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Crescent Creek Wild and Scenic River Comprehensive River Management Plan

**Crescent Ranger District, Deschutes National Forest
Klamath County, Oregon**

Township 24 S, Range 6, Sections 1, 2, 11, 12, 13 and Township 24 S, Range 7 E,
Sections 8, 9, 14-21, Willamette Meridian



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The Purpose of This Plan

In 1968, Congress passed the Wild and Scenic Rivers Act (P.L. 90-542) and established a nationwide system of outstanding free-flowing rivers. For a river segment to be considered eligible for Wild and Scenic River status it must be “free-flowing” and possess “outstandingly remarkable values” within its immediate environment. These rivers are protected for the benefit and enjoyment of present and future generations. In 1968, Congress identified 27 rivers for study with the enabling legislation. To date, 208 rivers in 40 states and the Commonwealth of Puerto Rico have been added to the National Wild and Scenic Rivers System. Crescent Creek was designated by Congress as a Wild and Scenic River in 1988.

The goal of the Crescent Creek Wild and Scenic River Comprehensive River Management Plan (CRMP) is to protect and enhance the river values for which Crescent Creek was included in the Wild and Scenic Rivers System. In addition to free-flow and high water quality, outstandingly remarkable values (ORVs) were determined in a Resource Assessment in 1990, verified in a second Resource Assessment in 2015 (USFS 2015), and added to during the CCWSR CRMP EA process. The ORVs unique to this designated portion of river were identified as: Geology, Scenic Vegetation, and Fisheries.

The following sections briefly discuss existing conditions to provide context, prior to summarizing applicable management direction and defining the desired future condition of the river corridor. Examples of consistent and inconsistent uses are included to provide further clarification on how to interpret standards and guidelines. Actions that lead toward the desired conditions over the long-term are consistent with this plan. Actions that lead the corridor away from desired conditions over the long-term are not consistent with this plan. A monitoring plan with measures, indicators, and action trigger points is also outlined.

This plan will be implemented through three primary mechanisms, including intergovernmental coordination, individual agency action, and partnerships with non-governmental organizations and the public. Ultimately its success will depend on community involvement and stewardship. The Deschutes National Forest Land and Resource Management Plan (LRMP; USFS 1990) was amended by the CCWSR CRMP FEA to support this CRMP. Future actions or projects would require appropriate National Environmental Policy Act analysis, documentation, and public involvement for projects on Federal lands. Private landowners are not affected by this plan but are required under the Wild and Scenic River Act to follow county, state, and Federal regulations for projects that occur within the ordinary high water mark of the Crescent Creek WSR.

Background

Crescent Creek originates within the Deschutes National Forest on the eastern slopes of the Cascades and flows downstream approximately 33 miles to its confluence with the Little Deschutes River. The designated Wild and Scenic area includes 10 miles, with the interim boundary beginning at the outlet of Crescent Lake and ending at the Forest Service boundary at the Crescent Cut-off Road (County Road 61). The legal description for the area is Township 24 South, Range 6 East, Sections 1, 2, 11, 12, and 13 and Township 24 South, Range 7 East, Sections 8, 9, and 14-21, Willamette Meridian.. Six of the ten miles of Crescent Creek designated as Wild and Scenic River corridor are managed by the U.S. Forest Service with the balance in private ownership.

The entire designated portion of Crescent Creek is free-flowing. Below Crescent Lake dam there are no water diversions, dams, or other impoundments on this reach of stream on National Forest land. The shorelines are natural except in the immediate vicinity of the two road crossings and the portions of the creek on private lands. The bridges are above the ordinary high water mark and do not disrupt the river's free-flowing character. The river corridor is landscape dominated and defined by natural forces. With its natural components intact and dominant, it provides a high level of scenic attractiveness.

River Classification

The Crescent Creek Wild and Scenic River section is classified as "Recreational". Recreational rivers are defined in the Wild and Scenic Rivers act as: "Those rivers or sections of rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past."

Timeline of the Crescent Creek Wild and Scenic River Designation

- **1988** – A 10 mile segment of Crescent Creek was designated by Congress as a Wild and Scenic River as part of the Omnibus Oregon Wild and Scenic Rivers Act of 1988.
- **1990** - A Resource Assessment was conducted to identify outstandingly remarkable values exclusive to the designated Wild and Scenic component of Crescent Creek.
- **2009** - Initial planning efforts were undertaken, but put on hold due to shifting priorities.
- **2015** – A second Resource Assessment was conducted and completed in 2015 to identify outstandingly remarkable values (ORVs) exclusive to the designated Wild and Scenic component of Crescent Creek. The Resource Assessment confirmed geology and scenic vegetation to be ORVs for Crescent Creek.
- **2017** – The Comprehensive River Management Plan Environmental Assessment was initiated to amend the Forest Plan to provide specific Forest Plan guidance to Crescent Creek as well as to identify a final River Corridor boundary as required by the Wild and Scenic Rivers Act. This Comprehensive River Management Plan is an outcome supported by the CCWSR CRMP Environmental Assessment.
- **2018** – The Preliminary Environmental Assessment proposed to amend the Forest Plan to provide specific Forest Plan guidance to Crescent Creek as well as to identify a final River Corridor boundary as required by the Wild and Scenic Rivers Act.
- **2019** – The Final Environmental Assessment and Resource Assessment were modified in response to comments to the Preliminary Environmental Assessment. Fisheries was added to the list of ORVs for Crescent Creek and the description of the final proposed boundary was updated. The Environmental Assessment was finalized and a Decision Notice was signed.

River Corridor Boundary

The 1988 Omnibus Oregon Wild And Scenic Rivers Act of 1988 (Public Law 100-557) designated "CRESCENT CREEK, OREGON – The 10-mile segment from the southwest quarter of section 11, township 24 south, range 6 east, to the west section line of section 13, township 24 south, range 7

east, as a recreational river, to be administered by the Secretary of Agriculture” as a Wild and Scenic River.

The 1988 designation of the Crescent Creek Wild and Scenic River established an interim river corridor boundary with a width of 0.25 miles from the ordinary high water mark on either side of the river for interim management during the preparation of the final boundary and comprehensive river management plan. The final corridor boundary was determined as part of the Crescent Creek Wild and Scenic River Comprehensive River Management Plan Environmental Assessment. The adjustments to the Crescent Creek Wild and Scenic River boundary were intended to provide for protection and enhancement of river values. Section 3(b) of the Wild and Scenic River Act states “...establish detailed boundaries therefor (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).” This plan does not apply to any portions of Crescent Creek downstream, outside of federal lands, or outside of the designated Wild and Scenic River Corridor.

This plan designates a final boundary for the Crescent Creek WSR, which starts approximately 440 feet downstream from the centerline of the dam at the north end of Crescent Lake, just below the stream gage, and ends at the west boundary of section 13. The final boundary expands the interim boundary to include the Cold Creek tributary system, which contributes approximately 15 cubic feet per second of cold water which is critical to the overall total flow of Crescent Creek before the junction with Big Marsh Creek. The final boundary avoids the maintenance yard for the Union-Pacific Railroad, which is under Special Use Permit with the Forest Service and reduces the amount of private property within the boundary. Total acres within the CCWSR boundary would increase from 3,050 to 3,160 acres. Figure 1 shows the interim boundary for the CCWSR. Figure 2 shows the final boundary for the CCWSR.

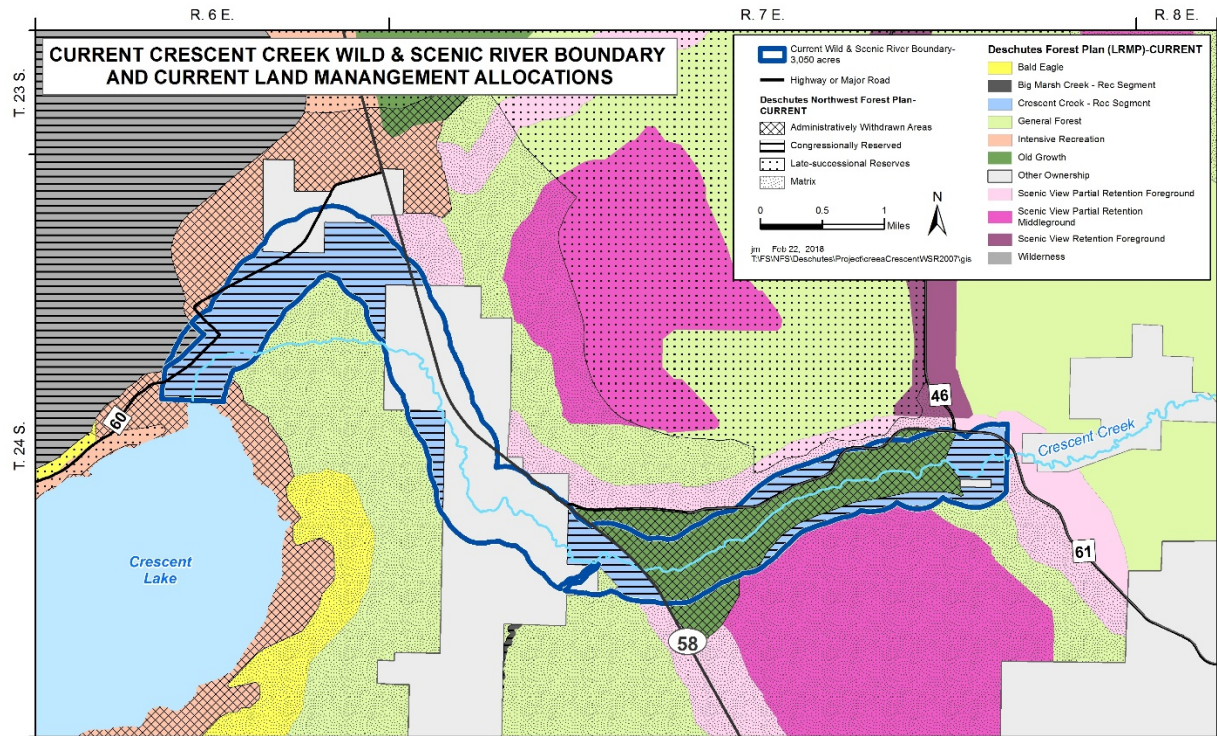


Figure 1. Interim Boundary and Land Management Allocations.

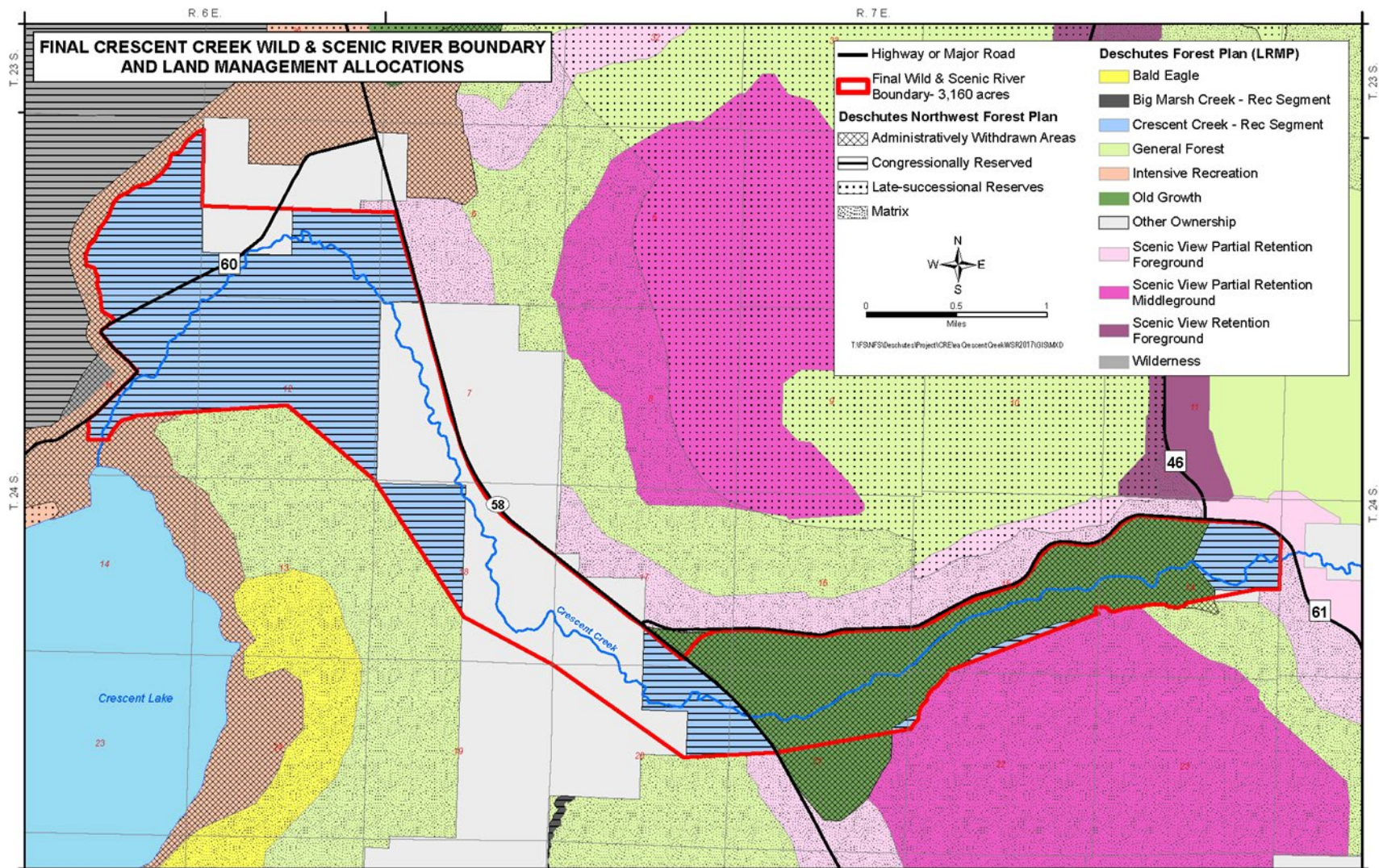


Figure 2. Final Boundary and Land Management Allocations

Management Direction

Management direction on the Deschutes National Forest comes from the 1990 Deschutes National Forest Land and Resource Management Plan (Forest Plan) Final Environmental Impact Statement and Record of Decision, and incorporates by reference the accompanying land and resource management plan (LRMP), as amended. Additional management direction is provided by Forest Plan amendments approved since 1990, which include the 1994 Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents within the Range of the Northern Spotted Owl (Northwest Forest Plan).

The Forest Plan provides general direction to protect and enhance the ORVs on all Wild and Scenic rivers on the Forest. The direction in the Forest Plan was intended to be temporary until the river planning process and appropriate river-specific management plans could be completed. The CCWSR CRMP EA proposes to amend the Deschutes Forest Plan to designate all lands, with some exceptions, within the final CCWSR boundary as M17, Wild and Scenic River, to protect the values within the WSR boundary. Table 1 and Table 2 show the interim and final land allocations for both the Deschutes LRMP and the Northwest Forest Plan (NWFP) for the interim CCWSR boundary and the final boundary.

Table 1. The Underlying Deschutes LRMP Allocations with the interim and final Wild and Scenic River Corridor

Deschutes Land Management Allocation	Management Allocation Acres within the Interim WSR Boundary	Management Allocation Acres within the Final Surveyed WSR Boundary
Wild and Scenic	1,277	1,586
Old Growth	752	813
Other Ownership	984	761
General Forest	13	0
Wilderness	23	0
Intensive Recreation	0	0
Scenic View Partial Retention Foreground	0	0
Scenic View Partial Retention Middleground	0	0
Total Acres:	3,050	3,160

Note: Wilderness land allocation will not change, the difference is a result of wilderness no longer being within the boundary. Old Growth Management Area will not change, where Old Growth exists within the boundary it is also overlapped with Wild and Scenic. Difference in Old Growth acres is a result of slight differences in the information sources used.

Table 2. NWFP Land Allocations within the interim and final Wild and Scenic River Corridor.

Northwest Forest Land Management Allocation	Management Allocation Acres within the Interim WSR Boundary	Management Allocation Acres within the Final Surveyed WSR Boundary
Congressionally Reserved	1,286	1,586
Administratively Withdrawn	752	813
Other Ownership	984	761
Matrix	13	0
Total Acres:	3,050	3,160

Each management area allocation under the Deschutes LRMP has associated standards and guidelines that guide management within the management area allocation. M17, Wild and Scenic River, has existing standards and guidelines that give overarching direction for all activities within the M17 allocation acres to help ensure that river values are protected by future management:

- All activities within the corridor will preserve the river’s free flow, water quality, and Outstandingly Remarkable Values.
- In instances where there is conflicting or overlapping direction, apply the most restrictive direction.

Additional standards and guidelines, specific to Crescent Creek, were developed as part of the CCWSR CRMP EA to protect the ORVs of Geology, Fisheries and Scenic Vegetation and protect water quantity and quality:

- **G-1¹**: The location of claims under current mining laws will be continued (no locatable minerals are known to be present within the corridor); mineral leasing and the disposal of saleable minerals will only be allowed if such activities would protect and enhance Outstanding Remarkable Values or free-flow/ water quality benefits.
- **SV-1**: Partial retention will be used as the visual management standard within Crescent Wild and Scenic River boundary.
- **F-1**: Modifications or changes would be made to storage and release of flow from Crescent Lake to more closely resemble the historic hydrograph to improve habitat quality, access and connectivity within Crescent Creek as well as a more natural temperature regime.
- **F-2**: Habitat restoration work within Crescent Creek would include activities such as adding large wood in the form of logjams and restoring valley scale fluvial processes. Restoration would be aimed at restoring an elevated shallow groundwater table, thereby supporting riparian vegetation development, hyporheic exchange and greater habitat quality/complexity for redband trout.
- **H-1**: Wood manipulation to allow boating is not allowed.
- **H-2**: Trails will be designed to avoid sensitive riparian areas and to the extent possible provide access to the creek at designated locations.
- **H-3**: Dispersed camping sites will be managed consistent with the 2011 Travel Management Project Final Environmental Impact Statement for the Deschutes National Forest, Ochoco National Forest, and Crooked River National Grasslands.
- **H-4**: Habitat improvement projects will be allowed, they should be natural appearing and be compatible with other values of the riverine setting.

Table 3 compares the interim management direction with the direction set by the CCWSR CRMP.

¹ G-Geology, SV- Scenic Views, F-Fisheries and H-Water Quality and Water Quantity

Table 3. Comparison of the interim management direction with the final management direction from the CCWSR CRMP.

Resource Area	Interim Management Direction	CCWSR CRMP Management Direction
Wild and Scenic River Boundary	Approximately ¼ mile from the banks of the creek.	Modified to include hydrologically connected areas, including Cold Creek system, adjacent wetlands and be more easily located and enforced by using roads, and section lines.
Wildlife	Use existing direction from Forest Plan - MA-17 and Forest-wide Standards including Wildlife, Riparian Areas, Law Enforcement, and Northwest Forest Plan, Eastside Screens, INFISH.	Use existing direction and add Standards and Guidelines emphasizing protection of scenic views, water quality and water quantity.
Recreation	Use existing direction from the Forest Plan - MA-17 and Forest-wide Standards including Recreation, Transportation System, Special Uses, Riparian Areas, Law Enforcement, and Northwest Forest Plan, Eastside Screens	No change in existing Standards and Guidelines. Addition of monitoring plan will allow for adaptive management.*
Roads and Access	Paralleling roads or railroads could be constructed on one or both river banks. There can be several bridge crossings and numerous river access points.	No change in existing Standards and Guidelines. Addition of monitoring plan will allow for adaptive management.*
Commercial and Special Uses	Use existing direction from Forest Plan - MA-17 and Forest-wide Standards including Recreation, Special Uses (SU-16 through SU-46), Law Enforcement, and Northwest Forest Plan, Eastside Screens, INFISH. Currently, there are no restrictions to collection of special forest products.	No change in existing Standards and Guidelines. Addition of monitoring plan will allow for adaptive management.*
Geology /Mining	Use existing direction from the Forest Plan - MA-17 and Forest-wide Standards including Minerals and Energy Resources.	The location of claims under current mining laws will be continued (no locatable mineral are known to be present within the corridor); mineral leasing and the disposal of saleable minerals will only be allowed if such activities would protect and enhance ORVs or free-flow/ water quality benefits.
Scenery /Vegetation	Use existing direction from Forest Plan - MA-9, 17 and Forest-wide Standards including Forest Health, Timber Management, Riparian Areas, Fuelwood, Fire and Fuels Management, Law Enforcement, and Northwest Forest Plan, Eastside Screens, INFISH, Scenery and Regional Weed EIS.	Use existing direction. Vegetation management would aim to restore fire regimes for the area. For example, in ponderosa pine and mixed conifer, the goal is to restore appropriate fire return intervals using silvicultural techniques and prescriptive application of fire. In lodgepole pine, recognize stand replacement as a potential process within the corridor and look at placing strategic risk reduction activities outside of the corridor first to reduce risk to private land, Odell Butte Lookout and the electronic site. Target removal of small diameter live trees and down material along private land and county road 62 as an acceptable practice if effects to ORVs for scenery can be found to be neutral or beneficial.
Hydrology /Fisheries	Use existing direction the Forest Plan - MA-17 and Forest-wide Standards including Riparian Areas, Water and Soils Best Practices, Riparian Areas, and Northwest Forest Plan, Aquatic Conservation Strategy, INFISH, Clean Water Act.	Use existing direction and add Standards and Guidelines to prevent wood manipulation for boating, dispersed camping sites will be regulated to protect river resources, and encourage natural appearing habitat improvement projects. Modifications or changes

Resource Area	Interim Management Direction	CCWSR CRMP Management Direction
		would be made to storage and release of flow from Crescent Lake to more closely resemble the historic hydrograph to improve habitat quality, access and connectivity within Crescent Creek as well as a more natural temperature regime.

Desired Future Condition

River management will support a condition where landscapes within and near the channel of Crescent Creek possess a concentration of complex, diverse, and highly scenic vegetation and geological features. Natural processes, including disturbance, continue across the watershed, occurring at natural rates and scales. The landscape scenery is dominated by a natural character and retains the high level of scenic attractiveness and integrity that led to its Wild and Scenic River designation.

Consistent and Inconsistent Uses

The desired future condition presents a broad vision of the desired state for resources in the river corridor, and standards and guidelines provide more detailed management direction. Uses that are consistent and inconsistent with the standards and guidelines are discussed for each Outstandingly Remarkable Value (ORV), as well as other resource areas. Actions that lead toward the desired conditions over the long-term would be considered consistent with this plan. Actions that lead the corridor away from desired conditions over the long-term would be considered inconsistent with this plan. While it may not be possible to anticipate every potential future use, discussion of consistent and inconsistent uses is intended to provide additional clarification on how to interpret standards and guidelines if conflicts arise.

Outstandingly Remarkable Values

The Wild and Scenic Rivers Act, requires the protection and enhancement of river values. i.e., the values that caused it to be included in the National Wild and Scenic Rivers System. The Wild and Scenic Rivers Act states that to be considered for designation, a river or portion of river must be free-flowing and possess at least one “outstandingly remarkable value.” The 2015 Resource Assessment and 2019 CCWSR CRMP EA confirmed *scenery*, *geology*, and *fisheries* to be outstandingly remarkable values for Crescent Creek.

The following criteria were used to determine ORVs for Crescent Creek, first that the values are river-related. To be considered river-related, values should:

1. Be located in the river or its immediate environment,
2. Contribute substantially to the functioning of the river ecosystem, and/or
3. Owe their existence to the presence of water.

Outstandingly Remarkable Values (ORVs) were defined as unique or exemplary features that are significant at a comparative regional or national scale. A resource or combination of resources that are either one-of-a-kind, or one of the better examples of that type of resource.

The Deschutes National Forest assembled an Interdisciplinary Team (IDT) to evaluate the potential ORVs of Crescent Creek. The IDT considered unique values and the degree of rareness at a regional

or national level. Values must be river-related in that they owe their existence or contribute to the functioning of the river system and its immediate environs. The IDT used standardized criteria against which river values are compared for determining outstandingly remarkable values. The IDT felt it was necessary to compare Crescent Creek with other rivers which displayed the same evolutionary processes, environmental features and climates as Crescent Creek. It was decided that Crescent Creek would be compared with rivers located in the region to the north which includes the Deschutes River of which Crescent Creek is a tributary. Values which were not determined to be ORVs are considered in this document according to the ways they contribute to the protection and enhancement of river values. Some of these values may also have additional non-river related management considerations. Such considerations are generally covered in other planning and management documents and are outside of the scope of this Comprehensive River Management Plan.

Summary of Outstandingly Remarkable Values

Geology

The geologic values of Crescent Creek are considered outstandingly remarkable because the geologic condition of the area is dramatic and of considerable educational value. Crescent Creek exemplifies a geomorphological area to enjoy and study the ancient glacial processes and landforms. For this reason, the geology at Crescent Creek represents an ORV for the region, worth preserving because of its outstanding geologic values for the enjoyment and scientific study of the considerable variety of glacial and erosional processes and landforms for present and future generations.

Existing surface geology within the Wild and Scenic River boundary

- 76-77% Quaternary gravels – glacial deposits from Suttle Lake advance (glacial maximum 20,000 years ago) mapped to head of canyon.
- 13% Two Quaternary Tertiary older mafic vent complexes (Royce Mountain to the north and Odell Butte to the south) that form the canyon that Crescent Creek flows through.
- 10% Quaternary fluvial mixed grain sediments downstream from the mouth of the canyon.
- <1% Quaternary cinder cone on far eastern boundary limit.

Groundwater Dependent Ecosystems (GDE)

Two springs are located in Township 24 South, Range 6 East, Sections 2 and 11 along the west boundary of the final Wild and Scenic River boundary and downslope of the railroad grade.

Cave Resources

There are no known caves within the final Wild and Scenic River boundary. If any caves are discovered, the Forest Service would refer to the Federal Cave Protection Act of 1988.

Geo-Hazards

Volcanic Hazard

The probability of a volcanic hazard in the vicinity of Crescent Creek is low. The entirety of Crescent Creek free-flows through the High Cascade Mountain geologic province which is principally composed of quaternary volcanic vents and lava flows. The volcanism in the Cascades is driven by an active subduction zone off the coast of Oregon making central Oregon constantly prone to new

volcanic events. The area of and immediately adjacent to the 10-mile Wild and Scenic boundary has not experienced any recent volcanism (within last 10,000 years). Thirty three miles northeast of the eastern Crescent Creek Wild and Scenic boundary, Oregon's youngest lava flow (Big Obsidian Flow) erupted 1,300 years ago. Thirty six miles south-southwest of southern Crescent Creek Wild and Scenic boundary, Mount Mazama erupted 7,700 years ago forming Crater Lake, Oregon's only National Park.

Earthquake Hazard

In October 2015, six miles northeast of the eastern Crescent Creek Wild and Scenic boundary a swarm of 43 earthquakes was recorded by Pacific Northwest Seismic Network's seismographs.

Rockfall Hazard

High slope angles (27 to 45 degrees) and exposed large rock outcrops lead to increased probability of natural rockfall in the steep canyon between Royce Mountain and Odell Butte.

Mineral Material Minerals

There are no active or closed mineral material sources (rock pits and quarries) within the final Wild and Scenic River boundary.

Locatable Minerals

Scenic and recreation portions of the Wild and Scenic River Act are not withdrawn from locatable mining. On March 20, 2017, using the DOI BLM online database LR2000, a Mining Claim Geographic Index report search for all active, closed, pending, and void mining claims was performed. The LR2000 report for T24S, R6E and T24S, R7E did not reveal any active, closed, pending, or void mining claims within the final Wild and Scenic River boundary. Based on this search there are no valid existing rights within the final Wild and Scenic River boundary.

How the Geology ORV contributes to Desired Future Conditions

Land forming processes will continue at a natural pace. Landscapes within Crescent Creek possess a concentration of complex, diverse, and highly scenic geologic features created by glacial and volcanic events. The diverse and varied geological features of this area are protected, and provide opportunities for learning about the unique volcanic and glacial forces that formed this mountain landscape.

Consistent and Inconsistent Uses

- Subject to regulations (36 CFR 228), new mining claims are allowed. Mineral activity must be conducted in a manner that minimizes surface disturbance, sedimentation, pollution, and visual impairment [LRMP, M17-5 Standards (Mining)] would be consistent.
- Mineral material sources (rock pits and quarries) within the final Wild and Scenic River boundary shall be withdrawn from entry, sale, and other disposition under public land laws would be consistent.
- Installation of scientific monitoring equipment with negligible impacts would be consistent.

Standards and Guidelines

G-1: The location of claims under current mining laws will be continued (no locatable mineral are known to be present within the corridor); mineral leasing and the disposal of saleable minerals will

only be allowed if such activities would protect and enhance Outstanding Remarkable Values or free-flow/ water quality benefits.

Scenic Vegetation

The scenic vegetation resource of Crescent Creek is considered to be outstandingly remarkable. Scenic and vegetative diversity is unique within the steepness and narrowness of the canyon. A variety of conifers, Engelmann spruce, lodgepole pine, ponderosa pine and some true firs, are visible from the stream. Large old growth ponderosa pines in excess of 24 inches in diameter exhibiting the characteristic yellow-bellied appearance are found scattered throughout. Several large rock outcrops found in the lower sections of the zone add variety to the overall visual landscape. As the creek exits the canyon, the valley floor widens and there is an increase in willows and rose species, which have grown to large sizes. The lack of seen human intrusion creates a feeling of pristine wilderness, close to a major county highway.



Figure 3. Crescent Creek free-flowing through the Canyon

How the Scenic Vegetation ORV contributes to Desired Future Conditions

The landscape scenery is dominated by a natural character and retains the high level of scenic attractiveness that led to its Wild and Scenic River designation. Immediate-foreground and foreground scenic views for primary travel corridors exhibit a vegetative diversity of species, age, and size class that add a sense of mystery to the landscape. Foreground views are punctuated by occasional middle and background views of the surrounding landscape. Direct views of water may be limited, but its presence on the landscape should be sensed and felt. Middleground and background scenic views from, or into, the Wild and Scenic River corridor are of a naturally appearing landscape dominated by natural form, line, texture and shapes. The diversity of tree species in the corridor and

the presence of large outcrops and instream boulders add to the visual attraction of the area and invite exploration.

Consistent and Inconsistent Uses

- Vegetation management activities would be consistent where they maintain or enhance scenic integrity.
- Mitigations to protect scenic integrity would be expected. Commercial or noncommercial vegetation management and utilization activities where allowed by other plans and standards which accomplish desired management (i.e. thinning, managed firewood cutting, biomass removal) would be consistent.
- Restoration of impacted areas with native plant species would be consistent

Standards and Guidelines

SV-1: Partial retention will be used as the visual management standard within Crescent Wild and Scenic River boundary.

Fisheries

The construction of the current Crescent Lake dam was completed in 1956 and has blocked fish passage at all life stages between Crescent Creek and Crescent Lake. The current flow management results in a reversal of natural flow conditions where peak flows now occur during the summer (irrigation season) and very low base flows occur during the fall-spring (storage season). As a result, adfluvial life histories of those native species have been lost. Spawning, incubation, and emergence are likely adversely affected by these conditions.

How Fisheries contributes to Desired Future Conditions

Restoration of a natural flow regime, or run of the river hydrology would likely provide much more favorable habitat and water quality conditions for native species. Restoration of a natural flow regime would likely improve spawning and rearing conditions for native species by making appropriate habitats available during the times of year that these fish have evolved to take advantage of. In addition to providing access to available habitats, flow restoration would also likely result in improved water temperature conditions and thermal complexity. Restoration of a fish passage between Crescent Creek and Crescent Lake would benefit native fishes that historically migrated between these habitats to take advantage of spawning, rearing and foraging habitats.

The restoration of habitat and flow complexity would be of great value to native fish species and the ecology of the river as a whole. The restoration of large logjam complexes, beaver dams, wetlands and highly connected floodplains would provide a much more resilient riparian and aquatic environment.

Consistent Uses

- Stream restoration including flow restoration, which protected and improved fish habitat and water quality would be consistent.
- Fisheries monitoring which emphasized genetic composition, distribution, and abundance would be consistent.
- Monitoring and removal of riparian and aquatic invasive species would be consistent.

- Removing bridges and culverts in order to provide unimpeded passage for all life-stages of native fish and other organisms would be consistent.

Inconsistent Uses

- Activities that could pollute the river such as fire retardant, herbicides, or other chemicals would not be consistent.
- Introduction of fish that may affect the genetics of native fish populations, introduce or exacerbate disease, increase competition for resources, or alter predator/prey interactions would not be consistent.

Standards and Guides

- **F-1:** Modifications or changes would be made to storage and release of flow from Crescent Lake to more closely resemble the historic hydrograph to improve habitat quality, access and connectivity within Crescent Creek as well as a more natural temperature regime.
- **F-2:** Habitat restoration work within Crescent Creek would include activities such as adding large wood in the form of logjams and restoring valley scale fluvial processes. Restoration would be aimed at restoring an elevated shallow groundwater table, thereby supporting riparian vegetation development, hyporheic exchange and greater habitat quality/complexity for redband trout.

Other Resources

Recreation

Water-based recreation opportunities throughout the Crescent Creek Wild and Scenic River corridor are very limited. Flow regulation out of Crescent Lake is the greatest concern for water based recreation. Currently the annual hydrograph is essentially reversed with higher flows in the summer months, June through September and much lower when irrigation season is over, which would be opposite of what would be expected in a natural system. There are no established or visible put-ins or take-outs for the river and there is too much woody debris for whitewater rafting to be viable.

Fishing is another activity that could occur along the river. This activity is limited by river access and not found desirable to most fisherman. As a result of the reversed natural flow conditions, the amount of habitat available to native fish during the storage season is greatly reduced. Spawning, incubation, and emergence are likely adversely affected by these conditions. Local managers' experience suggests this type of use is very minimal.

Presently, there are no Forest Service trails along the river but limited use by off-trail hikers, hunters, and mushroom pickers can be seen in the area. Due to the limited developed roads and steep terrain, this area on National Forest land sees very little winter recreation. On the private land, there are a few unauthorized trails that begin on private property but lead to National Forest land.

Crescent Creek Campground is the only developed recreation site within the Wild and Scenic River Corridor. Crescent Creek Campground is considered a low use campground (see Capacity analysis) and is a somewhat isolated campground that is popular for bird watching, camping, and to a lesser degree fishing, during hunting season. The campground is operated by a concessionaire from the end of May to the end of September with additional use in the fall for hunting camps. It contains a vault toilet, water (seasonally), picnic tables, and fire rings. The campground has river access and views of

the unique geology and vegetation in the canyon. Additionally, there are three known dispersed camping areas west of Crescent Creek Campground. These receive light summer camping use, light day-use by fisherman, and moderate-light use during the hunting season.

How Recreation contributes to Desired Future Conditions

There are sustainable recreation opportunities that allow for enjoyment of the Wild and Scenic River, and that are consistent with the preservation of river values. Recreation supports public appreciation of the Wild and Scenic River.

Consistent Uses

- Dispersed camping is allowed. Campsites are rested or decommissioned as needed.
- Fishing, hunting, hiking and other recreational opportunities exist. Motorized access occurs on designated routes in accordance with Travel Management standards.
- Boating which does not require wood manipulation.
- Winter recreation such as cross country skiing or over the snow machine travel.
- Special use permits for groups, individuals, or organizations on the Crescent Ranger District which protect the area's character.
- Low key signing, off site interpretation, and on-site interpretation that is consistent with the area's desired character.
- Unauthorized road closures or obliterations for resource protection or to reduce vandalism.
- Structure removal and site revegetation projects are encouraged.

Inconsistent Uses

- Unauthorized trails or roads that adversely impact riparian areas, cultural sites, wildlife refugia, or cause unstable areas or erosive soils.
- Dispersed camping or campfires that adversely impact ORVs would not be consistent.
- Illegal or undesirable behaviors such as building unauthorized roads or trails, building unauthorized bridges, shooting trees, graffiti, leaving trash, cutting live or dead standing trees outside firewood cutting areas, or vandalism would not be consistent.
- Illegal or undesirable behaviors associated with the railroad corridor such as waste and trash dumping, unauthorized road building, or unauthorized vegetation clearing would not be consistent.

Visitor Capacity

Section 3(d)(1) of the Wild and Scenic Rivers Act directs agencies to address visitor capacities in a comprehensive river management plan. This is to ensure that use levels in the river area do not threaten river values or established desired conditions. Overall visitor use within Crescent Creek area is quite low and does not appear to be threatening river values. Commensurate with this there has not been a large degree of investment in data collection, monitoring, and analysis to support visitor capacity estimates. As a result the visitor capacity estimates included in this comprehensive river management plan recognize the likelihood that visitor capacity decisions may need to be reviewed and revised as more data becomes available. The monitoring plan associated with this Comprehensive River Management Plan, outlines thresholds that if exceeded would determine if a re-examination of visitor capacities or other negative effects to the river values is needed.

Initial Visitor Capacity Estimates

To determine initial visitor capacity estimates, visitors were divided into four categories: Crescent Creek Campground primary season, Crescent Creek Campground hunting season (fall), dispersed camping, and dispersed recreation. Capacity estimates were based off of formulas used in other WSR projects, including the Upper White Salmon, and professional judgement.

- Crescent Creek Campground, primary season use
 - Formula= (number of sites) x (number of days in season) x (site occupancy rate) x (average campers per site)
 - Crescent Creek Campground sees very light use compared to other developed campgrounds on the District. Standard site occupancy rates in other campgrounds are around (1/3 or 33.3%) in visitor analysis. In this case, we will be utilizing a 1/10 rate for 10%. With field observations, we will utilize an average of 4 campers per site. Standard operating season is 4 months over the summer (May-September).
 - **480 campers** during one primary season= 10 sites x 120 days x 10% occupancy x 4 campers.
- Crescent Creek Campground, hunting season (fall)
 - Although no amenities are provided after the campground is closed, the area is popular for hunting camps. Multiple hunting seasons exist on the Crescent Ranger District but the most popular camping times typically overlap with modern rifle hunts in the month of October. Hunting camp at the campground have been observed to be closer to the standard 4 people per site, camping in larger numbers than primary season use campers in the area. The standard 1/3 occupancy rate is also applicable in this case.
 - **400 campers** during hunting season=10 sites x 30 days x 33.3% occupancy x 4 campers
- Dispersed camping
 - There are three known dispersed campsites within the river corridor. It is likely that there are more, smaller and less developed sites along the river due to the open vegetation and river access that have not been discovered. Dispersed campers occupy the area throughout the spring, summer and fall in small occupancy rates. Through observation, there are usually 2 campers per site.
 - **120 dispersed campers**= 3 sites x 200 days x 10% occupancy x 2 campers
- Dispersed recreation
 - Dispersed recreation within the river corridor includes hiking, hunting, and fishing. There are so few observations of dispersed recreation, there is no appropriate formula to estimate number of individuals. There are no established popular dispersed sites but in areas of open forest, recreationalists can easily move across the landscape. The best observations include counting vehicles throughout the year parked along the Crescent Cutoff Road where recreationalists park and hike downhill to the river. Local residents may be accessing the river but their use is not documented since it appears they obtain access from private land. The majority of dispersed use occurs within the summer months (approximately 120 days). Average group size is estimated at 1-2 people.

Carrying Capacity

The following is an evaluation of the estimated carrying capacity of the river corridor that would maintain core river values and protect the river ORVs. If during monitoring these capacity numbers are approximately met, managers will need to reevaluate the need for additional management actions.

This evaluation takes into consideration current facilities, roads and trails. As use patterns or other management activities across the District change, these numbers may need to be reevaluated.

- Crescent Creek Campground, primary season use
 - If the campground was at full capacity for half of the open season, this would likely mean that for several weeks during peak camping season, the campground would be completely or nearly full. If this were the case, campers that could not get into the campground would potentially go to surrounding areas and put additional pressure on natural resources and impact river values. With no other near-by developed recreation facilities, there isn't infrastructure that could protect the corridor. Popular existing dispersed sites would also likely be full during the busy camping season. Campers may create or expand dispersed sites.
 - **2,400 campers** during one primary season= 10 sites x 120 days x 50% occupancy x 4 campers.
- Crescent Creek Campground, hunting season
 - With increased occupancy during hunting season, there would be periods where all sites were full and campers would seek near-by opportunities. Popular existing dispersed sites could also be full, causing campers to create new or expand dispersed sites. Since hunters are limited to their hunting season and specific tag, it is unlikely that the District would see drastic short-term changes in hunting use of the ranger district.
 - **600 campers** during hunting season=10 sites x 30 days x 50% occupancy x 4 campers.
- Dispersed Camping
 - With increased occupancy, there would be periods that all existing sites would be full and campers would seek new or expand dispersed sites. Without infrastructure, natural resource damage could occur including excess human waste and garbage. Dispersed camping could be directly related to available developed campground occupancy. If all near-by developed campgrounds are at or near capacity, more campers could choose to disperse camp.
 - **600 dispersed campers**= 3 sites x 200 days x 50% occupancy x 2 campers
- Dispersed Recreation
 - A signifier that the carrying capacity has been met for dispersed recreation would be recreation created natural resource damage within the river corridor. This could include users creating new or widening existing parking areas to access the river, the creation of unauthorized user-created roads or trails, and trash or dumping associated with hunting, fishing, or hiking in the area.

Hydrology

Crescent Creek is the outflow from Crescent Lake. It is generally a slow moving stream with an average gradient drop of less than 45 feet per mile. It is regulated by the Tumalo Irrigation District for irrigation purposes. Temperatures are influenced by the regulated flows and average 42 degrees F for the summer months. Low flows are common during the months of October through April when the lake is recharged for summer irrigation withdrawal. High flows are usually moderate (averaging 146 CFS) during the months of June through September. Flows for irrigation purposes may exceed 230 CFS during specific times during June through September. The soils in the area are generally porous and absorb rainfall, therefore the creek experiences very little fluctuation in the flow levels from rainfall.

The activity at and around the boat ramp located directly above the dam may influence the water quality of Crescent Creek. The location of docking and fueling facilities directly above the dam may increase the risk of the accidental release of minor impurities into the creek.

The confluence of Big Marsh Creek with Crescent Creek occurs just upstream of the crossing with Highway 58. The naturally occurring flow regimes of Big Marsh Creek moderate the effects of the controlled flows from Crescent Creek and the creek experiences fewer fluctuations. The tannic acid from the organic matter decomposition occurring in Big Marsh colors the water a tea color downstream though the clarity of the water is maintained. This section of stream is dramatically different from the upper section mostly due to the steep canyon that ends near the crossing with the Crescent Cutoff Road.

How the Hydrology contributes to Desired Future Conditions

Recreation and Forest management represent a potential for degraded water quality within Crescent Creek. Developed recreation within the river corridor is fairly limited, currently there is only one campground, Crescent Creek campground. This is a fairly low use campground that presently provides little threat to water quality. There are no official trails within the Wild and Scenic River Corridor. The private land within and adjacent to Crescent Creek represent a potential threat to aquatic vegetation by trespass of off-highway vehicles. If such sites are identified they should be restored and monitored. Forest management such as prescribed fire and timber harvest will continue to promote a resilient landscape and provide protections for watershed health.

Consistent Uses

- Consolidation, removal, relocation or maintenance of trails, roads, and campsites to protect riparian areas would be consistent.
- Vegetation management which meets all other direction and protects stream shade, streambanks, and provides for long-term wood input would be consistent.
- Installation of scientific monitoring equipment with negligible impacts would be consistent.
- Recreation including fishing, hunting and camping with little impacts on riparian vegetation or bank trampling would be consistent.

Inconsistent Uses

- Activities which alter channel morphology such as: removing or cutting instream wood, driving vehicles through the channel or stream banks, bridge or culvert installation which destabilizes stream banks, adding riprap along stream banks or other forms of inappropriate channel manipulation would not be consistent.
- Vegetation management which removes future instream wood, causes erosion, or permanently alters streamside shade would not be consistent.
- Wildfire suppression that would cause more damage to the creek's water quality and riparian areas than direct and indirect wildfire effects. Activities include construction of safety zones, fire camps, retardant use and hydrologically connected hand/dozer lines would not be consistent.

Standards and Guides

H-1: Wood manipulation to allow boating is not allowed.

H-2: Trails will be designed to avoid sensitive riparian areas and to the extent possible provide access to the creek at designated locations.

H-3: Dispersed camping sites will be regulated to the quantity and location to protect river resources, particularly riparian vegetation and water quality by the Travel Management Project Final Environmental Impact Statement for the Deschutes National Forest, Ochoco National Forest, and Crooked River National Grasslands (2011).

H-4: Habitat improvement projects will be allowed, improvements should be natural appearing and compatible with other values of the riverine setting.

Wildlife

The Crescent Creek Wild and Scenic River Corridor supports a variety of wildlife populations. Riparian habitat includes freshwater shrub/forest, fen, and wet meadows. Upland habitat includes lodgepole pine, spruce, ponderosa pine and mixed conifer with large trees scattered throughout. Unique habitats include cliff, lava and other rock formations. Confirmed and unconfirmed sightings include: Oregon spotted frog (T²), northern spotted owl (T), gray wolf (E), wolverine (P), western bumble bee (S), Cascades frog (S), brown creeper (LBFS), great blue heron (MIS) black-backed woodpecker (MIS), northern bald eagle (S), goshawk (MIS), red-tailed hawk (MIS), Cooper's hawk (MIS), and American marten (MIS). This diversity of wildlife is recognized as part of a healthy riverine ecosystem.

Riparian habitats within the WSR corridor are diverse due to the free flowing nature of the river and geological landforms. The upper reaches contain the headwaters to Crescent Creek as well as the largest wetland, wet shrub, and wet meadow complexes. Many of these areas are cycling into wet lodgepole stands. Willow, alder and other hardwoods habitats are scattered throughout the corridor. The canyon section has a narrow riparian area and less diverse riparian habitats.

The upland habitats vary from lodgepole, lodgepole/spruce, to mixed conifer and ponderosa pine. The upper section is primarily lodgepole pine and lodgepole/ spruce mix. Medium to extra-large structure consists primarily of ponderosa pine, with some Douglas-fir, sugar pine and white fir. The canyon section, east of private lands, has less access and provides refugia habitat with late and old structure lodgepole, ponderosa and other mixed conifers. Other unique habitats such as cliffs add to the diversity of the Crescent Creek corridor. All vegetation types occur at all seral stages, providing the diversity of habitats for a variety of common and uncommon wildlife species.

Human influences on wildlife habitat include access management, vegetation management, recreation, and encroachment by private land owners. They alter or reduce habitat, increase habitat fragmentation, increase disturbances (noise from motorized traffic, recreational use), reduce connectivity, provide an avenue for the introduction of non-native species, facilitate legal and illegal hunting and increase habitat degradation through soil and water contamination. The result is a reduction in core habitat for wildlife species.

Wildlife species vary in their ability to utilize small blocks of habitat. Many forest wildlife species (spotted owl, wolf, elk, etc.) require large blocks of undisturbed land to live and breed successfully, provide security and/or refugia where there is limited access for hunting and trapping. Within the WSR corridor there are four large blocks of core habitat greater than 100 acres, the largest being over 400 acres (within the Old Growth Management Allocation). Several other parcels are parts of larger blocks that continue outside the corridor. Approximately 26 percent of the corridor is in blocks greater than 100 acres.

² T=federally listed threatened, E= federally listed endangered, P=proposed for federal listing, S=R6 Regional Forester's designated sensitive, LBFS=land bird focal species, MIS = management indicator species, BCC=birds of conservation concern

How Wildlife contributes to the Desired Future Conditions

Elements of the desired future condition for wildlife are that wildlife security and refugia be maintained within the corridor. This can be accomplished by reinforcing maintenance level 1 (ML 1) road closures inside the corridor; careful planning of any additional trail routes that may be constructed to avoid sensitive areas (e.g. Oregon spotted frog breeding habitat, wetlands etc.), and areas that currently have no or minimal human presence, and by managing dispersed campsites and converting unauthorized roads and trails back to natural habitats.

Forest management should create and maintain a diversity of habitat stages and structures that are resilient on the landscape and consistent with Wild and Scenic River designation. This could include low intensity natural disturbances or active management that creates openings, promote hardwood tree species, and create/retain large snags and down wood. Having a diversity of vegetation structure within the corridor that is reflective of both the drier and more moist ecoclasses, as well as the significant elevational difference between the bottom and the top of the corridor will be beneficial to wildlife, in addition to improving the scenery ORV.

Consistent Uses

- Vegetation management which complies with current direction and plans would be consistent. Including perpetuate or enhance late and old structure, convert wet lodgepole into earlier seral shrub/meadow/fen stages, or removal of conifers to restore aspen and other unique hardwood habitats would be consistent
- Hunting game with appropriate permits and licenses would be consistent.

Inconsistent Uses

- Actions which fragment forest or riparian habitat would not be consistent.
- Development of trails or roads in sensitive areas (i.e. OGMA, Riparian reserves, Oregon spotted frog habitat, etc.) would not be consistent
- Human disturbance including recreational events, trails and dispersed sites in undeveloped areas which currently function as wildlife refugia would not be consistent.
- Illegal shooting or trapping of wildlife would not be consistent.

Standards and Guidelines

See Hydrology Section

Note: No change to the Old Growth Management Area boundary or Standards and Guidelines.

Cultural History

Approximately 28 percent of the FS lands within the Crescent Creek WSR boundary (excluding 321 private land acres) have been subject to an adequate level of cultural resource inventory surveys as standard procedure have changed in the last 30 years. An additional 11 percent has been previously surveyed but the surveys are no longer considered adequate. The previous surveys resulted in the discovery of 12 archaeological sites within the WSR boundary. Four of the sites are from the pre-contact era, five are within the historic period, and three are multi component historic/pre-contact sites. Eleven of the 12 sites have been evaluated for eligibility to the National Register of Historic Places. Nine of the sites were deemed eligible and two sites were considered not eligible. One site remains unevaluated due to a lack of information.

How the Cultural History Contributes to Desired Future Conditions

A management plan for the heritage resources of the area would identify opportunities for education, research, and recreation access as well as priority sites for protection measures and monitoring. Archaeological research conducted within the Crescent Creek WSR boundary and beyond would be synthesized, published, and continually updated as information becomes known.

Consistent Uses

- Low impact recreation would be consistent.
- Protection/Restoration of the areas landscape character would be consistent.
- Interpretation of the area's history would be consistent.
- Installation of scientific monitoring equipment with negligible impacts would be consistent.
- Prescribed fires conducted in such a way that cultural resources are sufficiently protected would be consistent.

Inconsistent Uses

- Activities which change the area's landscape character would not be consistent.
- Activities resulting in vandalism or damage to cultural resources would not be consistent.

Other Management Direction

Deschutes Land and Resource Management Plan Allocation

The two major land management area allocations from the Deschutes Forest Plan that are present in the final CCWSR boundary are Old Growth (M15) and Wild and Scenic River (M17):

- **Old Growth (M15)** - The goal is to provide a naturally evolved old growth forest ecosystem for both plant and animal habitat. Old growth forest is managed to provide an abundance of large trees, both standing and downed dead trees, and a variety of vegetative canopy heights (LRMP 4-149).
- **Wild and Scenic (M17)** - The goal is to protect the outstandingly remarkable values that qualify segments of the Deschutes, Little Deschutes, Big marsh, Crescent and Squaw Creeks for the inclusion in the National Wild and Scenic Rivers System (LRMP 4-155).

Northwest Forest Plan Allocation

- **Aquatic Conservation Strategy/ Riparian Reserve** - The Aquatic Conservation Strategy was implemented to protect and improve the health of the region's aquatic ecosystems. Riparian Reserves are one component of the strategy. The main purpose of the riparian reserves is to protect the health of the aquatic system and maintain and restore riparian structures and functions. Riparian Reserves have been identified for every type of aquatic feature on the forest landscape: streams, lakes, ponds, wetlands, springs, etc. areas where special standards and guidelines direct land use decisions. These Reserves are critical for meeting many of the Aquatic Conservation Strategy Objectives, and as such require special attention in developing management strategies for activities occurring within them.

Private Land

Private land uses are governed by the state and local land use regulations, which were reviewed during preparation of this plan. Unless otherwise noted all current land use regulations administrated by federal, state, and local authorities will continue. All private lands within the river corridor are subject to Klamath County comprehensive plan and ordinances. Private landowners are not affected by this management plan but are required under the Wild and Scenic River Act to follow county, state, and Federal regulations for any project they have that occurs within the ordinary high water mark of Crescent Creek.

Section 7

Section 7 of the Wild and Scenic Rivers Act is a key provision that authorize federal agencies to protect the free-flowing condition and ORVs of designated rivers and congressional study rivers. The Act also includes a standard that governs water resources projects below, above, or on a stream tributary to a designated river or congressionally authorized study river. Determinations under Section 7 are made by the river-administering agency, for Crescent Creek this is the US Forest Service.

A determination is required under Section 7 in the following cases, only when all conditions of each case is met:

- When the project is proposed in *bed or banks* of a designated river or congressionally authorized Study River; **AND** the project is proposed by a federal agency or it requires some type of federal assistance such as a permit, license, grant or loan.
- When the project is proposed in *bed or banks of river below, above or on a stream tributary* to a designated river or a congressionally authorized study river; **AND** the project is proposed by a federal agency or it requires some type of federal assistance such as a permit, license, grant or loan; **AND** the project likely to result in effects within a designated river or congressionally authorized study river.

Monitoring Plan

This section identifies activities that will be conducted to assess the progress and results of implementing the Crescent Creek Wild and Scenic River Comprehensive River Management Plan. The ecological and social conditions of an area can be expected to occur as a result of natural and human factors. Monitoring is important to ensure that changes stay within acceptable levels and do not compromise the protection and enhancement of the river values.

For each river value to be monitored, one or more key indicators are selected that will allow managers to keep attuned to changes in the ecosystem or social setting. The indicator description provides an example of how the indicator might be measured, but these sample methods can and should be changed if better means become available. When possible, monitoring indicators that are already being collected for other management purposes were selected to help assure this monitoring plan is attainable.

For each key indicator, a threshold is set. This threshold value indicates the point at which river management objectives are no longer being met. A trigger is also set for each indicator at a level below the threshold value. In most cases the existing low use in Crescent Creek means that current conditions of indicators are all far from reaching either triggers or thresholds. In cases where limited data is currently available, reaching a trigger point may result in further investigation, monitoring, and

evaluation. Trigger points were set low to provide an opportunity for early and responsive management actions that prevent a threshold from being reached. In this manner, indicators, triggers and thresholds provide managers with information to determine if the resource values and opportunities they are being used to manage are actually being provided. Table 5 shows the monitoring plan elements.

Table 5. Monitoring Plan Elements: Values, Indicators, Thresholds, Triggers, & Actions

River Value(s)	Indicator Type	Indicator Description	Threshold	Trigger(s)	Possible Management Actions
Scenery	Social	Scenery Photo Points	Long-term decreases in scenic integrity class.	Any decrease in scenic integrity class from baseline conditions.	Develop management options to improve scenic integrity.
Water Quality, ORVs	Resource	Dispersed campsite surveys	Impacts to riparian vegetation with the potential to affect water quality or scenic integrity.	20% increase in number of sites from previous survey.	Verify whether or not the increase in the number of sites has the potential to affect water quality or ORVs.
Water Quality, ORVs	Resource	Dispersed campsite surveys	Impacts to riparian vegetation with the potential to affect water quality or scenic integrity.	Any sites or grouping of sites which reduces the scenic integrity of the area below desired conditions	Verify whether or not the increase in the number of sites has the potential to affect water quality or ORVs.
Water Quality, ORVs	Resource	Dispersed campsite surveys	Impacts to riparian vegetation with the potential to affect water quality or scenic integrity.	Any site with greater than 10' of continuous reduction in shoreline vegetation.	Evaluate whether or not there is potential to affect water quality or ORVs. If there is potential for effects, develop management options for implementation.
Water Quality	Resource	Non-system trails within WSR corridor	Erosion and other trail impacts that affect water quality, free flow or ORVs.	Any new non-system trails that come within 200' of Crescent Creek	Evaluate whether or not there is potential to affect water quality or ORVs. If there is potential for effects, develop management options for implementation.

Crescent Creek Wild and Scenic River Comprehensive River Management Plan

River Value(s)	Indicator Type	Indicator Description	Threshold	Trigger(s)	Possible Management Actions
Water Quality	Resource	U.S. Forest Service, Region 6 Level II Stream Survey protocol - Large wood frequency, location, and total abundance instream	Large wood pieces per mile meet or exceed watershed analysis standards.	-	<p>Correct management practices that may be limiting recruitment of large wood.</p> <p>Public outreach and education, regarding the importance of large wood to the fisheries resource.</p> <p>Increased monitoring of instream large wood in the stream systems within the Wild and Scenic River corridor.</p>
Water Quality and Visual Quality	Resource	Invasive Species Presence/Absence	If possible, periodic monitoring focused within the aquatic influence zone of the Wild and Scenic River corridor should be conducted in order to practice the “early detection rapid response (EDRR)” paradigm, which is the most effective approach to invasive species management.		