivers, such as South Fork Roaring River, are dense with vegetation and lushly forested. To the east, Fifteenmile Creek transitions from glacially influenced floodplains into high desert environments dominated by pine, juniper, and white oak. Combined, the west-east rivers provide a wide range of recreation and scenic opportunities representing an incredible vestige of wild and scenic America. Six of the nine wild and scenic rivers flow through designated wilderness areas. These overlapping designations highlight the remote, primitive, and undeveloped quality of these rivers to the greater landscape, despite their proximity to the urban Portland

metropolitan area. Recreation opportunities are enhanced and, in some cases, depend upon the classic Pacific Northwest scenery these rivers provide.

Recreation within the wild and scenic river environment includes both traditional and new recreation uses. In some cases, wild and scenic rivers may not be the destination, but they provide a backdrop to the overall visitor experience. The local community includes many expert and professional adventure athletes. Because many of these rivers are remote and less well known than others in the region, they provide opportunities for challenge and self-reliance, supporting innovative and emerging recreation uses. In many cases, these activities are difficult to track and characterize. For instance, some users are now using paddle boards for whitewater descents. In the future, these innovations may lead to unforeseen activities within the wild and scenic river landscape.

### Recreation Evaluation Criteria

Recreational opportunities are, or have the potential to be, popular enough to attract visitors from throughout or beyond the region of comparison and/or are unique or rare within the region. River-related opportunities include, but are not limited to, sightseeing, interpretation, wildlife observation (wildlife dependent on a riparian environment), camping (water source and scenery), photography, hiking, fishing, hunting (species that are riparian dependent), and boating. The river may provide settings for national or regional usage or competitive events. Specific evaluation criteria are as follows:

- Popular enough to attract local and regional use;
- Recreation opportunities are rare or unique within the region; and/or,
- The river provides usage for regional and national events (excluding those wild and scenic rivers within wilderness).

### Scenery Evaluation Criteria

The landscape elements of landform, vegetation, water, color, and related factors result in notable or exemplary visual features and/or attractions (would be highly memorable). When analyzing scenic values, additional factors—such as seasonal variations in vegetation, scale of cultural modifications, and the length of time negative intrusions are viewed—may be considered. Scenery and visual attractions may be highly diverse over the majority of the river or river segment. Other scenic designations, such as state scenic byways or scenic waterways, may also be considered. Specific evaluation criteria are as follows:

- Highly memorable;
- Highly diverse and not common to other rivers within the area;
- Photographs are often included in publications; and/or,
- Human alterations are absent or contribute favorably to visual quality (bridges, historic structures).

## Geology/Hydrology

The rivers lie within the western, high and eastern slopes of the Cascade Mountain Range, which are dominated by volcanic deposits arising from the subduction of the Pacific plate beneath the North American plate. As a result of mountain building and glaciation, geologic processes include pyroclastic flows, debris flows, and earthflows. Terrain is generally mountainous, steeply sloping and highly dissected, leading to moderate to high stream gradients. The regional climatic regime includes an effect, resulting in a high to low precipitation gradient from west to east. Hydrologic regimes include rain-dominated, transitional, and snow-dominated with flashy, base flow, and snowmelt flow regimes.

### Evaluation Criteria

The river, or the area within the river corridor, contains one or more examples of a geology/hydrology feature, process or phenomenon that is unique or rare within the region of comparison. The feature(s) may be in an unusually active stage of development, represent a "textbook" example, and/or represent a unique or rare combination of geologic and hydrologic features (erosional, volcanic, glacial, channel morphology, flow regime, streambank or streambed erosion, and water-created features such as waterfalls, sinks, caverns, wetlands or springs).

## Fisheries and Wildlife

Headwaters on the forest provide high-quality habitat for many regionally and nationally significant fish and wildlife species. These native species are self-sustaining and the river courses and associated habitats are critical to their viability. These corridors harbor federally threatened spotted owl, Chinook and coho salmon, steelhead trout, bull trout and their designated critical habitats. Other regionally important species include Harlequin duck, Copes' giant salamander, redtree vole, redband trout, cutthroat trout, and pacific lamprey. They are managed as wild fish safe-havens and provide critical migration corridors or habitat for a full complement of native species within close proximity to the Portland/Vancouver metropolitan area.

### Fisheries Evaluation Criteria

Fish values may be judged on the relative merits of either fish populations, habitat, or a combination of these river-related conditions.

**Populations:** The river is nationally or regionally an important producer of resident and/or anadromous fish species. Of particular significance is the presence of wild stocks and/or federal or state listed (or candidate) threatened, endangered or sensitive species. Diversity of species is an important consideration and could, in itself, lead to a determination of outstandingly remarkable. Specific evaluation criteria are as follows:

- Wild fish presence (robust wild populations not influenced by hatcheries);
- Native spawning (fisheries);
- Diversity (genetic isolation or species abundance); and/or,
- Threatened and endangered species presence and/or density.

**Habitat:** The river provides exceptionally high-quality habitat for fish species indigenous to the region of comparison. Of particular significance is habitat for wild stocks and/or federal or state listed (or candidate) threatened, endangered or sensitive species. Diversity of habitats is an important consideration and could, in itself, lead to a determination of outstandingly remarkable. Specific evaluation criteria are as follows:

- High-quality habitat as a critical migration corridor for fisheries;
- Diverse suite of habitat types; and/or,
- High-quality habitat having core spawning or rearing areas.

### Wildlife Evaluation Criteria

Wildlife values may be judged on the relative merits of either terrestrial or aquatic wildlife populations or habitat or a combination of these conditions.

**Populations:** The river, or area within the river corridor, contains nationally or regionally important populations of indigenous wildlife species. Of particular significance are species considered to be unique, and/or populations of federal or state listed (or candidate) threatened, endangered or sensitive species. Diversity of species is an important consideration and could, in itself, lead to a determination of outstandingly remarkable. Specific evaluation criteria are as follows:

- Diversity (genetic isolation or species abundance);
- Threatened and endangered species presence and/or density; and/or,
- Unique wildlife species presence and/or density.

**Habitat:** The river, or area within the river corridor, provides exceptionally high-quality habitat for wildlife of national or regional significance, and/or may provide unique habitat or a critical link in habitat conditions for federal or state listed (or candidate) threatened, endangered or sensitive species. Contiguous habitat conditions are such that the biological needs of the species are met. Diversity of habitats is an important consideration and could, in itself, lead to a determination of outstandingly remarkable. Specific evaluation criteria are as follows:

- High-quality habitat as a critical migration corridor for wildlife;
- Diverse suite of habitat types; and/or,
- Contiguous habitat conditions for wildlife.

## Historic and PreContact

The wild and scenic river evaluation criteria broadly defines two time periods— prehistoric and historic. The prehistoric period, typically referred to as the precontact period in the Pacific Northwest, broadly relates to lifeways practiced prior to European or Asian contact with indigenous peoples. The historic period covers early contact between American Indians and Euro- and Asian Americans and Asian and Euro-American uses. Cultural resource sites located within the river corridors reflect the various uses during these eras.

### Historic

Although similar, the evaluation criteria for wild and scenic river historic values are separate and distinct from the criteria for evaluation established for identifying historic properties under the National Historic Preservation Act and detailed in 36 CFR 60.4. The wild and scenic river evaluation criteria does not negate the National Historic Preservation Act requirement for consideration of the effects of undertakings on historic properties within the nine designated wild and scenic river corridors.

Historic values in the region include transportation corridors such as Barlow Road, transient uses such as exploration and recreation, human occupation including homesteading and forest administrative facilities, and commodity extraction including logging, mining, grazing, trapping and water use.

#### *Evaluation Criteria*

The river or area within the river corridor contains sites or features associated with significant events, an important person, or a cultural activity of the past that was rare, unusual, or one-of-a-kind in the region. Historic sites or features in most cases are 50 years old or older. Of particular significance are sites or features listed in, or are eligible for inclusion in, the National Register of Historic Places.

### PreContact

PreContact values in the forest river systems are present in various cultural sites associated with Native American lifeways. The cultural boundaries of the Columbia Plateau, Northwest Coast, and Great Basin overlap in the area of the Mt. Hood National Forest. The archaeological record of this area reflects more than 8,000 years of upland resource procurement. Sites associated with precontact lifeways include seasonal camps, open air lithic scatters and isolates, culturally modified trees—particularly bark peeled western redcedars, stacked rock features, and berry drying trenches.

#### *Evaluation Criteria*

Although similar, the evaluation criteria for wild and scenic river historic values are separate and distinct from the criteria for evaluation established for identifying historic properties under the National Historic Preservation Act and detailed in 36 CFR 60.4. The wild and scenic river evaluation criteria does not negate the National Historic Preservation Act requirement for consideration of the effects of undertakings on historic properties within the nine designated wild and scenic river corridors.

Sites must have rare or unusual characteristics or exceptional human interest values. Sites may have national or regional importance for interpreting ethnography; may be rare and represent an area where a culture or cultural period was first identified and described; may have been used concurrently by two or more cultural groups; or, may have been used by cultural groups for rare or sacred purposes.

## Macroinvertebrates (Other Value)

Headwaters on the forest provide high-quality habitat for many regionally and nationally significant macroinvertebrate species. These native species are self-sustaining and the river courses and associated habitats are critical to their viability. These corridors harbor species that are not found anywhere else in the world and are endemic to the forest. Important macroinvertebrate species include the endemic Scott's apatanian caddisfly (*Allomyia scotti*), Green Springs Mountain farulan caddisfly (*Farula davisi)*, and the Columbia Gorge caddisfly (*Neothrema andersoni*). These waterways provide important habitat for a full complement of native macroinvertebrate species within close proximity to the Portland/Vancouver metropolitan area.

### Evaluation Criteria

These values may be judged on the relative merits of either macroinvertebrate populations, habitat, or a combination of these river-related conditions.

**Populations:** The river is nationally or regionally a producer of important macroinvertebrate species. Of particular significance is the presence of federal or state listed (or candidate) threatened, endangered or sensitive species. Diversity of species is an important consideration and could, in itself, lead to a determination of outstandingly remarkable. Specific evaluation criteria are as follows:

- Diversity (genetic isolation or species abundance);
- Threatened and endangered species presence and/or density; and/or,
- Endemic to the Mt. Hood National Forest or the region.

**Habitat:** The river provides exceptionally high-quality habitat for macroinvertebrate species indigenous to the region of comparison. Of particular significance is habitat for federal or state listed (or candidate) threatened, endangered or sensitive species. Diversity of habitats is an important consideration and could, in itself, lead to a determination of outstandingly remarkable. Specific evaluation criteria are as follows:

- High-quality habitat as a critical link for persistence of the species; and/or,
- Diverse suite of habitat types.

## Botany (Other Value)

The westside river corridors include forest habitat that is botanically and ecologically remarkable. It contains a substantial amount of old-growth forest (both riparian and upland stands); a suite of native plant communities; a diversity of plants and animals; and acts as a refuge for rare and uncommon botanical species (vascular plants, lichens, bryophytes, and fungi). This habitat type can be found in the Collawash River, South Fork Clackamas River, Eagle Creek, Fish Creek, South Fork Roaring River and Zigzag River. This habitat is where cold water corydalis (*Corydalis aquae-gelidae*), which grows along streams in late-successional/old-growth riparian forest, can be found. The East Fork Hood River and its immediate environment in the upper corridor also provides important botanical habitat on the forest. It provides important high-quality riparian habitat. In addition, in the lower-mid river corridor, moist basalt rock outcrops provide high-quality habitat for violet suksdorfia (*Suksdorfia violacea*). Throughout the river corridor, there are numerous wetlands, streams, and side channels that support diverse plant communities, some within late-seral forest habitat suitable for a variety special status botanical species. The corridors provide high-quality habitat for botanical species within close proximity to the Portland/Vancouver metropolitan area.

### Evaluation Criteria

Botany values may be judged on the relative merits of either botanical populations or habitat or a combination of these conditions.

**Populations:** The river, or area within the river corridor, contains nationally or regionally important populations of indigenous plant species. Of particular significance are species considered to be unique and/or populations of federal or state listed (or candidate) threatened, endangered, or sensitive species. Diversity of species is an important consideration and could, in itself, lead to a determination of outstandingly remarkable. Specific evaluation criteria are as follows:

- Nationally or regionally important populations of indigenous plant species that are unique, rare, and endemic, and/or exemplary; and/or,
- Diversity of species.

**Habitat:** The river, or area within the river corridor, provides exceptionally high-quality habitat for plant species indigenous to the region. Of particular significance is habitat for federal or state listed (or candidate) threatened, endangered or sensitive species. Diversity or uniqueness of habitats is an important consideration and could, in itself, lead to a determination of outstandingly remarkable. Specific evaluation criteria are as follows:

- High-quality habitat for indigenous species, including habitat for rare and endemic species;
- Diversity of habitats; and/or,
- Uniqueness of habitats.

# Appendix E: South Fork Clackamas Waterfalls Extensive Recreation Management Area Framework

The following is an excerpt from the Recreation Management Area Frameworks for the Salem District (BLM, 2016). This framework applies to the BLM administered lands within the South Fork Clackamas wild and scenic river corridor. This framework includes a description of the recreation values, what type of visitors are targeted, the outcome objectives, the Recreation Setting Characteristics, and the applicable management actions and allowable use restrictions.

## Status

Proposed for Development-New Opportunity

- Develop Recreation facilities and features: non-motorized trails
- Develop plan for trails
- Develop implementation level Recreation Area Management Plan
- Develop implementation level Travel Management Plan (including completing route designations for motorized access and non-motorized use) during district-wide Travel Management Plan
- Complete implementation-level environmental analysis and planning

## Recreation Management Area Description

See section called Important Recreation Values below. No immediate development plans. Congressionally Reserved, District-Designated Reserve, Harvest Land Base, Late Successional Reserve, and Riparian Reserve overlapping land use allocation that would condition management in this Recreation Management Area.

## Important Recreation Values

This Recreation Management Area is a designated a wild and scenic river. The South Fork of the Clackamas River boasts several sizable and highly scenic waterfalls near its confluence with the main stem of Clackamas River. The lower canyon is a mix of BLM and National Forest System lands. Visible remnants of the historic South Fork Water Works, which provided municipal drinking water to Oregon City and West Linn, offer interpretation opportunities.

## What Type of Visitors are Being Targeted

The South Fork Clackamas Waterfalls Extensive Recreation Management Area has potential to draw local residents, Portland metropolitan residents, and regional or out-of-state visitors traveling the West Cascades Scenic Byway.

# Outcome Objectives

Participants in visitor assessments report an average 4.0 realization of the targeted experience and benefit outcomes listed in the table below. (4.0 on a probability scale where: 1 = Not at all realized to 5 = Fully realized).

**Table 10. Summary of Outcome Objectives**

| Visitor Activities | Visitor Experiences | Visitor Benefits |
|---|---|---|
| Hiking<br>Picnicking<br>Day use<br>Environmental education<br>Canyoneering | • Enjoying getting some needed physical exercise<br>• Enjoying risk-taking adventure<br>• Enjoying having access to hands on environmental learning<br>• Enjoying learning about local history | **Personal Benefits:**<br>• Better mental health and health maintenance<br>• Enhanced awareness and understanding of nature<br>• Better sense of my place within my community<br>**Community/Social Benefits:**<br>• More informed citizenry about where to go for different kinds of recreation experiences and benefits<br>**Environmental Benefits:**<br>• Greater community ownership and stewardship of park, recreation, and natural resources<br>• Increased ecologically friendly tourism operations<br>**Economic Benefits:**<br>• More positive contributions to local-regional economy<br>• Maintenance of community's distinctive recreation-tourism market niche or setting character |

# Supporting Management Actions and Allowable Use Decisions

**Proposed Recreation Setting Characteristics Designation:** Middle Country

**Management Actions and Allowable Use Restrictions:**

Camping Restrictions:

- Open to overnight use

Special Recreation Permits:

- Allow special recreation permits within recreation management area boundaries

Trails and Travel Management:

- Closed to biking
- Closed to equestrian
- Open to hiking
- Designate area as *limited to existing* for off-highway vehicles

Firearm Use Restriction:

- Closed to shooting

| **Lands and Realty** |
|---|
| • Allow Recreation Public Purposes Leases if compatible with meeting recreation objectives, not interfering with recreation opportunities, and maintaining setting characteristics.<br>• Allow Federal Land Policy and Management Act right-of-way grants if compatible with meeting recreation objectives, not interfering with recreation opportunities, and maintaining setting characteristics.<br>• Allow Mineral Leasing Act right-of-way grants if compatible with meeting recreation objectives, not interfering with recreation opportunities, and maintaining setting characteristics.<br>• Allow land use authorizations through leases, permits, and easements if compatible with meeting recreation objectives, not interfering with recreation opportunities, and maintaining setting characteristics.<br>• Subject to Wild and Scenic River designation and lands with Wilderness characteristics. |

| **Forest Management** |
|---|
| • Allow timber harvest if compatible with meeting recreation objectives, not interfering with recreation opportunities, and maintaining setting characteristics.<br>• Allow firewood cutting and special forest product harvest if compatible with meeting recreation objectives, not interfering with recreation opportunities, and maintaining setting characteristics.<br>• Allow sale of hazard trees if compatible with meeting recreation objectives, not interfering with recreation opportunities, and maintaining setting characteristics.<br>• Allow fuel treatments or other vegetation modifications if compatible with meeting recreation objectives, not interfering with recreation opportunities, and maintaining setting characteristics.<br>• Establish timber harvest Best Management Practices -Do not skid across trail, directional falling required to protect trail-based resources.<br>• Subject to Wild and Scenic River designation and lands with Wilderness characteristics. |

| **Mineral Management** |
|---|
| • Apply a controlled surface use stipulation on surface occupancy and surface-disturbing activities to minimize conflicts with developed (and future) recreation sites and trails.<br>• Leasable Minerals: Open - No Surface Occupancy<br>• Locatable Minerals: Recommend for Withdrawal<br>• Salable Minerals: Closed |

# Appendix F: Monitoring Plan

**Table 11. Monitoring plan (Italicized monitoring questions are part of the current monitoring plans for Mt. Hood National Forest or Northwest Oregon District of BLM)**

| River Value | Applicable River(s) | Monitoring Question | Indicator | Trigger | Threshold | Management Actions, if threshold reached | Sampling Procedure and Frequency |
|---|---|---|---|---|---|---|---|
| Water Quality, Fish, Botany | All | *Have Best Management Practices (BMPs) been implemented and are they effective at managing water quality consistent with the Clean Water Act?*<br>Are recreation sites adding sedimentation to the wild and scenic river? If yes, is the sedimentation negatively impacting the water quality? | Number of sites associated with trails, take-outs, boat ramps, parking lots, campgrounds, and roads that show evidence of erosion and delivery to the river or a tributary to the river | Observation of rilling and gullies at recreation areas | 0 sites | Designate and direct visitors to sustainable facilities, routes, and river access points.<br>Close and rehabilitate un-sustainable facilities, routes, and river access points.<br>Construct sustainable facilities, routes, and river access points if needed, and where appropriate | Annually for all rivers located outside of wilderness. The frequency of monitoring will increase with noticeable increase in use. The rivers located entirely within designated wilderness and currently see little use. Water quality monitoring, therefore, will be commensurate with apparent use; as use increases, monitoring frequency will also increase. |

| River Value | Applicable River(s) | Monitoring Question | Indicator | Trigger | Threshold | Management Actions, if threshold reached | Sampling Procedure and Frequency |
|---|---|---|---|---|---|---|---|
| Water Quality | All | *Have BMPs been implemented and are they effective at managing water quality consistent with the Clean Water Act?*<br>Is the segment of Wild and Scenic River that is on the Oregon Department of Environmental Quality (ODEQ) 303(d) list classified as impaired (Category 5)? | A designated Wild and Scenic river segment is included on the ODEQ's 303(d) list. | A pollutant has been identified by ODEQ to be impairing water quality on a segment of designated Wild and Scenic River. | The segment is listed as Category 5 and requires a TMDL (total maximum daily load) for the defined pollutant. | Development of a Water Quality Restoration Plan that qualifies ODEQ requirements for meeting the TMDL for the defined pollutant. | As determined in coordination with ODEQ in the signed Water Quality Restoration Plan. |
| Water Quality | Collawash River Segment 2 | Are there potential impacts to water quality from human waste in segment 2 of Collawash River? | Multiple numbers of human waste deposits (obvious shallow burial holes included) and/or direct conduits from fecal source to surface water body. | Recent (within 1 year) evidence of dispersed camping or other concentrated recreation use, in areas without sanitary facilities. | Multiple piles of unburied human waste observed (per site visit). | More frequent monitoring; informational signage with education on "pack it out" and defecating away from surface water; "pack it out" requirements; fix the cause of contamination; and provide sanitary facilities where possible. | Annually. The frequency of monitoring will increase with noticeable increase in recreation use. |

| River Value | Applicable River(s) | Monitoring Question | Indicator | Trigger | Threshold | Management Actions, if threshold reached | Sampling Procedure and Frequency |
|---|---|---|---|---|---|---|---|
| Water Quality, Fish | Fifteenmile Creek Segments 3 and 4 | Is there preexisting management, landscape features, or range improvements that control or draw livestock away from over utilizing stream sections? | Livestock in the stream and disrupting redds (spawning nests), with primary concerns during Steelhead spawning season.<br>Number of sites associated with livestock use that show evidence of erosion and/or sediment delivery to the river or a tributary to the river | Evidence of livestock over utilizing or damaging stream features. Maintain minimum impact. | Evidence of cattle lingering in water bodies un-managed | Period of use during the gazing season on the Friend Unit is August 16 to September 30. Permittee controls livestock movement during season of use to minimize impact of stream sites utilizing management tools listed on the annual operating instruction plan to protect outstanding values. | Site monitoring using range monitoring methods under the ranger permit. |
| Botany | Collawash River Segment 1, Eagle Creek, South Fork Roaring River | *Are known populations of invasive species continuing to spread? Are new infestations occurring?*<br>Is use having an impact on vegetation along river banks of the designated wild and scenic river? | Human disturbance and degradation along river banks and gravel bars (e.g., trampling of vegetation, creation of informal trails, presence of invasive plants) | Observable (noticeable) increase in disturbances | An observable increase in human disturbance, noted between visits, every 3 to 5 years, that raises concerns | Survey a representative sample of river stretch within the segment.<br>Map areas where disturbance is observed using GPS. If disturbance is observed, educate with signage, rehabilitate disturbance, or consider reducing the number of visitors allowed to recreate in the area | Monitor visitor impacts periodically (every 3 to 5 years) by surveying a representative sample of river stretches within the segment. |

| River Value | Applicable River(s) | Monitoring Question | Indicator | Trigger | Threshold | Management Actions, if threshold reached | Sampling Procedure and Frequency |
|---|---|---|---|---|---|---|---|
| Botany | East Fork Hood River | Are climbing activities negatively impacting the violet suksdorfia at Pete's Pile? | Impacts to vegetation (vascular plants, bryophytes, and lichens) on the climbing wall and at the base of the climbing wall from climbers.<br>(Bryophytes = mosses and liverworts) | Evidence of vegetation (vascular plants, bryophytes, and lichens) dislodged from cracks, ledges, and crevices at climbing areas onto ground below. | No plant material dislodged from cracks, ledges, and crevices at climbing area | Install interpretative signs to educate climbers about the rarity of violet suksdorfia and potential impacts from recreational activities. Continue fostering partnerships with the local climbing community. Develop a climbing management plan that addresses strategies for human waste management, resource protection and erosion control. This management plan will also address the unauthorized (social) trail. | Monitor Pete's Pile and other popular climbing areas on an annual basis to assess impacts to violet suksdorfia. |

| River Value | Applicable River(s) | Monitoring Question | Indicator | Trigger | Threshold | Management Actions, if threshold reached | Sampling Procedure and Frequency |
|---|---|---|---|---|---|---|---|
| Fish | Collawash River Segments 1 and 2, Fifteenmile Creek Segments 3 and 4 | Are we maintaining or enhancing quality aquatic habitat for threatened and endangered species within the Collawash River, Fifteenmile Creek, and Fish Creek wild and scenic river corridors? | People walking or cooling off in the stream and disrupting redds (spawning nests), with primary concern in late summer and fall (mid-August to November except in Fifteenmile Creek being early spring through Mid-July) during steelhead salmon and bull trout spawning season | Observation of people in the stream during late summer or fall, especially on gravel and cobble substrate. | No more than 2 groups of people observed walking instream or disturbing stream substrate in areas that are < 3% gradient that are easily accessible via road | Information posted or signed. Forest Service personnel visits. Identify key spawning areas, and block access to direct use from these reaches. | Monitoring of habitat qualities that includes current annual coordination with Oregon Department of Fish & Wildlife, U.S. Fish & Wildlife and Confederated Tribes of Warm Springs |
| Fish | Middle Fork Hood River, Collawash River Segments 1 and 2, Fifteenmile Creek Segments 3 and 4, Fish Creek | *Are Standards and Guidelines effective in maintaining or enhancing aquatic habitat complexity?* | Salmonid habitat | Evidence of reduction or degradation of stream habitat and water quality that supports salmonids | No increase in stream temperature. Maintenance of large wood cover and spawning gravel | Plan and implement actions that would improve habitat conditions | Monitoring of habitat qualities that includes current annual coordination with Middle Fork Irrigation District, Oregon Department of Fish & Wildlife, U.S. Fish & Wildlife and Oregon Department of Environmental Quality. |

| River Value | Applicable River(s) | Monitoring Question | Indicator | Trigger | Threshold | Management Actions, if threshold reached | Sampling Procedure and Frequency |
|---|---|---|---|---|---|---|---|
| Historic | Fifteenmile Creek Segment 1, South Fork Clackamas River | *Are significant (National Register eligible) historic properties being maintained, stabilized, and repaired according to historic preservation standards? (Forest Service)*<br>*Are the outstandingly remarkable values of designated Wild and Scenic river corridors (including those classified as Wild, Scenic, or Recreational) being maintained? (BLM)* | Impacts to eligible cultural resources. Site integrity. | Impact to integrity of historic properties (elements of integrity include: location, setting, design, materials, workmanship, feeling, association) | One or more incidence of impact to integrity | Develop mitigation measures to preserve site integrity. Consult with State Historic Preservation Office concerning mitigation measures if an adverse effect determination is reached | Annual site condition assessment *(Forest Service)*<br>Evaluate 100 percent of BLM-authorized activities that have the potential to affect the outstandingly remarkable values of wild and scenic river corridors. This will be completed annually initially, and then changed to an interval to once every 3 years if 3 consecutive years of monitoring show 100 percent compliance. *(BLM)* |

| River Value | Applicable River(s) | Monitoring Question | Indicator | Trigger | Threshold | Management Actions, if threshold reached | Sampling Procedure and Frequency |
|---|---|---|---|---|---|---|---|
| Macro-invertebrate | Zigzag | Are recreational social trails in and around the stream impacting macroinvertebrates within the Zigzag River wild and scenic river corridor?<br>*Are Standards and Guidelines effective in maintaining or enhancing aquatic habitat complexity?* | Applies to only small springs and tributaries above elevation 3,500 feet.<br>Social trails paralleling spring or dispersed camping or fire rings near springs and spring fed tributaries.<br>People walking in springs or tributary crossing evidence | Evidence of people using the springs for collecting water.<br>Degraded or reduction in instream moss and vegetation | These springs are in steep and unstable areas and nearly inaccessible to hikers. Hikers and campers accessing these areas instream will create small landslides and debris flows in unstable and steep streams. No more than one new trail, campfire, or spring crossing reported in one year | Rehabilitate and close unauthorized trails and campfire rings<br>Information posted or signed to explain sensitive endemic species use and impacts caused by social trails. | Annual site inspections and field visits to monitor for new unauthorized trails, campsites, and roads while staff is performing normal field work. |

| River Value | Applicable River(s) | Monitoring Question | Indicator | Trigger | Threshold | Management Actions, if threshold reached | Sampling Procedure and Frequency |
|---|---|---|---|---|---|---|---|
| Recreation | Collawash River Segment 1, Eagle Creek, East Fork Hood River, Fifteenmile Creek Segments 2 and 3, Zigzag River | *Are people having a high level of satisfaction during their visit to the Mt Hood National Forest?* | People at one time<br>Visitor satisfaction | Observed increase or crowding at parking areas or pullouts greater than 4 times per season outside holidays<br>Unacceptable shift in satisfaction score (from satisfied to not satisfied), or increase in crowding or conflict measured in National Visitor Use Monitoring. | Not to exceeded 80 percent of the assigned river capacity greater than 2 times per season outside holidays. | Trail development to disperse visitors. More group campground gathering places. Consider restrictions on number of people in each dispersed site.<br>Increase site specific monitoring if use increase is observed. | Site monitoring annually while staff performing work assignments. National Visitor Use Monitoring occurs every 5 years and informs satisfaction levels on a forest-wide scale. |
| Recreation | Eagle Creek, Fifteen Mile Creek Segments 2 and 3, Zigzag River | *Are the physical/biological, managerial and social settings of each Wilderness Resource Spectrum (WRS) maintained consistent with the standards for wilderness management?* | Encounters per day | Increases noted in group sizes or requests for group permits.<br>Increases in impacts based on recreation site or solitude monitoring. | Encounters with other groups shall be limited to no more than 10 groups per day during 80 percent of the primary recreational use season. | Conduct additional visitor use monitoring. | Wilderness monitoring protocols |

| River Value | Applicable River(s) | Monitoring Question | Indicator | Trigger | Threshold | Management Actions, if threshold reached | Sampling Procedure and Frequency |
|---|---|---|---|---|---|---|---|
| Scenery | Middle Fork Hood River, South Fork Clackamas River, Zigzag River | Are we maintaining the visual quality objectives recommended for the Middle Fork Hood River, South Fork Clackamas River, and Zigzag River wild and scenic river corridors? (Forest Service)<br>*Are the outstandingly remarkable values of designated Wild and Scenic river corridors (including those classified as Wild, Scenic, or Recreational) being maintained? (BLM)* | Activities or modifications which alter landform, vegetation, water, or character within the viewshed as seen from the river and high use areas. | Visitor use activities with evidence of erosion, soil compaction, exposed soils, or damaged vegetation, such as trampling, lack of ground cover or damaged trees | 1 site that does not meet visual resource management plan direction and visual quality objectives. | Designate and direct visitors to sustainable facilities, routes, and river access points.<br>Close and rehabilitate un-sustainable facilities, routes, and river access points.<br>Construct sustainable facilities, routes, and river access points if needed, and where appropriate | Site inspections and field visits as part of normal Forest Service administrative duties. *(Forest Service)*<br>Evaluate 100 percent of BLM-authorized activities that have the potential to affect the outstandingly remarkable values of wild and scenic river corridors. This will be completed annually initially, and then changed to an interval to once every 3 years if 3 consecutive years of monitoring show 100 percent compliance. *(BLM)* |
| Wildlife | East Fork Hood River | *What is the trend for early-seral habitat needed for deer and elk persistence?*<br>What is the trend for habitat needed for the Harlequin duck in the East Fork Hood River wild and scenic river corridor? | Wildlife disturbance, specifically Harlequin duck nesting and migration in stream and floodplain, and big game calving, fawning, and foraging habitat. | Evidence of new unauthorized dispersed camping sites or user made trails and roads in the corridor | No new (<1) unauthorized dispersed campsites, trails, or roads within the entire river corridor. | Restore disturbed area and close it to future use in same year discovered. | Annual site inspections and field visits to monitor for new unauthorized trails, campsites, and roads while staff is performing normal work assignments. |

| River Value | Applicable River(s) | Monitoring Question | Indicator | Trigger | Threshold | Management Actions, if threshold reached | Sampling Procedure and Frequency |
|---|---|---|---|---|---|---|---|
| Wildlife | Fifteenmile Creek All Segments | Are we effectively maintaining or enhancing wildlife habitat in the Fifteenmile Creek wild and scenic river corridor? | Wildlife disturbance and habitat loss | Evidence of new unauthorized dispersed camping sites or user made trails and roads in the corridor. | No new (<1) unauthorized dispersed campsites, trails, or roads within the entire river corridor. | Restore disturbed area and close it to future use in same year discovered. | Annual site inspections and field visits to monitor for new unauthorized trails, campsites, and roads while staff is performing normal work assignments. |

# Appendix G: User Capacity Estimates for Nine Wild and Scenic Rivers

## Introduction

Several steps were taken over the planning process to reach the final user capacity numbers identified in this report. With little known use in most of the nine rivers, field data was needed to assess the current visitor use within the river corridors and the impacts associated with that use. Some areas do not have river-related use, and a few locations were known to have river-specific use, but all in all, there was minimal information about visitor use within the river corridors. The rivers were first put through an initial capacity ranking system which outlined whether further studies were needed to address any current or potential user capacity concerns. In this initial step, three of the rivers were found to not have any user capacity concerns, therefore, in depth surveying was not needed. The other six rivers were found to have a moderate need to address user capacity along those corridors, therefore, more information was needed.

To further decipher potential impacts to the outstandingly remarkable values along these six rivers, an evaluation team defined current and potential impact locations as well as use types per river that may be of concern to the outstandingly remarkable values. From these two initial steps, a survey protocol was designed, and field data was collected. The survey data reports areas of concern and known impact locations which helped guide the development of this report. No major capacity concerns were reported along any of the rivers visited over the summer of 2018. The user capacity estimates for each river are well over the current visitor use recorded and are not anticipated to meet or exceed the defined numbers unless otherwise noted in the report.

This report will summarize the user capacity for each river as well as describe the indicators and thresholds for each river value and will inform the Comprehensive River Management Plan.

## Background

The Wild and Scenic Rivers Act directs that river-administering agencies address visitor use capacities to protect the free-flowing conditions, water quality, and outstandingly remarkable values of designated rivers (Wild and Scenic Rivers Act, October 2, 1968). The 1982 National Wild and Scenic Rivers System: Final Revised Guidelines for Eligibility, Classification and Management of River Areas (1982) define carrying capacity as:

> The quantity of recreation use which an area can sustain without adverse impact on the outstandingly remarkable values and free-flowing character of the river area, the quality of recreation experience, and public health and safety. To further meet the requirement of the act, the guidelines note that: Management plans will state the kinds and amounts of public use that the river can sustain without impact to the values for which it was designated (1982).

In addition to the Act and the interagency revised guidelines for eligibility, classification and management of river areas, the Ninth Circuit Court of Appeals issued a 2008 ruling regarding visitor capacity decisions in the revised Comprehensive River Management Plan for the Merced River in Yosemite National Park. Among the findings, the court ruled that the Merced Comprehensive River Management Plan must:

> (1) discuss the maximum number of people that can be received in a river corridor and describe an actual level of visitor use that will not adversely impact or degrade river values, (2) make an explicit tie between the kinds and amounts of visitor and other public use and the protection and enhancement of river values, (3) specify an appropriate quantity of use based on an analysis of

> resource values and desired conditions, not necessarily previous or current use levels, and (4) conduct periodic and on-going studies to determine whether the quantity and mixture of use leads to adverse impact on the resource values of the river area (U. S. Court of Appeals, 2008).

Although this ruling was made relative to the Merced River, the findings provide clarification for addressing the visitor capacity provision for designated rivers on the Mt. Hood National Forest.

The term "capacity" in the recreation context has been confusing due to the tendency to use this term as a short-hand for the entire concept of visitor use management. Thus, a few key points must be noted.

- Visitor capacity is not the same as use limits. Limiting use is a specific management tool, whereas visitor capacity is an overall estimate of how much use an area can sustain while achieving desired conditions. Limiting use is only one of many tools available to managers to ensure visitor use does not cause adverse impact to desired conditions. Other tools available to managers include providing visitor education, offering information about alternative opportunities, changing where or when use occurs, re-designing sites, re-distributing use, limiting the type(s) of use, limiting group size, and many others.
- Visitor capacity is about the maximum amount of use that can be sustained, not how much use is desired.
- The term user capacity as used in this document is synonymous with "visitor capacity," "carrying capacity," and similar terms.

## Estimating User Capacity

User capacity can be described as a subset of the larger visitor use management framework. In the Interagency Visitor Use Management Council's paper titled, "Visitor Capacity Guidebook: Managing the Amounts and Types of Visitor Use to Achieve Desired Conditions" they describe four guidelines for determining visitor capacity (IVUMC, 2017):

1. Determine the analysis area;
2. Review existing direction and knowledge;
3. Identify the limiting attributes; and
4. Identify capacity.

The Interagency Wild and Scenic River Coordinating Council further described user capacities in their technical paper titled, "Steps to Address User Capacities for Wild and Scenic Rivers". In this paper, it further outlines the process for determining user capacity, but specific to Wild and Scenic Rivers. Table 12 below outlines the steps identified by the council (IWSRCC, 2018). Step 1 has been addressed in "The River Values Report for Nine Wild and Scenic Rivers on Mt. Hood National Forest" (April 2019), which describes the baseline and current conditions, and uses on the rivers. Then, the Forest Plan (pages Four-208 to Four-210) identifies desired conditions for the classification, thereby addressing Step 2. This report covers Steps 3 through 8 outlined in the following table. The monitoring plan in Step 9 will be included in the Comprehensive River Management Plan.

**Table 12. Steps to address user capacities for wild and scenic rivers**

| Step | Step Details |
|---|---|
| 1 | Describe the baseline and current conditions and uses for the Wild and Scenic River |
| 2 | Identify desired conditions for the rivers' values and classifications |
| 3 | Identify the kinds of use that the Wild and Scenic River corridor can accommodate |
| 4 | Identify measurable indicators for the desired conditions |
| 5 | Establish thresholds for each indicator |
| 6 | Identify triggers that elicit management response |
| 7 | Identify management actions to take when triggers are reached |
| 8 | Determine the Wild and Scenic River corridor's user capacity |
| 9 | Establish a monitoring and adaptive management approach |

The Ninth Circuit Court ruling regarding the Merced River recognized that the Wild and Scenic Rivers Act "does not mandate one particular approach to visitor capacity". As described in the visitor capacity literature, capacity estimates must be derived from decisions about desired conditions, including the desired experiential opportunities, managerial setting and infrastructure development (IVUMC, 2016). More specifically, capacity estimates must correlate with established thresholds to ensure no thresholds would be violated if the amount of use were to increase (Cole and Carlson 2010). This process used a combination of the Interagency Council's technical papers as well as the Ninth Circuit Court decision to formulate the best approach for determining user capacity on the rivers of the Mt. Hood National Forest.

User capacity is an **estimate** and not always a definitive number. This is particularly true in situations where the amount of use is low and does not threaten desired conditions or river values. In these situations, capacity estimates yield visitor use numbers that are far higher than current amounts of use, thus decisions about capacity do not result in near-term management actions to regulate use levels. For a few of the nine rivers on the forest, this is the case. The amount of investment devoted to determining user capacity needs to be commensurate with the consequence of the potential decisions to be made about managing visitor use. For most of the nine river segments, user capacity numbers will not reflect current use, however, monitoring will still occur, and more precise numbers will be developed if trends suggest river values could be threatened. There are a few exceptions on these nine rivers where use levels reported were at a moderate level and consequently the amount of analysis devoted to determining user capacity on those rivers was greater, however, capacity numbers for those segments are still higher than the current use.

In general, the capacities were determined by looking at the current use by site type along each river while considering turnover and people at one time requirements at designated sites outlined in the Forest Plan. For dispersed areas, the survey data collected estimated how many individuals could physically be in the area. In rivers within designated wilderness, carrying capacities from management direction was used as a baseline. All of these factors were then added up to estimate a total user capacity for each river.

The section below briefly summarizes pertinent information necessary to address the visitor capacity requirement. For each river, the following information is summarized:

- The **river values** (outstandingly remarkable values, water flow and water quality) that could be affected by visitor use are identified.
- **Current visitor use –** This summarizes all types of use that is known to be occurring in each river corridor, past and present.
- **Indicators, triggers and thresholds** – To monitor each river value, one or more key indicators are selected that will allow managers to keep attuned to changes in the ecosystem or social setting. For each key indicator, a threshold is set. This value determines the amount of change desired or that will be accepted before river management objectives are no longer being met. In this manner, indicators and thresholds provide managers with information to determine if the resource values, and opportunities they are managing, are actually being provided. The standards serve as triggers that cause predetermined management actions to be implemented when the limit is being approached. For each indicator and standard, a management action column lists the likely action that would be triggered if a particular threshold is reached. These management actions may require additional environmental analysis and would be subject to all relevant law, regulation and policy for the relevant agency, including the National Environmental Policy Act.
- Estimate of **user capacity** and rationale – Each river capacity is split by pertinent use types. In general this included the following.
    - **Overnight use**: This category would include dispersed and developed camping and the numbers that could be accommodated in the corridor.
    - **Day use:** Represents the maximum number of day users who can be accommodated in the river corridor or segment at one time. Day-users spend all or part of a day in the corridor but then spend the night outside the corridor. In most situations, day-use levels typically reach a peak during mid-day.
    - **Wilderness use**: In river corridors that were 100 percent in wilderness, the wilderness use category is day use and overnight use combined. Wilderness capacity is defined in the Forest Plan.
    - **Administrative use:** While this category was not separated with a number assigned, it was included in the overall process and can still be accommodated through user capacity numbers defined in each corridor. This category includes activities by Forest Service employees, concessioners, and contractors in support of the Wild and Scenic River operations and management. Other Mt. Hood National Forest partners and volunteers are also included in this use category.
    - **Other use**: This category is other special concern use types which may require specific monitoring in the future and will be defined where necessary.

## Data Collection

In order to gather use data most efficiently, a ranking system was developed by using a user capacity decision criteria support tool. This tool summarized the access, use types, recreational development, conflicts among users, special interests, and the ability for users to disperse. This tool ranked each river on a high, moderate, or low need to address user capacity. Three of the rivers ranked as a low need (Eagle Creek, Middle Fork Hood River, and South Fork Roaring River); therefore, field data collection was not a

priority. The other six rivers ranked as moderate, needing additional data collection. None of the rivers ranked as a high need.

On May 2, 2018, the interdisciplinary team assessed visitor use impacts on each of the six moderate ranked rivers (Collawash, East Fork Hood River, Fifteenmile Creek, Fish Creek, South Fork Clackamas and Zigzag) in order to determine where further field data was needed and to what degree. The initial resource impacts by recreation use type are summarized in Appendix B of the full User Capacity Report. Some of the concerns brought forward were dispersed recreation effects on water quality (fecal contamination), the spread of invasive plants by recreation users, sedimentation from trails and roads, and recreational climbing impacts to a sensitive species, Violet suksdorfia (*Suksdorfia violacea*). The concerns were concentrated on Collawash (specifically in segment 2), East Fork Hood River, and Fifteenmile Creek. Fish Creek and South Fork Clackamas had recreation concerns brought up and therefore needed further investigation. Zigzag has overlapping designations and therefore use data specific to the river corridor was needed to better determine the potential impacts.

In the summer of 2018, use data was collected on these six moderate ranked rivers using the Wild and Scenic River Visitor Use Data Collection Form (available in the full User Capacity Report). The form collected data such as: site type, size and or people at one time estimates, access, cleanliness, social trails (user created trails), and observed visitor use. The second page ranked the biophysical impacts (soil and vegetation) by recreation use type. A summary of the data collected is found below, and a more detailed summary is available upon request. The two rivers which had the most high to moderate rated impacts were segment 2 of the Collawash River and East Fork Hood River. Human waste was documented at several sites along the Collawash River and at one location along the East Fork Hood River. The data collected from these forms was used to inform user capacity discussions by the interdisciplinary team in December 2018.

## Indicators, Triggers and Thresholds Common to all River Segments

The Wild and Scenic Rivers Act requires the administering agency to prepare a Comprehensive River Management Plan “to provide for the protection of the river values” (Section 3(d)(1)). This includes resource protection related to the wild and scenic river’s free-flowing condition, water quality, and outstandingly remarkable values. Water quality indicators, triggers and thresholds are the same across all nine rivers evaluated in this report, as summarized in the following table.

**Table 13. Indicators, triggers and thresholds common to all river segments**

| River Value | Indicator | Trigger | Threshold | Management Actions | Rationale |
|---|---|---|---|---|---|
| *Water Quality, Fish, Botany | Number of sites associated with trails, take-outs, boat ramps, parking lots, campgrounds, and roads that show evidence of erosion and delivery to the river or a tributary to the river | Observation of rilling and gullies at recreation areas | 0 sites | Designate and direct visitors to sustainable[8] facilities, routes, and river access points<br>Close and rehabilitate un-sustainable facilities, routes, and river access points<br>Construct sustainable facilities, routes, and river access points if needed, and where appropriate | Soil compaction at facilities, routes, and river access points decreases water infiltration and increases runoff. Heavily used areas which typically lack ground-cover are most susceptible to erosion; where they are near waterbodies, they may cause sedimentation. Sedimentation can adversely affect aquatic habitat and the recreation experience |
| *Water Quality | A designated Wild and Scenic river segment is included on the Oregon Department of Environmental Quality (ODEQ) 303(d) list. | A pollutant has been identified by ODEQ to be impairing water quality on a segment of designated Wild and Scenic River. | The segment is listed as Category 5 and requires a TMDL (total maximum daily load) for the defined pollutant. | Development of a Water Quality Restoration Plan that qualifies ODEQ requirements for meeting the TMDL for the defined pollutant. | Pollutants and other bacteria can affect water quality over time. |

*Water Quality: The frequency of monitoring will increase with noticeable increase in recreation use. The designated segments of the Eagle Creek, South Fork Clackamas River, South Fork Roaring River, and Zigzag River are located entirely within designated wilderness and currently see little recreation use. Water quality monitoring, therefore, will be commensurate with apparent recreational use; as use increases, monitoring frequency will also increase. There may not be an immediate need to track the water quality metrics listed in the table above.

# Collawash River - Segment 1

## Current Visitor Use

Recreational use within the corridor is primarily dispersed in nature such as camping, hiking, fishing, and expert kayaking. Seasonal use is relatively moderate, with more use during peak summer holidays. Users are primarily local in nature, but some travel from other places within the state to experience the rare and unique kayaking opportunities offered in this segment.

Segment 1 of the Collawash River is popular for local use and can draw advanced recreationalist looking for a high-quality and challenging kayak run. The river corridor has overlapping portions within the wilderness, which is often only 100 feet from the main road. Equestrian use in the area has been steadily

[8] Sustainable recreation, as defined by the 2012 Planning Rule (36 CFR 219) is a set of recreation settings and opportunities on the National Forest System that is ecologically, economically, and socially sustainable for present and future generations. Recreation setting is defined as the social, managerial, and physical attributes of a place that, when combined, provide a distinct set of recreation opportunities. The recreation setting and opportunity of the facility should be ecologically, economically and socially sustainable for present and future generations. More information is available at: https://www.fs.fed.us/emc/nfma/includes/planning_rule/08_planning_rule.pdf

increasing, but the river is not a recreational draw for that type of use. There are no developed campgrounds within this segment of the corridor. What makes segment 1 unique for recreation is the challenge it provides to expert kayakers. This is due primarily to the geology of the area allowing for a change in experience nearly every time it is run. The remoteness and challenge of this segment make recreation an outstandingly remarkable value.

While the Collawash River initially ranked as a moderate need to address user capacity, after further assessment of visitor use and associated impacts, segment 1 was changed to a low priority for field data collection, therefore field studies were not as detailed.

## Indicators, Triggers and Thresholds

The following table provides the indicators, triggers, thresholds, and management actions, along with the rationale, for each of the outstandingly remarkable values identified for this wild and scenic river segment.

**Table 14. Indicators, triggers and thresholds for Collawash River, segment 1**

| River Value | Indicator | Trigger | Threshold | Management Actions | Rationale |
|---|---|---|---|---|---|
| Fish | People walking or cooling off in the stream and disrupting redds (spawning nests), with primary concern in late summer and fall (mid-August to November) during salmon and bull trout spawning season | Observation of people in the stream during late summer or fall, especially on gravel and cobble substrate | No more than 2 groups of people observed walking instream or disturbing stream substrate in areas that are ≤ 3% gradient that are easily accessible via road | Information posted or signed. Forest Service personnel visits. Identify key spawning areas, and block access to direct use from these reaches | Trampling of redds will reduce survival of juvenile salmon and bull trout. Disturbance to staging and spawning salmon and bull trout increases stress and reduces survival |
| Botany | Human disturbance and degradation along river banks and gravel bars (e.g., trampling of vegetation, creation of informal trails, presence of invasive plants) | Observable (noticeable) increase in disturbances | An observable increase in disturbance, noted between visits, every 3 to 5 years, that raises concerns | Monitor visitor impacts periodically (every 3 to 5 years) by surveying a representative sample of river stretches within the segment. Map areas where disturbance is observed using GPS. If disturbance is observed, consider reducing the number of visitors allowed to recreate in the area | Reducing disturbance will protect cold water corydalis habitat |

| River Value | Indicator | Trigger | Threshold | Management Actions | Rationale |
|---|---|---|---|---|---|
| Recreation | People at one time | Observed increase or crowding at parking areas or pullouts greater than 4 times per season outside holidays | Not to exceeded 80 percent of the assigned river capacity greater than 2 times per season outside holidays | Trail development to disperse visitors. More group campground gathering places. Consider restrictions on number of people in each dispersed site | Having large groups at one time will change and or diminish the recreation experience and potentially exceed maximum capacity estimates |

## Estimate of Visitor Capacity

The following tables provide an estimated capacity for overnight use and day use for this river segment.

**Table 15. Estimated user capacity for Collawash River, segment 1**

| Use Type | Site/Activity | Measure | Estimated Capacity | Rationale |
|---|---|---|---|---|
| Overnight Use | Dispersed camping | People per day | 50 | Based on number of dispersed sites or pullouts available for groups to disperse camp |
| Day Use | Day use activities | People per day | 120 | Based roughly on the Wilderness regulations of group size of 12 and no more than 10 groups per day. The river weaves in and out of Wilderness |

Based on these use types, the overall user capacity for the Collawash River, segment 1 is 170 people per day as described in the following table.

**Table 16. Overall user capacity for Collawash River, segment 1**

| Use Type | Estimated Capacity (people per day) |
|---|---|
| Overnight Use | 50 |
| Day Use | 120 |
| **Total** | **170** |

# Collawash River - Segment 2

## Current Visitor Use

The area along the river receives a variety of heavy recreational use. The Forest Service Road 63 along the lower half of the segment is traveled by many people on their way to Bagby Hot Springs (A4 Special Interest Area, Forest Plan, Four-151), a regional attraction. The lower portion of the corridor contains developed recreational amenities. While the river is not considered a major recreational boating river, there are areas where recreationists use kayaks and small rubber rafts to play on the river.

There is also some fishing and hiking that takes place along the river. Users are primarily from the local area, except along the travel route to Bagby Hot Springs which is used by recreationists from around the

region. There are unique earth flows and other geologic features along the river that provide a potential interpretive opportunity.

Most recreation sites were rated at a high priority to visit during the 2018 field season. A few of the sites surveyed ranked as having a high level of impact due to roads, user created trails, soil and vegetation impacts and evidence of human waste. Moderate use was recorded with daily counts and specific activities. These included swimming, walking and viewing features, along with primitive and developed camping.

## Indicators, Triggers and Thresholds

The following table provides the indicators, triggers, thresholds, and management actions, along with the rationale, for each of the outstandingly remarkable values identified for this wild and scenic river segment.

**Table 17. Indicators, triggers and thresholds for the Collawash River, segment 2**

| River Value | Indicator | Trigger | Threshold | Management Actions | Rationale |
|---|---|---|---|---|---|
| Fish | People walking or cooling off in the stream and disrupting redds, with primary concern in late summer and fall (mid-August to November) during salmon and bull trout spawning season | Observation of people in the stream during late summer or fall, especially on gravel and cobble substrate | No more than 2 groups of people observed walking instream or disturbing stream substrate in areas that are ≤ 3% gradient that are easily accessible via road | Information posted or signed. Forest Service personnel visits. Identify key spawning areas, and block access to direct use from these reaches | Trampling of redds will reduce survival of juvenile salmon and bull trout. Disturbance to staging and spawning salmon and bull trout increases stress and reduces survival |
| Water Quality | Multiple numbers of human waste deposits (obvious shallow burial holes included) and/or direct conduits from fecal source to surface water body | Recent (within 1 year) evidence of dispersed camping or other concentrated recreation use, in areas without sanitary facilities | Multiple piles of unburied human waste observed (per site visit) | More frequent monitoring; informational signage with education on “pack it out” and defecating away from surface water; “pack it out” requirements; fix the cause of contamination; and provide sanitary facilities where possible | Fecal coliform can adversely affect the recreation experience and human health |

## Estimate of Visitor Capacity

The following tables provide an estimated capacity for overnight use and day use for this river segment.

**Table 18. Estimated user capacity for Collawash River, segment 2**

| Use Type | Site/Activity | Measure | Estimated Capacity | Rationale |
|---|---|---|---|---|
| Overnight Use | Raab Campground | People per day | 135 | Forest Recreation Site Analysis data indicates the People At One Time (PAOT) total is 135 |
| Overnight Use | Dispersed camping | People per day | 170 | Total of all dispersed sites (approximately 16 total) along the corridor and their specific capacities from field reconnaissance. One third of the total 500 is accounted for here in the dispersed camping. |
| Day Use | Dispersed day use | People per day | 330 | Total of all dispersed sites (approximately 16 total) along the corridor and their specific capacities from field reconnaissance. Two thirds of the total 500 is accounted for here in the dispersed camping day use. |

Based on these use types, the overall user capacity for the Collawash River, segment 2 is 635 people per day as described in the following table.

**Table 19. Overall user capacity for Collawash River, segment 2**

| Use Type | Estimated Capacity (people per day) |
|---|---|
| Overnight Use | 305 |
| Day Use | 330 |
| **Total** | **635** |

# Eagle Creek

## Current Visitor Use

Because Eagle Creek is entirely within the Salmon-Huckleberry Wilderness, uses are limited to wilderness-compliant uses, such as hiking, horseback riding, dispersed camping, nature viewing, and trout fishing. The main activity is hiking and horseback riding, but nature viewing, photography, and picnicking may be ancillary activities. There are some hiking trails in the river corridor that are most used in the snow-free season. The level of use in the area is light to moderate.

The visitor experience is likely high for those seeking solitude, with the area experiencing less visitation than other parts of the forest. There is likely little to no crowding or conflict issues for visitors. Equestrian use, however, is becoming increasingly more popular in the area. Local equestrian groups have a special interest in the area due to the easy trail grade and ease of use for horses. Equestrian trail use along the river is a unique characteristic for the area because of old growth stands and the opportunities for solitude. Access to the area is limited because of the wilderness designation and limited trailhead facilities.

While this corridor lies entirely in wilderness, the attractions and unique experiences along the river draw a specific use that is not found in many areas throughout the region. Since equestrian trails of this caliber are limited within the region of comparison, people are willing to travel long distances to experience it.

This river was rated as a low need to address river capacity because it is entirely within the Salmon-Huckleberry Wilderness and showed very little visitor use. Site surveys were not conducted during the summer of 2018.

## Indicators, Triggers and Thresholds

The following table provides the indicators, triggers, thresholds, and management actions, along with the rationale, for each of the outstandingly remarkable values identified for this wild and scenic river segment.

**Table 20. Indicators, triggers and thresholds for Eagle Creek**

| River Value | Indicator | Trigger | Threshold | Management Actions | Rationale |
|---|---|---|---|---|---|
| Recreation | Encounters per day | Increases noted in group sizes or requests for group permits.<br>Increases in impacts based on recreation site or solitude monitoring | Encounters with other groups shall be limited to no more than 10 groups per day during 80 percent of the primary recreational use season (Forest Plan, page Four-139, Standard A2-011) | Conduct additional visitor use monitoring | Maintaining group size will protect wilderness values and recreation experiences |
| Recreation | People at one time<br>Visitor satisfaction | Observed increase or crowding at parking areas or pullouts greater than 4 times per season outside holidays<br>Unacceptable shift in satisfaction score (from satisfied to not satisfied), or increase in crowding or conflict measured in National Visitor Use Monitoring | Not to exceeded 80 percent of the assigned river capacity greater than 2 times per season outside holidays | Trail development to disperse visitors. More group campground gathering places. Consider restrictions on number of people in each dispersed site.<br>Increase site specific monitoring if use increase is observed. | Too many people at one time will change and or diminish the recreation experience and potentially exceed maximum capacity estimates |

| River Value | Indicator | Trigger | Threshold | Management Actions | Rationale |
|---|---|---|---|---|---|
| Botany | Human disturbance and degradation along river banks and gravel bars (trampling of vegetation, creation of informal trails, presence of invasive plants) | Observable (noticeable) increase in disturbances | An observable increase in disturbance, noted between visits every 3 to 5 years, that raises concerns | Survey a representative sample of river stretch within the segment.<br>Map areas where disturbance is observed using GPS. If disturbance is observed, educate with signage, rehabilitate disturbance, or consider reducing the number of visitors allowed to recreate in the area | Reducing disturbance will protect cold water corydalis habitat |

## Estimate of Visitor Capacity

The following tables provide an estimated capacity for wilderness use for this river segment.

**Table 21. Estimated user capacity for wilderness use for Eagle Creek**

| Use Type | Site/Activity | Measure | Estimated Capacity | Rationale |
|---|---|---|---|---|
| Wilderness Use | Wilderness | People and recreational livestock per day | 120 | Forest Plan consistency with standards A2-011 and A2-013. A2-013: Group size should not exceed 12 in any combination of people and recreational livestock. (A2-011: Encounters with other groups shall be limited to no more than 10 groups per day during 80 percent of the primary recreational use season. 12 x 10 = 120 |

Based on these use types, the overall user capacity for the Eagle Creek is 120 people and recreational livestock per day as described in the following table.

**Table 22. Overall user capacity for Eagle Creek**

| Use Type | Estimated Capacity (people and recreational livestock per day) |
|---|---|
| Wilderness Use | 120 |
| **Total** | **120** |

# East Fork Hood River

## Current Visitor Use

This 14.1-mile segment of river receives year-round recreational use of varied types and experiences. Year-round recreation activities include camping, hiking and biking of trails that follow the river. Some climbing and fishing occur throughout the year as well as kayaking when river conditions are right.

Hunting is a popular activity and occurs throughout the corridor. Winter activities include snowshoeing and Nordic skiing.

Two developed campgrounds, Sherwood and Nottingham, are very popular throughout the spring, summer, and early fall as they provide an opportunity to camp along the river. There are also several dispersed campsites along the river that are very popular during the summer. There is heavy non-motorized use along the trails that follow and cross the East Fork Hood River including East Fork Trail #650, which follows the river, and Tamanawas Falls Trail #650A, which crosses the river. Other popular trails within the river corridor include Zigzag Trail #678 and Dog River Trail #675. Trailheads for these trails are developed, but limited in size. Gumjuwac Trail #480 is another popular trail that enters the river corridor, but access is limited by the trailhead capacity of one or two vehicles.

Nordic skiing and snowshoeing is popular during winter months. The best-groomed Nordic ski trail system on Mt. Hood National Forest is present in the river corridor. There are regional Nordic skiing competitive events and races on the groomed trails. The ungroomed Nordic system receives moderate use and is dependent on snow levels. One of the few rock climbing areas on the forest exists within the corridor. Routes varying from easy to extremely difficult are present in the columnar basalt cliffs. Access to climbing is dispersed in nature and not established or officially recognized.

One of the very reasons the East Fork Hood River was designated is for the "…low impact recreation opportunities abound" (Blumenauer, Congressional Remarks, 5/31/2009) This corridor can accommodate many types of recreation and offers a unique experience for kayakers due to its sustained gradient and continuous boulder features, unlike the more common bedrock formations. These traits make this corridor unique when compared to other rivers in the region.

Recreational use is low in many areas along the corridor due to difficulty of access from Highway 35 and steep terrain. High levels of use occur within isolated areas where access is already established. Encounters with others in these hot spots is expected to occur.

The East Fork Hood River was rated as a moderate need to address capacity due to various use types, proximity to the highway and multiple resource concerns, therefore, several sites were visited, and surveys were completed in the summer of 2018. The climbing area also houses a sensitive species, Violet suksdorfia (*Suksdorfia violacea*), therefore use in that area was assessed and considered in the capacity estimate determination.

## Indicators, Triggers and Thresholds

The following table provides the indicators, triggers, thresholds, and management actions, along with the rationale, for each of the outstandingly remarkable values identified for this wild and scenic river segment.

**Table 23. Indicators, triggers and thresholds for East Fork Hood River**

| River Value | Indicator | Trigger | Threshold | Management Actions | Rationale |
|---|---|---|---|---|---|
| Botany | Impacts to vegetation (vascular plants, bryophytes, and lichens) on the climbing wall and at the base of the climbing wall from climbers (Bryophytes are mosses and liverworts) | Evidence of vegetation (vascular plants, bryophytes, and lichens) dislodged from cracks, ledges, and crevices at climbing areas onto ground below | No plant material dislodged from cracks, ledges, and crevices at climbing area | Develop (or update) a climbing management plan that addresses strategies for human waste management, resource protection and erosion control. | Reducing disturbance will protect violet suksdorfia. |
| Wildlife | Wildlife disturbance, specifically Harlequin duck nesting and migration in stream and floodplain, and big game calving, fawning, and foraging habitat | Evidence of ***new*** unauthorized dispersed camping sites or user made trails and roads in the corridor | No ***new*** (<1) unauthorized dispersed campsites, trails, or roads within the entire river corridor | Restore disturbed area and close it to future use in same year discovered | Human disturbance greatly increases stress to nesting, calving, and fawning wildlife and will reduce juvenile survival rates. Chronic disturbance displaces wildlife and reduces use of available habitat |
| Recreation | People at one time<br>Visitor satisfaction | Observed increase or crowding at parking areas or pullouts greater than 4 times per season outside holidays.<br>Unacceptable shift in satisfaction score (from satisfied to not satisfied), or increase in crowding or conflict measured in National Visitor Use Monitoring | Not to exceeded 80 percent of the assigned river capacity greater than 2 times per season outside holidays | Trail development to disperse visitors. More group campground gathering places. Consider restrictions on number of people in each dispersed site.<br>Increase site specific monitoring if use increase is observed. | Too many people at one time will change and or diminish the recreation experience and potentially exceed maximum capacity estimates |

## Estimate of Visitor Capacity

For East Fork Hood River, the dispersed camping and developed camping were separated out because the wildlife outstandingly remarkable value is located in areas of known dispersed camping and may need more monitoring in the future, therefore separating the two use types would make that effort easier.

The following tables provide an estimated capacity for overnight use and day use for this river segment.

**Table 24. Estimated user capacity for East Fork Hood River**

| Use Type | Site/Activity | Measure | Estimated Capacity | Rationale |
|---|---|---|---|---|
| Developed Overnight Use | Sherwood Campground | People per day | 96 | 16 total campsites. Six people per campsite<br>16 X 6 = 96 |
| Developed Overnight Use | Nottingham Campground | People per day | 138 | 23 total campsites. Six people per campsite 23 X 6 = 138 |
| Dispersed Overnight Use | Dispersed camping – Hunter Camp | People per day | 10 | 50 to70 foot clearing for camping off road. Estimate from field reconnaissance |
| Dispersed Overnight Use | Dispersed site 1 | People per day | 20 | Estimated from field reconnaissance |
| Dispersed Overnight Use | Dispersed site 2 | People per day | 70 | 10 different sites used for camping |
| Dispersed Overnight Use | Dispersed site 3 | People per day | 80 | Estimated from field reconnaissance |
| Day Use | East Fork Trail #650 | People per day | 150 | Popular trail due to multiple access points and parking, information verified by district recreation staff |
| Day Use | Polallie Trailhead | People per day | 114 | Recreation Site Analysis describes people at one time capacity as 57. Turnover accounted for, therefore multiplied by two |
| Day Use | Tamanawas Trail #650A | People per day | 575 | Fee collection roughly 100 envelopes. Forest passes 75, and roughly 50 non paid vehicles. (Group size 3). Already at capacity and seeing some resource concerns. Keep at current use levels |
| Day Use | Zigzag Trail #678 | People per day | 17 | Recreation Site Analysis describes people at one time capacity as 17 |
| Day Use | Little John Sno-Park | People per day | 400 | Recreation Site Analysis describes people at one time capacity as 200. Turnover accounted for, therefore multiplied by two |
| Day Use | Pocket creek Trailhead | People per day | 60 | Recreation Site Analysis describes people at one time capacity as 120. Use is not heavy, therefore capacity was divided by 2 |
| Day Use | Tea cup Trails | People per day | 75 | Information gathered and verified by the ski area permit administrator |

| Use Type | Site/Activity | Measure | Estimated Capacity | Rationale |
|---|---|---|---|---|
| Day Use | Kayaking | People per day | 3^ | Current use is low, but the activity does occur in small groups on any given day depending on flows |
| Climbing Use | Pete's Pile and Clinger Springs | People per day | 20 | Zigzag Trailhead can park 4 vehicles and another small area can accommodate more. Typical group size of 3 |

^This per day number may be exceeded during peak water flow, isolated incidents.

Based on these use types, the overall user capacity for the East Fork Hood River is 1,828 people per day as described in the following table.

**Table 25. Overall user capacity for the East Fork Hood River**

| Use Type | Estimated Capacity (people per day) |
|---|---|
| Developed Overnight Use | 234 |
| Dispersed Overnight Use | 180 |
| Day Use | 1,394 |
| Climbing Use | 20 |
| **Total*** | **1,828** |

*User capacity does not include traffic on State Highway 35.

# Fifteenmile Creek

## Current Visitor Use

There is a great diversity of recreation uses within the Fifteenmile Creek corridor. The majority of the use occurs in the summer and includes camping, hiking, mountain biking, climbing, horseback riding, mushrooming, hunting, berry picking, and paddling. There are opportunities for Nordic skiing and snowmobiling in the winter. Snowmobiling opportunities exist outside the Badger Creek Wilderness. Access for some of these activities can be difficult during the shoulder seasons of spring and fall due to the elevation of the corridor and generally limited vehicle access. Overall, use levels are relatively low, except at main entry points where it can see moderate use. Higher use is focused around key access points, such as trailheads and campgrounds, as well as roadways.

The Fifteenmile National Recreation Area overlaps with segments 2 and 3 of this corridor. Only one campground exists in the corridor and the lack of development is part of the draw to this area. Fifteenmile Campground and Fifteenmile Trail #456 are popular for hiking and mountain biking due to their proximity to the river.

Fifteenmile Creek provides an opportunity to enjoy a quieter recreation experience than can be found along many river corridors on the Mt. Hood National Forest. Visitors to the area are mainly local, although some may come from within the region to hike or ride the trail.

Based on the initial assessment, this segment was found to have a moderate need to address river capacity due to roads and other water diversions; site surveys were completed during the summer of 2018. The

surveys collected found mostly low impact to the sites visited, however Fifteenmile Campground and three dispersed sites have moderate levels of impact from damaged trees, clearing of vegetation, and widening of trails.

## Indicators, Triggers and Thresholds

The following table provides the indicators, triggers, thresholds, and management actions, along with the rationale, for each of the outstandingly remarkable values identified for all segments of Fifteenmile Creek.

**Table 26. Indicators, triggers and thresholds for Fifteenmile Creek**

| River Value | Indicator | Trigger | Threshold | Management Actions | Rationale |
|---|---|---|---|---|---|
| Historic | Segment 1 only. Impacts to eligible cultural resources. Site integrity | Impact to integrity of historic properties (elements of integrity include: location, setting, design, materials, workmanship, feeling, association) | One or more incidence of impact to integrity | Develop mitigation measures to preserve site integrity. Consult with State Historic Preservation Office concerning mitigation measures if an adverse effect determination is reached | Heritage resources are non-renewable |
| Recreation | Segments 2 and 3 only.<br>People at one time<br>Visitor satisfaction | Observed increase or crowding at parking areas or pullouts greater than 4 times per season outside holidays.<br>Unacceptable shift in satisfaction score (from satisfied to not satisfied), or increase in crowding or conflict measured in National Visitor Use Monitoring | Not to exceeded 80 percent of the assigned river capacity greater than 2 times per season outside holidays | Trail development to disperse visitors. More group campground gathering places. Consider restrictions on number of people in each dispersed site.<br>Increase site specific monitoring if use increase is observed. | Too many people at one time will change and or diminish the recreation experience and potentially exceed maximum capacity estimates |

| River Value | Indicator | Trigger | Threshold | Management Actions | Rationale |
|---|---|---|---|---|---|
| Recreation | Segments 2 and 3 only. Encounters per day | Increases noted in group sizes or requests for group permits. Increases in impacts based on recreation site or solitude monitoring | Encounters with other groups shall be limited to no more than 10 groups per day during 80 percent of the primary recreational use season (Forest Plan, page Four-139, Standard A2-011) | Conduct additional visitor use monitoring | Maintaining group size will protect wilderness values and recreation experiences |
| Fish | Segments 3 and 4 only. People walking in or cooling off in the stream and disrupting redds, with primary concern in early spring through mid-July during steelhead spawning season | Observation of people in the stream during early spring through mid-July, especially on gravel and cobble substrate | No more than 2 groups of people observed walking instream or disturbing stream substrate in areas that are ≤ 3% gradient that are easily accessible via road | Information posted or signed. Forest Service personnel visits. Identify key spawning areas, and block access to direct use from these reaches | Trampling of redds will reduce survival of juvenile steelhead. Disturbance to staging and spawning steelhead increases stress and reduces survival |
| Wildlife | All segments. Wildlife disturbance and habitat loss | Evidence of ***new*** unauthorized dispersed camping sites or user made trails and roads in the corridor | No ***new*** (<1) unauthorized dispersed campsites, trails, or roads within the entire river corridor | Restore disturbed area and close it to future use in same year discovered | Human disturbance greatly increases stress to nesting, calving, and fawning wildlife and will reduce juvenile survival rates. Chronic disturbance displaces wildlife and reduces use of available habitat |

## Estimate of Visitor Capacity

The following tables provide an estimated capacity for overnight use and day use for this river segment.

**Table 27. Estimated user capacity for Fifteenmile Creek**

| Use Type | Site/Activity | Measure | Estimated Capacity | Rationale |
|---|---|---|---|---|
| Overnight Use | Fifteenmile Campground | People per day | 18 | Site capacity is 6 people per site, 3 sites at the campground |
| Overnight Use | Dispersed Camp Site # 1 (off Lookout Mtn. Trail) | People per day | 8 | Large Cleared area for camping. Field reconnaissance to verify size, capacity and impacts to site |
| Overnight Use | Dispersed Camp Site # 2 (on 4450-170 spur) | People per day | 18 | Large Cleared area for camping. Field reconnaissance to verify size, capacity and impacts to site |
| Overnight Use | Dispersed Camp Site # 3 (on 2730) | People per day | 18 | Two main areas for camping. Field reconnaissance to verify size, capacity and impacts to site |
| Overnight Use | Dispersed Camp Site # 4 (on 4420) | People per day | 20 | Large cleared area for camping. Field reconnaissance to verify size, capacity and impacts to site |
| Day Use | Fifteenmile Campground and Trailhead access | People per day | 120 | Parking in the campground is limited. Some visitors may park off the road. Campground is small and hard to maneuver. Encounters and maximum group size, 10x12 =120 |

Based on these use types, the overall user capacity for Fifteenmile Creek is 202 people per day as described in the following table.

**Table E- 1. Overall user capacity for Fifteenmile Creek**

| Use Type | Estimated Capacity (people per day) |
|---|---|
| Overnight Use | 82 |
| Day Use | 120 |
| **Total** | **202** |

# Fish Creek

## Current Visitor Use

Given the river's proximity to Portland, including low elevations and short drive times, this is a year round desirable location for recreationists.

Dispersed camping is one of the more common recreation activities along and near Fish Creek, especially on any flat terrain near the river. One study from 1993 revealed 22 dispersed campsites along Fish Creek, but all have since been removed to protect and enhance water quality and riparian vegetation. Other recreational activities include whitewater kayaking, hiking, hunting, and fishing. Following the floods of

1996, the Forest Service decommissioned many roads in the watershed limiting access to many parts of the river.

Areas of Fish Creek that are easily accessible by vehicle provide limited access to a class III to IV rapids, often free of woody debris. Paddlers drive up to the end of pavement and hike in. Fish Creek has gained notoriety with its challenging river floating opportunities.

There is only one developed recreation facility in the Fish Creek watershed, the Fish Creek Barrier Free fishing pier, located at the confluence of Fish Creek and the Clackamas River. The parking area also serves as the trailhead for the Clackamas River Trail #715 and staging area for river events on the Clackamas River.

Fish Creek is very important as potential anadromous fish habitat for spring Chinook, winter and summer steelhead, and winter run coho salmon. A limited number of environmental education and interpretation occurs along the mainstem of Fish Creek. School classes and biologists visit a number of sites to view fish structures and monitoring sites. Three bulletin boards placed along the creek provide messages about fish and their habitat.

In the initial evaluation this river ranked as a moderate need to address river capacity, and there were concerns of potential recreation impacts in the area. The team visited the Fish Creek Day Use area as part of the scenery resource evaluation priority list, and recorded some minor impacts. Graffiti and trash were found onsite. Target shooting and illegal off-highway vehicle use is also known to occur in the area. Forest staff noted that during a busy summer weekend the parking lot will be overflowing with cars and thus cars will be parked all along the side of the road in order to access multiple recreation spots. The site is an access point for both Fish Creek and Clackamas River, so determining exact use on one particular river segment is somewhat difficult.

## Indicators, Triggers and Thresholds

The following table provides the indicators, triggers, thresholds, and management actions, along with the rationale, for each of the outstandingly remarkable values identified for this wild and scenic river segment.

**Table 28. Indicators, triggers and thresholds for Fish Creek**

| River Value | Indicator | Trigger | Threshold | Management Actions | Rationale |
|---|---|---|---|---|---|
| Fish | People walking or cooling off in the stream and disrupting redds, with primary concern in late summer and fall (mid-August to November) during salmon and bull trout spawning season | Observation of people in the stream during late summer or fall, especially on gravel and cobble substrate | No more than 2 groups of people observed walking instream or disturbing stream substrate in areas that are ≤ 3% gradient that are easily accessible via road | Information posted or signed. Forest Service personnel visits. Identify key spawning areas, and block access to direct use from these reaches | Trampling of redds will reduce survival of juvenile salmon and bull trout. Disturbance to staging and spawning salmon and bull trout increases stress and reduces survival |

## Estimate of Visitor Capacity

The following tables provide an estimated capacity for overnight use and day use for this river segment.

**Table 29. Estimated user capacity for Fish Creek**

| Use Type | Site/Activity | Measure | Estimated Capacity | Rationale |
|---|---|---|---|---|
| Overnight Use | Dispersed Camping in corridor | People per day | 48 | 22 dispersed sites were recorded along the river corridor before the floods. There has been an increased use from boaters and others walking in. Average group size is 3. Of the 22 sites, 6 were decommissioned. (22-6 = 16) 16 x 3 = 48 |
| Day Use | Non-motorized day use | People per day | 50 | Day use in the corridor from various sites in the area; Fish Creek Day use and Clackamas River Trailhead, as well as old decommissioned sites that visitors hike into |

Based on these use types, the overall user capacity for Fish Creek is 98 people per day as described in the following table.

**Table 30. Overall user capacity for fish Creek**

| Use Type | Estimated Capacity (people per day) |
|---|---|
| Overnight Use | 48 |
| Day Use | 50 |
| **Total** | **98** |

# Middle Fork Hood River

## Current Visitor Use

Due to the very limited access and infrastructure in this corridor, recreational opportunities are not readily available for forest visitors. There are no trails, very limited road access and rafting/paddling access is not particularly safe. Recreationists that are more adventurous may enjoy activities such as photography, fishing, hunting, and hiking in the area, as well as extreme kayaking access during the summer months. Use is mainly local and dispersed in nature, including some camping and off-trail hiking. Currently, there are no existing facilities. The area has a high potential for interpreting volcanic processes that could attract users from around the region to view the Parkdale Lava Beds, however, this would require a large financial investment and there are no plans to enhance the conservation education in the area. As such, there was a low need to address river capacity issues, therefore, site surveys were not conducted during the summer of 2018.

## Indicators, Triggers and Thresholds

The following table provides the indicators, triggers, thresholds, and management actions, along with the rationale, for each of the outstandingly remarkable values identified for this wild and scenic river segment.

**Table 31. Indicators, triggers and thresholds for Middle Fork Hood River**

| River Value | Indicator | Trigger | Threshold | Management Actions | Rationale |
|---|---|---|---|---|---|
| Scenery | Activities or modifications which alter landform, vegetation, water, or character within the viewshed as seen from the river and high use areas | Visitor use activities with evidence of erosion, soil compaction, exposed soils, or damaged vegetation, such as trampling, lack of ground cover or damaged trees | 1 site that does not meet visual resource management plan direction and visual quality objectives | Designate and direct visitors to sustainable facilities, routes, and river access points. Close and rehabilitate un-sustainable facilities, routes, and river access points. Construct sustainable facilities, routes, and river access points if needed, and where appropriate | Erosion, soil compaction, exposed soils, or damaged vegetation can negatively affect and strongly dominate the scenic character and views, contrasting with the desire for a naturally appearing scenic character in the river corridor. This indicator maintains or enhances scenic quality and scenery outstandingly remarkable values |
| Fish | Salmonid habitat | Evidence of reduction or degradation of stream habitat and water quality that supports salmonids | No increase in stream temperature. Maintenance of large wood cover and spawning gravel | Monitoring of habitat qualities that includes current annual coordination with Middle Fork Irrigation District, Oregon Department of Fish & Wildlife, U.S. Fish & Wildlife and Oregon Department of Environmental Quality. Plan and implement actions that would improve habitat conditions | This would contribute to the conservation of salmonids species that are in decline region-wide |

## Estimate of Visitor Capacity

The following tables provide an estimated capacity for overnight use and day use for this river segment.

**Table 32. Estimated user capacity for Middle Fork Hood River**

| Use Type | Site/Activity | Measure | Estimated Capacity | Rationale |
|---|---|---|---|---|
| Overnight Use | Dispersed Camping | People per day | 3 (*10 during hunting season) | Average group size is 3. Small corridor with limited access and no trails or developed facilities. Allow for an exceedance during hunting season up to 10 people per day |
| Day Use | Off trail hiking | People per day | 50 | Current use is low with no designated trails and limited access. Leaving room for future access for an interpretive site at the lava beds |

Based on these use types, the overall user capacity for the Middle Fork Hood River is 53 people per day as described in the following table.

**Table 33. Overall capacity for Middle Fork Hood River**

| Use Type | Estimated Capacity (people per day) |
|---|---|
| Overnight Use | 3* |
| Day Use | 50 |
| **Total** | **53** |

*Exceedance to 10 during hunting season

# South Fork Clackamas River

## Current Visitor Use

The South Fork has been discovered by the whitewater community, and provides a hike-in backcountry opportunity for skilled boaters. Trail use includes day hiking, horseback riding, mountain biking, and backpacking, and provides access to catch-and-release fishing. Some extreme kayaking and canyoneering take place on this wild stretch of river. Class II to IV rapids and several waterfalls challenge kayakers. Woody debris and log jams are frequent and present challenges to paddlers. The Hillockburn Trail #516, which provides the only access to the lower river corridor, is 3.2 miles round trip. It is usually open from mid-March to December, and is moderately difficult.

The close proximity to the metropolitan area of Portland results in increasing popularity and higher recreation demand, as the city continues its rapid growth trend. A diversity of recreational opportunities exist, including whitewater paddling, hiking, and wilderness experiences.

The steep slopes and unroaded character of the South Fork Clackamas River and lack of infrastructure limit recreational use. Dispersed camping does occur at the confluence of the South Fork and mainstem of the Clackamas River, mainly by boaters.

In 1913, the young cities of Oregon City and West Linn suffered a serious outbreak of typhoid from an increasingly polluted Willamette River, their sole source of water at the time. The incident spurred an undertaking to find a safer source of drinking water, the South Fork Clackamas River. In 1939, the South Fork Water Board expanded the system, which involved carving a series of three tunnels and a cantilevered pipeline through solid basalt cliffs. Both systems were used until 1985, when the South Fork pipeline was decommissioned. These tunnels now tell the story of the past and attract hikers. Recreation use is known to occur in and around these tunnels.

In the initial evaluation this river ranked as a moderate need to address river capacity, and there were concerns of potential recreation impacts in the area. Surveys were collected in summer of 2018 and trash was reported as a high impact to one site, others were minor impacts. The team hiked the Hillockburn Trail for the scenic value evaluation and some recreation information was recorded.

## Indicators, Triggers and Thresholds

The following table provides the indicators, triggers, thresholds, and management actions, along with the rationale, for each of the outstandingly remarkable values identified for this wild and scenic river segment.

**Table 34. Indicators, triggers and thresholds for South Fork Clackamas**

| River Value | Indicator | Trigger | Threshold | Management Actions | Rationale |
|---|---|---|---|---|---|
| Scenery | Activities or modifications which alter landform, vegetation, water, or character within the viewshed as seen from the river and high use areas | Visitor use activities with evidence of erosion, soil compaction, exposed soils, or damaged vegetation, such as trampling, lack of ground cover or damaged trees | 1 site that does not meet visual resource management plan direction and visual quality objectives | Designate and direct visitors to sustainable facilities, routes, and river access points. Close and rehabilitate un-sustainable facilities, routes, and river access points. Construct sustainable facilities, routes, and river access points if needed, and where appropriate | Erosion, soil compaction, exposed soils, or damaged vegetation can negatively affect and strongly dominate the scenic character and views, contrasting with the desire for a naturally appearing scenic character in the river corridor. This indicator maintains or enhances scenic quality and scenery outstandingly remarkable values |
| Historic | Impacts to eligible cultural resources. Site integrity | Impact to integrity of historic properties (elements of integrity include: location, setting, design, materials, workmanship, feeling, association) | One or more incidence of impact to integrity | Develop mitigation measures to preserve site integrity. Consult with State Historic Preservation Office concerning mitigation measures if an adverse effect determination is reached | Cultural site disturbance is unacceptable because they are a nonrenewable resource |

## Estimate of Visitor Capacity – South Fork Clackamas

The following tables provide an estimated capacity for overnight use and day use for this river segment.

**Table 35. Estimated user capacity for South Fork Clackamas**

| Use Type | Site/Activity | Measure | Estimated Capacity | Rationale |
|---|---|---|---|---|
| Overnight Use | Dispersed Camping at River and Hillockburn Trail | People per day | 6 | Small area where the trail meets the river for camping, cannot hold many |
| Day Use | Hillockburn Trail | People per day | 24 | Generally open from April to December (275 user days). Other use accounted for on the BLM side near the tunnels. 24 all together for both areas |

Based on these use types, the overall user capacity for the South Fork Clackamas River is 30 people per day as described in the following table.

**Table 36. Overall user capacity for South Fork Clackamas**

| Use Type | Estimated Capacity (people per day) |
|---|---|
| Overnight Use | 6 |
| Day Use | 24 |
| **Total** | **30** |

# South Fork Roaring River

## Current Visitor Use

The corridor is entirely in the Roaring River Wilderness, and uses are limited to wilderness-compliant activities such as hiking, horseback riding, dispersed camping, photography, and nature viewing. Use in the corridor is light compared to other parts of Mt. Hood National Forest.

The river is not the destination in this area, but rather the nearby lakes outside the corridor provide the more interesting recreation experience. The Frazier Turnaround Trailhead is the main access point to the Serene Lake Trail #512, which is the only trail within the corridor.

In the initial evaluation of this river, it was found to have a low need to address river capacity due to low use, access, and within wilderness; therefore, recreation staff did not complete site surveys during the summer of 2018 on this segment. Forest staff reported water running in the spring of 2018, however another report from mid-summer described the river as being dried up, therefore this river was moved to a low priority for recreation use data collection.

## Indicators, Triggers and Thresholds

The following table provides the indicators, triggers, thresholds, and management actions, along with the rationale, for each of the outstandingly remarkable values identified for this wild and scenic river segment.

**Table 37. Indicators, triggers and thresholds for South Fork Roaring River**

| River Value | Indicator | Trigger | Threshold | Management Actions | Rationale |
|---|---|---|---|---|---|
| Botany | Human disturbance and degradation along riverbanks and gravel bars (e.g., trampling of vegetation, creation of informal trails, presence of invasive plants) | Observable (noticeable) increase in disturbances | An observable increase in disturbance, noted between visits every 3 to 5 years, that raises concerns | Survey a representative sample of river stretch within the segment.<br>Map areas where disturbance is observed using GPS. If disturbance is observed, educate with signage, rehabilitate disturbance, or consider reducing the number of visitors allowed to recreate in the area | Reducing disturbance will protect cold water corydalis habitat |

## Estimate of Visitor Capacity

The following tables provide an estimated capacity for overnight use and day use for this river segment.

**Table 38. Estimated user capacity for South Fork Roaring River**

| Use Type | Site/Activity | Measure | Estimated Capacity | Rationale |
|---|---|---|---|---|
| Wilderness Use | Via Frazier Turnaround | People and recreational livestock per day | 120 | A few dispersed sites, user created fishing trails. Forest Plan consistency with standards A2-011 and A2-013. A2-013: Group size should not exceed 12 in any combination of people and recreational livestock. A2-011: Encounters with other groups shall be limited to no more than 10 groups per day during 80 percent of the primary recreational use season.<br>12 x 10 = 120 |

Based on these use types, the overall user capacity for the South Fork Roaring River, is 120 people per day as described in the following table.

**Table 39. Overall user capacity for South Fork Roaring River**

| Use Type | Estimated Capacity (people per day) |
|---|---|
| Wilderness Use | 120 |
| **Total** | **120** |

# Zigzag River

## Current Visitor Use

The river corridor is entirely within the Mt. Hood Wilderness, and uses are limited to wilderness-compliant activities, such as hiking, horseback riding, dispersed camping, photography, wildflower viewing, and nature viewing. The Timberline Trail and Pacific Crest Trail provide unique hiking opportunities and cross this river corridor. The river itself does not draw recreation use, but it adds to the recreation experience for those in the area.

There are no recreation facilities within the river corridor. There is direct access to the corridor from Forest Service Road 2639. Trail access is available via many trails and trailheads around Government Camp and Timberline Lodge.

The Timberline Trail is within the Mt. Hood Wilderness, and use is limited to the snow-free season, typically July to October, while there may be limited wintertime access by a small number of individuals. The use is light during weekdays, and portions of the area experience heavy use during the summer weekends, especially when the wildflowers are blooming. The Pacific Crest Trail is a 2,650-mile congressionally designated National Scenic Trail extending from Mexico to Canada, passing through California, Oregon, and Washington. Thousands of hikers and equestrians enjoy this international trail every year. Some trail users may only hike small sections, while others choose to take on the entire trail in one season. While the section of the trail in the Zigzag River corridor is one small part of the Pacific Crest

Trail, it is used by visitors from the local area as well as international visitors who come to embrace the challenge, explore, and enjoy the spectacular vistas along this iconic trail.

Due to high recreation use and potential impacts from Pacific Crest Trail users, this river was rated as a moderate need to address capacity, therefore recreation staff completed site surveys during the summer of 2018. Some moderate ratings were recorded for a few sites visited over the summer. Little Zigzag Falls Trailhead reported some graffiti, cutting of trees, and minor erosion from visitor use. Nothing of major concern was reported along this corridor and several visitors were spotted hiking, swimming and studying nature.

## Indicators, Triggers and Thresholds

The following table provides the indicators, triggers, thresholds, and management actions, along with the rationale, for each of the outstandingly remarkable values identified for this wild and scenic river segment.

**Table 40. Indicators, triggers and thresholds for the Zigzag River**

| River Value | Indicator | Trigger | Threshold | Management Actions | Rationale |
|---|---|---|---|---|---|
| Recreation | Encounters per day | Increases noted in group sizes or requests for group permits.<br>Increases in impacts based on recreation site or solitude monitoring | Encounters with other groups shall be limited to no more than 10 groups per day during 80 percent of the primary recreational use season (Forest Plan, page Four-139, Standard A2-011) | Conduct additional visitor use monitoring | Maintaining group size will protect wilderness values and recreation experiences |
| Recreation | People at one time<br>Visitor satisfaction | Observed increase or crowding at parking areas or pullouts greater than 4 times per season outside holidays.<br>Unacceptable shift in satisfaction score (from satisfied to not satisfied), or increase in crowding or conflict measured in National Visitor Use Monitoring | Not to exceeded 80 percent of the assigned river capacity greater than 2 times per season outside holidays | Trail development to disperse visitors. More group campground gathering places. Consider restrictions on number of people in each dispersed site.<br>Increase site specific monitoring if use increase is observed. | Too many people at one time will change and or diminish the recreation experience and potentially exceed maximum capacity estimates |

| River Value | Indicator | Trigger | Threshold | Management Actions | Rationale |
|---|---|---|---|---|---|
| Macroinvertebrates | Applies to only small springs and tributaries above elevation 3,500 feet. Social trails paralleling spring or dispersed camping or fire rings near springs and spring fed tributaries. People walking in springs or tributary crossing evidence | Evidence of people using the springs for collecting water. Degraded or reduction in instream moss and vegetation | These springs are in steep and unstable areas and nearly inaccessible to hikers. Hikers and campers accessing these areas instream will create small landslides and debris flows in unstable and steep streams. No more than one new trail, campfire, or spring crossing reported in one year | Rehabilitate and close unauthorized trails and campfire rings. Information posted or signed to explain sensitive endemic species use and impacts caused by social trails. | There are only nine known populations of Scott's apatanian caddisfly in the world and they are found on Mt. Hood National Forest. This species is endemic to the forest and these indicators and thresholds will help protect these populations because high-quality habitat is located in the river corridor |
| Scenery | Activities or modifications which alter landform, vegetation, water, or character within the viewshed as seen from the river and high use areas | Visitor use activities with evidence of erosion, soil compaction, exposed soils, or damaged vegetation, such as trampling, lack of ground cover or damaged trees | 1 site that does not meet visual resource management plan direction and visual quality objectives | Designate and direct visitors to sustainable facilities, routes, and river access points. Close and rehabilitate un-sustainable facilities, routes, and river access points. Construct sustainable facilities, routes, and river access points if needed, and where appropriate | Erosion, soil compaction, exposed soils, or damaged vegetation can negatively affect and strongly dominate the scenic character and views, contrasting with the desire for a naturally appearing scenic character in the river corridor. This indicator maintains or enhances scenic quality and scenery outstandingly remarkable values |

## Estimate of Visitor Capacity

The following tables provide an estimated capacity for overnight use and day use for this river segment. Based on known and existing use, the carrying capacity for Mt. Hood Wilderness was used, rather than group size which was the metric used for other rivers located within wilderness areas. If the carrying capacity for the Mt. Hood Wilderness is changed in the future, the estimated capacity for the wild and scenic river use would be increased based on the new carrying capacity.

**Table 41. Estimated user capacity for the Zigzag River**

| Use Type | Site/Activity | Measure | Estimated Capacity | Rationale |
|---|---|---|---|---|
| Wilderness Use | Pacific Crest Trail and Wilderness trail use | People per day | 177 | 36,118 Carrying Capacity for Mt. Hood Wilderness. – Plan before additional 18,450 acres was added in 2009.<br>New estimate would be approximately 64,742 Recreation Visitor Days per year, (acreage for Wilderness is 64,742) 1 person per acre of wilderness, therefore 177 people per day x 365 days. Capacity may be exceeded during summer months and high use times of the year |

Based on these use types, the overall user capacity for the Zigzag River is 177 people per day as described in the following table.

**Table 42. Overall user capacity for the Zigzag River**

| Use Type | Estimated Capacity (people per day) |
|---|---|
| Wilderness Use | 177 |
| **Total** | **177** |

# Future Recreation Demand and Trends

Recreation demand is the estimated number of people projected to participate in a particular recreation activity at some predetermined future time and location. Demand may also be expressed as the estimated percent of increase or decrease for a particular recreation opportunity from some baseline.

The purpose of estimating demand within the wild and scenic river corridor is to help ensure the supply of recreation opportunities desired by the public is met while protecting and enhancing river values, including outstandingly remarkable values, for which the wild and scenic river was designated. Estimating demand helps focus monitoring efforts and also identify current and future management actions.

## Past and Current Use

Estimated use and trends are based on the pre-work evaluations of current state from the River Values Report and observations made from local managers. In the summer of 2018, several surveys were done to assess visitor use along each river corridor. A summary of this information is available upon request.

In some river segments, access has been reduced from flooding and maintenance. For example, along Fish Creek many of the old roads and trails have been washed out and thus decommissioned from the floods of 1996. This has reduced some of the access in that specific corridor. In many other cases, access has remained the same. Access has not increased substantially in any of the river corridors since the rivers were evaluated as eligible in the Forest Plan.

Day use in many of the corridors is low to moderate. Impacts recorded from the surveys conducted in 2018 show that there is heavy use occurring in many dispersed sites along the rivers. The developed campgrounds are receiving moderate use, however, numbers from the 2018 campground concessionaire show that many of the developed campgrounds in each river corridor are under 50 percent utilization.

This would indicate that the current number of developed campgrounds are meeting the demand of the local visitation. Dispersed campgrounds may need some monitoring or improvements in order to protect river values in the future, especially in the East Fork Hood River. There seems to be an upward trend for dispersed river use along all of these corridors.

Various websites and blogs name several of the rivers as whitewater destinations. The South Fork Clackamas is known to be a very adventurous kayaking trip, while both East Fork Hood River and Collawash River, segment 1 are known for the unique route characteristics they offer to advanced kayakers. It is expected there could be an increase in kayaking along these three rivers as they become more popular in the future.

Current visitor use as described by the 2016 National Visitor Use Monitoring Master Report (NVUM, 2016) the Mt. Hood National Forest receives over 200,000 visitors per year, with 68 percent of those visitors being there primarily for recreation. The top three activities reported were downhill skiing, viewing natural features, and hiking/walking. While this data collected is forestwide, it gives a good indication of some of the current use and where most visitors are coming from and what activities they choose to participate in.

## Future Demand

While it is impossible to determine what type of demand these rivers will have in the future, we can use some of the information we have now to establish some expectations.

Mountain biking on the Fifteenmile Trail has become increasingly more popular over the last few years. The forest might see an upward trend in this use type or perhaps users searching for these types of opportunities around the forest. Mountain biking has been rated one of the top three activities people participate in for the last 8 years; it is assumed this trend would continue into the foreseeable future (OIA, 2019). Also, in the Fifteenmile River corridor lies the Fifteenmile National Recreation Area. Because this is a newly designated Recreation Area, the forest can expect an increase in the use of the area in the future as it becomes more known and any potential future development occurs. Dispersed camping and kayaking may also see more of a demand if and when that use begins to increase.

In a recent study conducted by the Oregon Parks and Recreation Department in support of the Oregon Statewide Comprehensive Outdoor Recreation Planning (SCORP, 2017), Oregonians were asked their opinions about priorities for the future both within and outside their community. When asked to rate 21 different items for future investment in parks and forests, the top priorities were as follows.

The top “in your community” needs for Oregonians:

- Cleaner restrooms.
- Soft surface walking trails.
- More restrooms.
- Playgrounds with natural materials (Natural Play Areas).
- Nature and wildlife viewing areas.
- Public access to waterways.

The top “outside your community” needs for Oregonians:

- Cleaner restrooms.

- Soft surface walking trails.
- Nature and wildlife viewing areas.
- More restrooms.
- Public access to waterways.
- More places and benches to observe nature and others.
- Picnic areas and shelters for small visitor groups.

Low priority “in your community” needs for Oregonians:

- Off-highway vehicle trails / areas.
- Low-impact exercise equipment.
- Designated paddling routes for canoes, kayaks, rafts, and drift boats.

Low priority “outside your community” needs for Oregonians:

- Low-impact exercise equipment.
- Multi-use sports fields.
- Off-highway vehicle trails / areas.

As noted in this study, it is clear the public has a desire for more access to waterways as well as clean availability to restroom facilities in their recreation destinations. Due to the remoteness of several of these rivers, it is not likely a large increase in demand for access or additional infrastructure (restrooms) will occur in the wild and scenic river corridors. If there is a notable increase in visitor use across all these river segments, funding and feasibility should be examined in order to accommodate the demand as well as protect the river values (restroom buildings to protect water quality).

The main changes to capacity would occur if access or transportation were improved or added. Should this occur, capacity would need to be revisited for the wild and scenic rivers.