

User Capacity Analysis Elkhorn Creek Wild and Scenic River

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Forest Service

Bureau of Land Management



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Introduction

The purpose of this report is to help determine the types and levels of visitor use that can occur within the Elkhorn Creek Wild and Scenic River corridor while still protecting and enhancing the outstandingly remarkable values for which the river was designated. This report will inform the Elkhorn Creek Comprehensive River Management Planning process and environmental effects analysis in the Elkhorn Creek Comprehensive River Management Plan Environmental Assessment (USDA 2022).

What is a User Capacity Analysis?

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](#)¹, October 2, 1968). The 1982 National Wild and Scenic Rivers System: Final Revised Guidelines for Eligibility, Classification, and Management of River Areas defines 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.

Figure 1 shows how capacity estimates are derived from desired conditions for visitor experience and level of development, current impacts to river values, and determinations of management strategies depending on quantifiable thresholds.

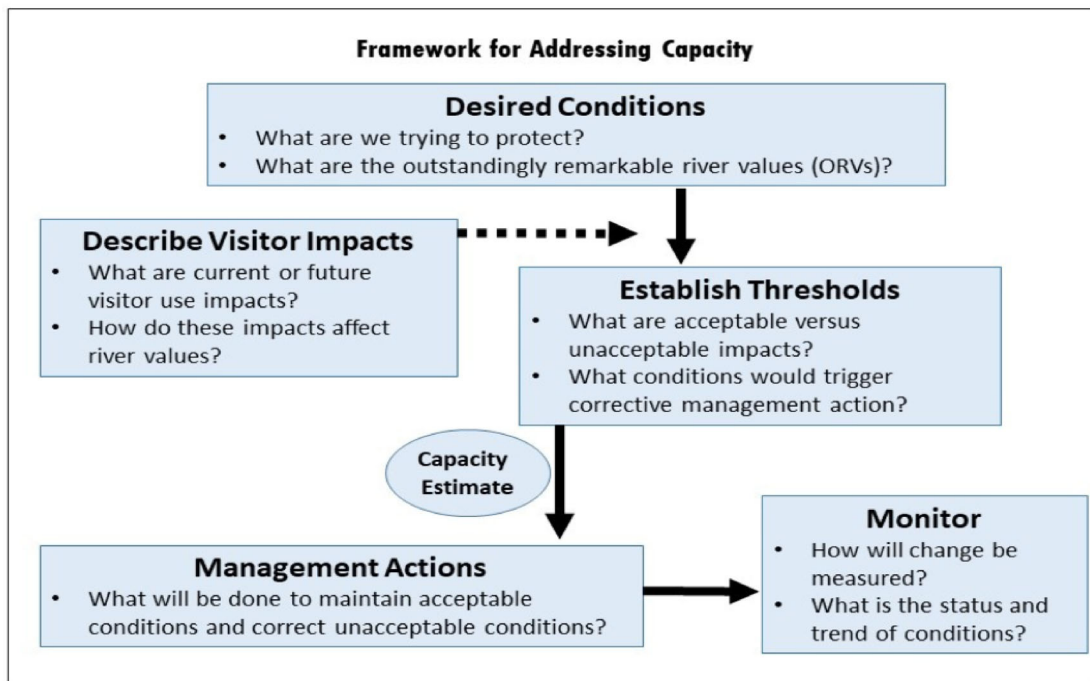


Figure 1. Capacity framework

¹ A copy of the Wild and Scenic Rivers Act is available at: <https://www.rivers.gov/documents/act/complete-act.pdf>.

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](#)”² (2018). This paper outlines the process for determining user capacity, specific to Wild and Scenic Rivers. We used this process to develop the capacity for the Elkhorn Wild and Scenic River (table 1).

Table 1. Steps to address capacity 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 river’s 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

Step 1: Elkhorn Creek Current Conditions

The Omnibus Parks and Public Lands Management Act of 1996 (November 12, 1996) designated 6.4 miles of Elkhorn Creek from the Willamette National Forest boundary to the point where the segment leaves Federal ownership along the BLM boundary as a wild and scenic river. The Omnibus Consolidated Appropriations Bill of 1996 ([Section 109, Public Law 104-208](#),³ September 30, 1996) made the same designation. Elkhorn Creek flows through the Opal Creek Scenic Recreation Area on the Willamette National Forest, which was designated as part of the same act in 1996 (Section 105). The purpose of the scenic recreation area is to “protect and provide for the enhancement of the natural, scenic, recreational, historic, and cultural resources of the area in the vicinity of Opal Creek.” This area provides a broad range of land uses, including recreation, harvesting of nontraditional forest products, and educational and research opportunities.

Approximately 3.4 miles of the designated Elkhorn Creek are located on National Forest System lands on the Willamette National Forest, and 3 miles are located on BLM-administered lands. The act designated 5.8 miles of the river as wild and 0.6 as scenic.

Baseline information (visitor use at the time of designation) is difficult to quantify, since no official monitoring has been recorded. However, since access has not increased appreciably since then, it is likely that visitor use was similar to what it is today. Data sources for determining visitor use include online videos and photos discussing kayaking on Elkhorn Creek (one found) and information from field visits by staff. It is estimated that visitor use within the designated segments is very low due to difficult access and steep topography; most use has occurred in the scenic segment and consisted of scenic viewing or occasional hiking from the bridge and motorized road across Elkhorn Creek. Overnight use has not been documented and is likely non-existent. In 2020, the Beachie Creek wildfire burned extensively through the wild and scenic river corridor, resulting in 75 to 100 percent basal mortality in the majority of the

² The Steps to Address User Capacities for Wild and Scenic Rivers can be found at: <https://www.rivers.gov/documents/user-capacities.pdf>.

³ A copy of the designating legislation is available at: <https://www.rivers.gov/documents/act/104-208.pdf>.

designated segments. This event is expected to inhibit visitor use both due to visual appearance of the area and presence of hazard trees at potential campsites. At this time, the area remains closed due to safety concerns. The National Forest System lands within the corridor are closed by [Forest Order](#), and the BLM administered lands are closed by an [Emergency Closure Order](#).

While data collection has taken place over the years, most resources have not been studied extensively in this corridor. As a result, the user capacity estimates included in this analysis recognize the likelihood that visitor capacity decisions may need to be reviewed and revised if more data becomes available.

An interdisciplinary team has determined the outstandingly remarkable values for the Elkhorn Creek Wild and Scenic River. These include scenery for the wild segment and fisheries for both the wild and scenic segments. As defined in the act, water quality and free flow are values to be protected and enhanced for all designated rivers.

River Values Affected by Current Visitor Use

Currently, no river values are affected by visitor use since this recreational use is so low. Increased and unmanaged recreational use could affect river values by increasing erosion, introducing pathogens or invasive species, affecting water quality through increased human waste, disturbing wildlife, or detracting from scenic views (proliferation of social trails or campsites).

Step 2: Desired Conditions

To define and describe the desired conditions, the team reviewed several guiding documents and processes, described below.

Forest Service Desired Conditions

Land and Resource Management Plan

On National Forest System lands, the Elkhorn Creek Wild and Scenic River is included in the Opal Creek Scenic Recreation Area, which is zoned to provide a range of opportunities and experiences.

The portion of the Elkhorn Creek Wild and Scenic River managed by the Forest Service falls in the very low intensity zone. The Opal Creek Scenic Recreation Plan (2002) guidance includes the following:

This zone is managed to provide opportunities for the most primitive recreational experiences. The area is characterized as an unmodified natural environment of very high scenic integrity and remains undeveloped with little or no evidence of recent human activity or impacts. No roads (except existing Road 351 to State land), bridges, trails, recreation facilities or other resource developments are present. The area is generally inaccessible and can only be reached by cross-country travel over very rugged terrain (pages 8 to 9).

Recreation use and interaction between visitors is very low, and opportunity to experience considerable isolation from the sights and sounds of human activity is very high. The area offers visitors potential to experience a high degree of solitude and tranquility, with many opportunities to appreciate the natural environment, and learning by investigation and self-discovery. Visitors understand that a high degree of self-reliance and knowledge of primitive outdoor skills are required in order to meet the inherent challenge and risk of the natural environment (page 9).

The standard MA-2c-03 in amendment 45 of the Willamette Land and Resource Management Plan (forest plan) applies to this capacity analysis:

Recreation activities at not less than the levels in existence on the date of enactment of P.L. [Public Law] 104-333 shall be permitted. Levels of recreation use higher than the levels in existence on the date of enactment of P.L. 104-333 may be provided if such uses are consistent with the protection of the resource values of the SRA [Scenic Recreation Area].

The standard MA-2c-05 (amendment 45 of forest plan) applies to management actions that could occur if thresholds were exceeded:

When recreation use results in effects that would not achieve desired condition or meet standards, management actions shall be taken to address the impacts or effects. The following actions, in order of priority, should be used in most cases: a. Informing and educating the public, and site restoration b. Site improvement and/or use of regulations such as limiting and designating campfires, designating campsites, hardening sites, establishing minimum setbacks from features, facility development for health and safety, or resource protection, and/or restricting types of use, group size and/or length of stay. c. Restrict numbers of users or timing of use such as allowing only day use, and/or restricting number of entries. d. Close areas to all users.

Recreation Opportunity Spectrum

The Forest Service uses the Recreation Opportunity Spectrum to classify and describe a range of recreation opportunities available. The recreational settings are described on a continuum ranging from primitive to urban (Recreation Opportunity Spectrum Book 1986, Forest Service Manual 2310). A Recreation Opportunity Spectrum setting is defined as the combination of physical, biological, social, and managerial conditions that give value to a place. By combining variations in these conditions, it is possible to provide a diversity of recreational settings for visitors to enjoy. The Recreation Opportunity Spectrum classification for the Forest Service portion of the Elkhorn Creek Wild and Scenic River is primitive.

In a primitive Recreation Opportunity Spectrum, the area is characterized by essentially unmodified natural environment of fairly large size. Interaction between users is very low and evidence of other users is minimal. The area is managed to be essentially free from evidence of human induced restrictions and controls. Motorized use within the area is not permitted. Extremely high probability of experiencing isolation from the sights and sounds of humans. Independence, closeness to nature, tranquility, and self-reliance through the application of outdoor skills in an environment that offers a high degree of challenge and risk. Typically, there are six or less encounters with other parties on trails, and less than three parties visible from camping sites. (Forest Service Manual 2311).

BLM Desired Conditions

Northwestern and Coastal Oregon Resource Management Plan

The BLM portion of the Elkhorn Creek is included in the Congressionally Reserved Lands and National Conservation Lands land allocation in the Northwestern and Coastal Oregon Resource Management Plan (RMP). The following guidance applies to the wild and scenic river: “Protect and enhance the free-flowing condition, water quality and outstandingly remarkable values of eligible, suitable, and designated Wild and Scenic Rivers” (RMP, page 55).

The BLM portion of the river has been designated an extensive recreation management area. An extensive recreation management area is an administrative unit that requires specific management consideration in order to address recreation use, demand, or recreation and visitor services program investments. An extensive recreation management area is managed to support and sustain principal recreation activities and associated qualities and conditions.

Outcome objectives for the Elkhorn Creek Extensive Recreation Management Area include visitor experiences of releasing or reducing built-up mental tension and enjoying having access to natural landscapes. Desired visitor benefits include restored mind from unwanted stress and improve capacity for outdoor physical exercise. Community benefits include a heightened sense of satisfaction with the community; environmental benefits include reduced negative human impacts such as litter and unplanned trails and improved respect for privately owned lands. Economic benefits include increased desirability as a place to live and retire and maintenance of the community's distinctive recreation-tourism market niche or setting character.

Recreation Setting Characteristics

The Bureau of Land Management uses Recreation Settings Characteristics to describe the visitor activities, experience and settings within recreation management areas, with classifications ranging from primitive to urban. (H-8320-1). The Salem District Recreation Management Area Framework (USDI 2016) classified the BLM portion of the Elkhorn Creek Wild and Scenic River as "Middle Country". As a result of analyzing the area for development of the Elkhorn Wild and Scenic Comprehensive River Management Plan, the BLM portion (Scenic segment) has been reclassified to "Back Country" and the BLM portion of the Wild segment as "primitive."

BLM H-8320-1 – Planning for Recreation and Visitor Services ⁴ defines Back Country encounters as 7-15 encounters on travel routes, with 4-5 people per group, and primitive as fewer than six encounters on travel routes, with fewer or equal to 3 people per group. However, this guidance can be adapted to local situations.

Future Recreation Trends

As mentioned above, visitor use is very low in the Wild and Scenic River due to the rugged terrain and lack of access. Within the last 5 years, the only documented use of the area by recreationists was in the upper section when kayakers used unknown cross country routes to access the creek. The Scenic segment is more accessible due to lower terrain and less challenging topography, but use is low here as well due to lack of trails, boulders, and steep cliffs. The recent wildfire (2020) has also created access challenges including closures for safety and hazards including standing and fallen dead trees in the Wild segment of the corridor. The bridge in the Scenic segment will likely continue to provide access for recreation.

If a trail were built in the Scenic segment, access to that portion of the river would change, though recreation use would likely be confined to the trail itself and a small portion of the corridor due to challenging terrain and navigational issues. Unless new access routes were pioneered and promoted in the wild segment, recreation use is likely to remain very low in both segments for the foreseeable future.

Step 3: Kinds of Use that can be Accommodated

Some activities are prohibited in the Extensive Recreation Management Area and in the Opal Creek Scenic Recreation Area. These include the following:

- Extensive Recreation Management Area: Biking and equestrian use are prohibited. Off-highway vehicle use is limited to existing; however, none occurs in the corridor presently and there are no trails designated for this type of use. Overnight camping is allowed, and there is an opportunity for

⁴https://www.blm.gov/sites/blm.gov/files/uploads/Media_Library_BLM_Policy_H-8320-1.pdf

a non-motorized trail (BLM Recreation management Area Frameworks for the Salem District, 2016).

- Opal Creek Scenic Recreation Area: No trails are permitted in this portion of the river corridor.

Currently, very limited recreational activities are pursued in the river corridor due to difficult access and steep terrain. Activities that could be accommodated in any segment include hiking, backpacking (very limited), wading/water play, challenging kayaking, fishing, and hunting. Uses that cannot be accommodated in any segment due to terrain, policy or lack of use-specific designated trails include the activities mentioned above (off-road vehicle driving, horseback riding, and mountain bike riding).

While overnight camping could occur in both segments, the terrain is extremely limited for this type of use.

Steps 4-7: Indicators, Thresholds, and Management Actions

Key definitions in the capacity analysis

Indicator: A specific natural resource attribute or social attribute that can be measured to track changes in conditions associated with human use. Agencies select at least one indicator for each river value during when determining visitor capacities. For example, indicators for the *water quality* river value could include presence of human waste in the riparian area or concentrations of *E. coli* measured in the river. Indicators for a *recreation* outstandingly remarkable value could include the number of people at one time at key recreation sites or length of time spent waiting for a parking space at a trailhead.

Threshold: The minimally acceptable condition of an indicator. When applied to wild and scenic river visitor capacities, thresholds identify conditions that prevent the degradation of a river value's baseline conditions. For example, a water quality threshold might be "no more than five observations of human waste in the riparian area in a single use season."

Triggers: A predetermined point at which changes in an indicator require a management response to ensure that the threshold for the indicator is not crossed. For example, if the baseline condition of a water quality indicator is 1 observation of human waste in the riparian area in a single use season, and the threshold is no more than 5 observations, a trigger might be "3 observations in a single season," and the management response could include a "W.A.G.-bag" requirement for all overnight visitors.

Limiting attribute: User capacities for wild and scenic rivers must be protective of all river values, but each river value can have varying sensitivities to visitor use. With this situation in mind, the *limiting attribute* for capacity is the river value (and associated indicators, triggers, and thresholds) that would be unacceptably degraded at the *lowest level of visitor use*. This threshold becomes the basis for the wild and scenic river segment's visitor capacity determination because the capacity cannot exceed the thresholds for any of the river values.

To evaluate each river value, one or more key indicators were selected that will allow managers to be attuned to changes in the ecosystem or social setting. For each key indicator, a threshold was set. This value determined the amount of change desired or acceptable before river management objectives are no longer being met. In this manner, indicators and thresholds provide managers with information to determine if they are adequately protecting and enhancing river values and providing for recreational opportunities. In several cases, we identified indicators that are applicable to several river values. The

potential management actions will require additional development including a proposed action and site-specific environmental review if the threshold is reached. Monitoring for these indicators and thresholds are discussed in step 9.

Table 2. Indicators, thresholds, potential actions

Segment	River Value	Indicator	Trigger	Threshold	Potential Management Action	Justification
Wild and Scenic	Fisheries, Water Quality, Scenery (Wild Segment)	Increasing use of wild segment as indicated by social media promotion	One broadly shared ⁵ social media post per calendar year promoting or referencing their recreational experience on Elkhorn WSR	More than five social media posts promoting the area in the current monitoring year	Education on responsible use and limitations of the area on forest and BLM webpages “Special Places” section (not in the field), Unless it becomes necessary for visitor safety and/or protection of river values, BLM and Forest Service visitor services staff will not promote the corridor as a recreational destination. Increase monitoring to document impacts. If necessary, designate access routes and campsites.	Increased knowledge and promotion of the river as a recreation destination could lead to a significant increase in recreational use, resulting in negative impacts to river values from unmanaged recreation. This could lead to impacts to fisheries and water quality (dragging of boats, campsites, trails).

⁵ “Broadly shared” is generally meant as an article, slideshow or posting that is available to the general public and is estimated to have been read, shared, or viewed by at least 100 people.

Segment	River Value	Indicator	Trigger	Threshold	Potential Management Action	Justification
Wild and Scenic	Water Quality, Fisheries, Scenery (Wild Segment), Free Flow	Social trails beginning from likely access points	Signs of trail development from likely access points: vegetation loss and tread forming in a linear fashion from the bridge (Scenic segment) or at locations near roads that could access the Wild segment.	Presence of established and apparent social trails in this segment of any length, that lead into the WSR	Rehabilitate/close unauthorized trails. Consider providing river access trail in the Scenic segment if appropriate and would not degrade river values.	Slopes in the area are loose and prone to sliding. Sediment load/turbidity and excessive erosion could be a concern. The Scenic value includes the quality of reflected light. Slow-moving, turbid water can affect this value. Removal of riparian vegetation can affect water quality and fish habitat and detract from scenery.
Scenic	Fisheries, Water Quality	Campsites causing erosion into the river	Observation of camping along this segment that is causing erosion	No more than 1 campsite causing erosion. In general, most campsites less than 200 feet from the river would be a cause for concern.	Education of users. Rehabilitate. Consider designated campsites if sites proliferate too close to the river.	Campsites close to the river can cause erosion and increase turbidity. Human waste improperly disposed of can affect water quality. This indicator may be removed if camping opportunities are determined to be unavailable due to terrain.
Scenic	Fisheries, Water Quality	Expansion of parking areas near the bridge	Observation of damage to vegetation from vehicles occasionally parking outside of defined parking area	Vehicles continually parking outside of defined parking area (noted on every visit)	Install natural barricades that blend in with the character of the landscape (for example, boulders, native vegetation) to keep parking area at the desired size.	User-created expansion of the parking area causes vegetation loss and can lead to drainage issues.

Step 8: Capacity Approach

Often, user capacity is an estimate, not a precise 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. 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. Such is the case for the majority of the Elkhorn Creek Wild and Scenic River. However, monitoring will still occur and more precise numbers will be developed if trends suggest river values could be impacted.

For the Elkhorn Creek corridor, we identified one capacity for each segment. Desired conditions from the Forest and BLM management plans, current and expected impacts to outstandingly remarkable values, and Recreation Opportunity Spectrum and Recreation Setting Characteristics classes were used to inform the estimates.

Relationship of Capacity Range to River Values

If user capacity is kept to the ranges identified below, negative impacts to river values can be prevented. Larger amounts of people at one time or total numbers of people per day can affect river values in many ways, including proliferation of campsites and erosion from creation of social trails.

The **limiting attribute** to capacity is access and topography; the river values first to be affected by amount and type of recreational use would be water quality from erosion (user-created trails and campsites). Indicators and thresholds were developed to monitor for any changes to the existing situation.

Calculation Formulas

Wild Segment

The primitive Recreation Opportunity Spectrum and the very low intensity zone is the most limiting guidance. The BLM and Forest Service managed segments were not split out since there is no clear break or change in terrain or visitor use patterns.

USFS ROS: Five encounters between groups, group size 6, 30 people per day

BLM primitive: Fewer than 6 encounters (5), 3 people per group, 15 people per day

For this capacity estimate, we chose the lower value (15 people) due to the risk of degradation to off-road vehicles.

Scenic Segment

The Back Country Recreation Setting Characteristics applies here; the lowest number of people (groups) was used due to the limited access and the need to ensure that river values are not impacted. Note that this is not a restriction on group size, but an average in order to determine capacity. However, larger groups would have more potential to spread out, creating additional trails/impacts to vegetation.

Seven encounters between groups, group size 4; 28 people per day

Table 3. User capacity for each segment of Elkhorn Creek

Segment	Measure	Existing Use	Estimated Capacity	Justification
Wild	People per day	Non-existent to very low. Estimate one to two groups every 5 years	15 people per day	Primitive Recreation Opportunity Spectrum, Primitive Recreation Setting Characteristics, very low intensity zone, less than 6 encounters; 3 people in a group
Scenic	People per day	Very low: most use occurs on bridge	28 people per day	Back Country Recreation Setting Characteristics; 7 encounters, 4 people in a group (lowest Back Country group size and encounters)

Step 9: Monitoring

Table 4 contains monitoring associated with indicators and thresholds. If thresholds are reached, potential management actions listed below would be implemented as appropriate.

Table 4. Monitoring

Monitoring Item	Frequency	Comments
Social media posts	Yearly	Response will depend on impacts to off-road vehicles. Track locations and type of use; determine impacts to off-road vehicles; if seen, determine management actions including education and enforcement.
Campsites in both segments; increases in user-created campsites	Once every 5 years	Record GPS locations of campsites and approximate size of disturbed area. Determine if sites are causing erosion, impacts to vegetation.
Social trails leading from bridge in scenic segment, especially the section that connects to the wild segment	Once every 5 years	Estimate length and destination of trail and include on a map for future monitoring. if technology allows, record locations of social trails using GPS or other method.
New social trails leading into the wild segment	Every 5 years from close by access roads	Record estimated total length of social trails, or, if technology allows record locations of social trails. Otherwise, include on a map for locating in the future.
Changes in land ownership	Whenever this occurs	Consider how new landownership can change access. Determine length and area of corridor affected; develop capacity estimate.
Changes in management or design (new trails in scenic segment or increased facilities there)	Prior to occurrence	No trails/facilities currently planned. Determine length and area of corridor affected; develop capacity estimate.
Changes in technology that can increase access (methods of transportation and uses)	Ongoing professional observation of recreation trends nationally and regionally	Types of flotation devices, legal wheeled access. Determine impacts to river values from this type of transport/access.

Monitoring Item	Frequency	Comments
Expansion of parking areas near bridge	Yearly	If no vehicles are currently parking outside of the defined bridge parking area, estimates of this user-created parking may be made by observing changes to vegetation (trampling, vegetation loss).

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