

Chapter 2: Alternatives

Introduction

This chapter describes four management strategies (alternatives) that the National Park Service is considering to achieve resource protection and visitor experience goals in the Boulder Creek area of Olympic National Park as identified in the 2008 GMP. These alternatives were developed through an interdisciplinary planning process that included discussions among subject matter experts, agency officials, partner agencies, American Indian tribes, and comments received from members of the public during initial project scoping.

Alternative 1 is the no action alternative that describes current management of the Boulder Creek trailhead, trail, and campground. The no action alternative provides a baseline against which other alternatives may be compared.

Alternatives 2, 3, and 4 (Action Alternatives) describe a range of reasonable approaches to meet the purpose and need for taking action, and to achieve management goals and objectives described in Chapter 1. The goals of this plan are:

- Goal 1: Protect Natural and Cultural Resources
- Goal 2: Protect and Restore Wilderness Character
- Goal 3: Improve Visitor Experience

The park's proposal to meet the objectives of Goals 1 and 2 are primarily described in this chapter as Activities Common to All Action Alternatives. The Action Alternatives described in this chapter vary primarily in how the park proposes to meet the management objectives defined for Goal 3, which are:

- Provide adequate parking and vehicle turnaround space at the trailhead for safe use by pedestrians and vehicles towing stock trailers.
- Restore the Boulder Creek Trail (former road) to a safe hiking and stock-use trail.
- Provide safe and adequate stream crossings for pedestrians and stock users.
- Protect the trail from future damage by including sustainable trail design measures at stream crossings and slide areas.
- Rehabilitate the Boulder Creek Campground to provide a visitor experience consistent with visitor use in a wilderness area.
- Design the Boulder Creek area to facilitate effective and sustainable management, maintenance, and visitor use.

This chapter is organized as follows:

- Alternative 1 (No Action, Continue Current Management Approach)
- Activities Common to All Action Alternatives
- Alternative 2 (Minimum Visitor Services Infrastructure)
- Alternative 3 (Provide Moderate Visitor Services)
- Alternative 4 (Provide Enhanced Visitor Services), Management Preferred

- Alternatives Considered but Dismissed
- Environmentally Preferred Alternative
- Summary Table of Alternatives
- Summary Table of Environmental Consequences

Alternative 1 - No Action (Continue Current Management, Routine Maintenance Only)

Under No Action, the National Park Service would not implement the actions identified for the Boulder Creek Trail and Campground in the 2008 General Management Plan. Only routine maintenance of existing structures would occur. No new infrastructure would be built. The current situation, as described below would continue. See Chapter 3 (Affected Environment) for a more detailed profile of the current environmental situation in the project area.

Boulder Creek Trailhead

The Boulder Creek trailhead is at the terminus of the Olympic Hot Springs Road, west of Lake Mills in the Elwha area of Olympic National Park. The trailhead is currently maintained to provide vehicle access during the snow-free seasons, generally between April and mid-November. An intermediate gate two miles east of the trailhead limits access during the winter months when snowpack at the higher elevations make access difficult and hazardous.

A stock user staging area is located approximately 1/8-mile east of the trailhead parking area. This stock area includes a raised earthen loading platform intended for use by high tailgate vehicles carrying stock. The stock staging area currently receives little use due to the inability of stock to cross Crystal Creek.

The trailhead currently provides parking for approximately 15 vehicles on a wide gravel shoulder on the south side of the road, although these parking spaces are not delineated and additional vehicles parallel park along the side of the road (Figure 3). On busy days as many as 55 vehicles have been observed by park staff. The trailhead currently contains approximately 7,020 square feet of paved asphalt road (approximately 18 feet wide by 390 feet long) and approximately 5,300 square feet of gravel surface along the road shoulder, which varies in width from the edge of the road.

The west end of the parking area is striped as “No Parking” to allow for west-bound vehicles to turn back toward the east. The existing turn-around design is limited in width and is inadequate to support turning movements by trucks towing long stock trailers and other longer vehicles.

The trailhead also contains trash receptacles, and one vault toilet. There are currently no interpretive signs in place, although there is a bulletin board at the trailhead where information is posted. There is currently one sign at the trailhead with mileage information for backcountry trails accessed from this point.

Trailhead

Parking Area
(Existing)

LEGEND

GRAVEL

VEGETATION

TRAIL-HEAD

BULLETIN BOARD

ROCKS + BOLLARDS AT TRAILHEAD

EXISTING VAULT TOILET

STRIPED NO PARKING

EXISTING GARBAGE CANS (NO RECYCLING)

PROPOSED PARKING ASPHALT

ASPHALT ROADWAY

PROPOSED PARKING ASPHALT

DITCH

BOULDER CREEK ROADWAY

390'

EXISTING GRAVEL PARKING

0 25 50 100

The Boulder Creek Trail segment addressed in this document is a 2.2 mile long segment that begins at the trailhead parking lot on the western edge of the Olympic Hot Springs Road and ends at the Boulder Creek campground located near the Olympic Hot Springs. The trail was originally a paved asphalt road leading to the Hot Springs and campground.

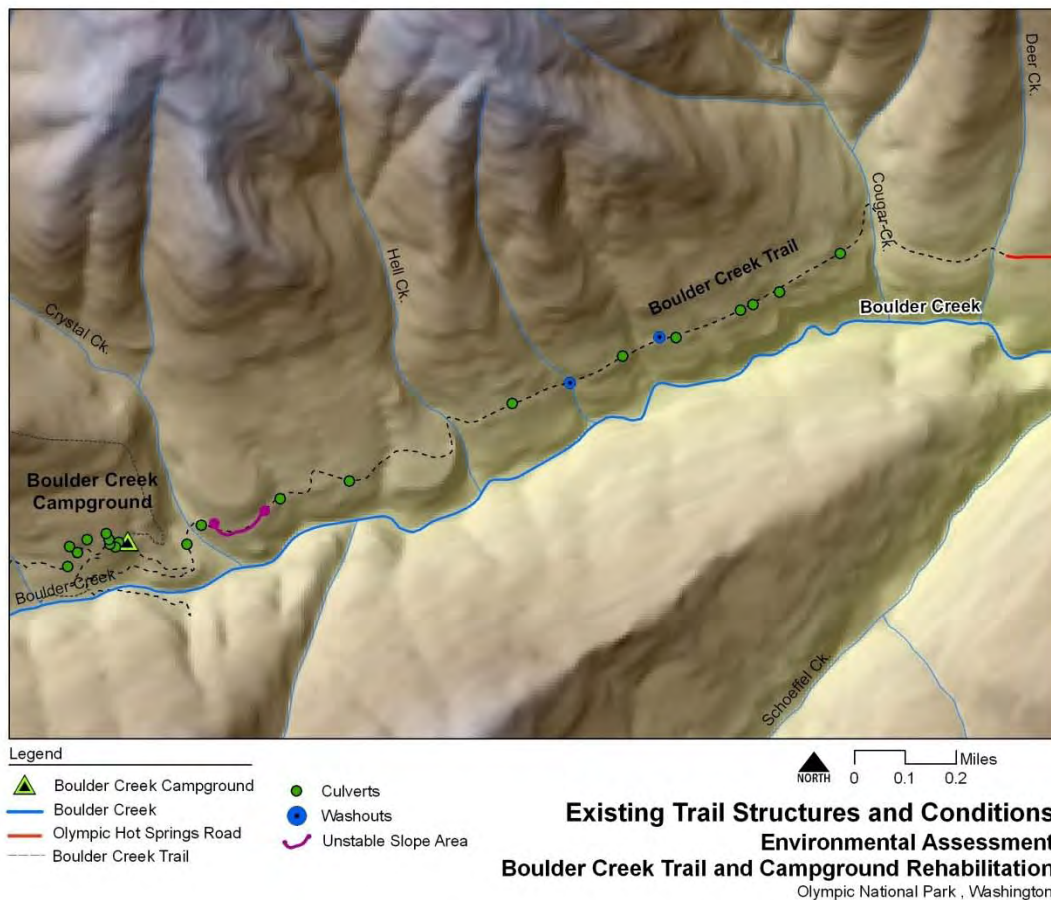
The road was cut from the existing hillside, resulting in uphill slopes of varying steepness and an abrupt edge on the downhill edge of the roadway. The resulting trail corridor ranges in width from approximately 12-20 feet, with an average width of 14 feet of asphalt paving in areas where the road surface is intact. The asphalt averages around 2 inches in thickness.

Current uses include hiking for pedestrians to access the Olympic Hot Springs, Boulder Creek Campground, and several backcountry hiking trails, including Boulder Lake, Appleton Pass, and the Sol Duc valley. Current maintenance is routine. Seasonal repairs consist of removing downed trees from the trail, cleaning drainage structures, and removing debris flows from across the trail.

The trail is immediately bordered by young trees and herbaceous plants that have established since the road was closed to vehicular access. The asphalt surface of the trail is deteriorated in many places, and is contributing both crumbled asphalt and gravel fill from the road bed into the Boulder Creek drainage. In several areas the uphill road cut has slumped onto the paved surface, burying the trail, reducing the width of exposed asphalt and providing a medium for the growth of both native and non-native vegetation.

There are approximately eleven culverts in place along the trail. These culverts were originally installed at low spots in the road that formed collection areas for storm water runoff. All of these culverts have failed due to blockage of the culvert or erosion of materials below the outlet of the culvert.

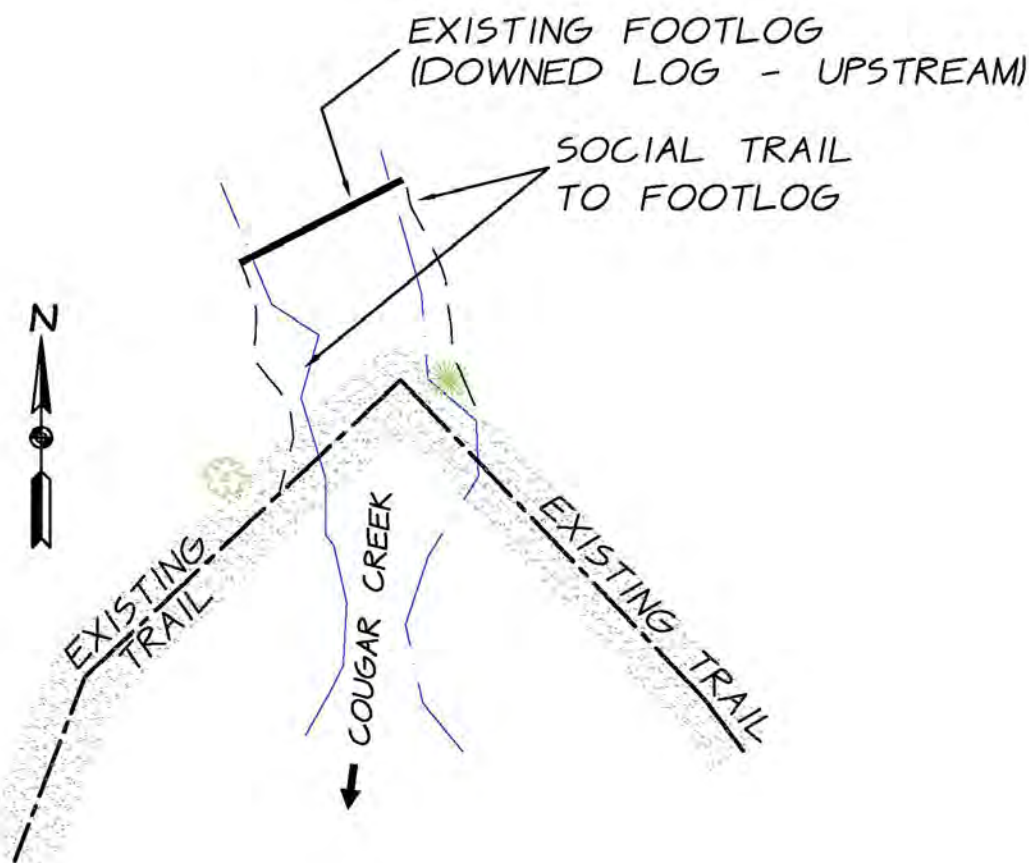
Figure 4: Existing Trail Structures and Conditions.



Stream Crossings

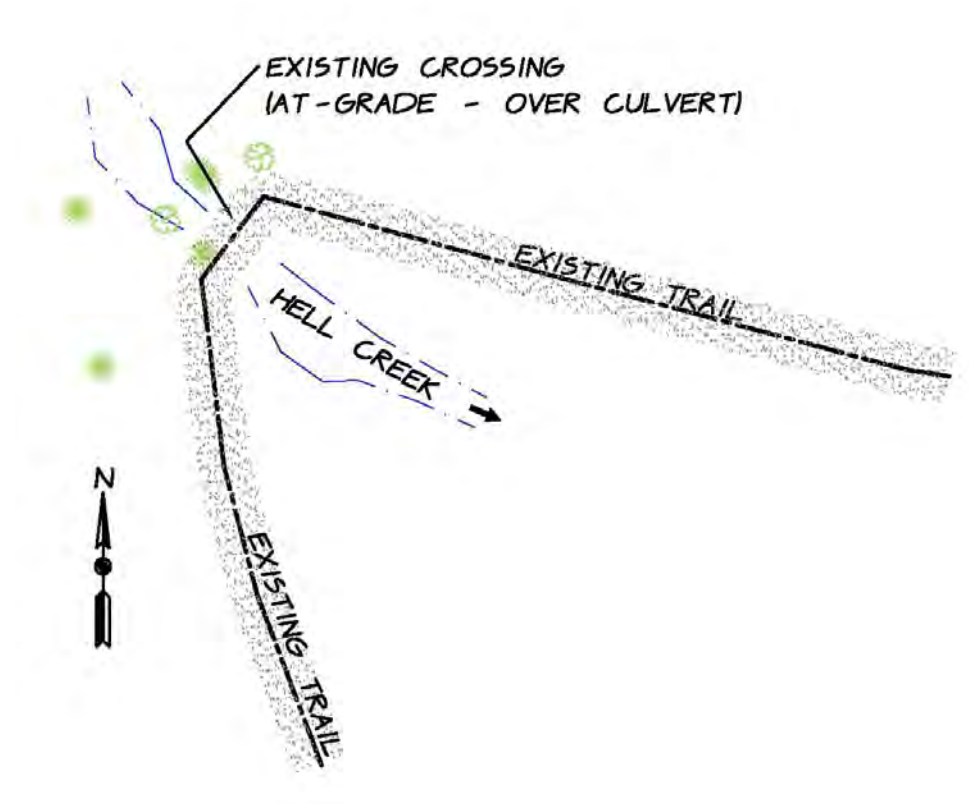
The trail crosses Cougar Creek, Hell Creek and Crystal Creek before reaching the Boulder Creek campground. The original Cougar Creek stream crossing was a corrugated metal pipe (CMP) culvert placed under the road. The culvert and road have failed at this location as a result of the culvert plugging and stream activity. A large log has fallen in Cougar Creek (Figure 5) approximately 50 feet upstream from the original stream crossing. The log is being used by some visitors to cross the creek, while others ford the creek during low flow at the original crossing location. A social trail has developed between the Boulder Creek Trail and the downed log. Pack stock may ford Cougar Creek in the original stream crossing location.

Figure 5: No Action Alternative, Cougar Creek Crossing.



The Hell Creek stream crossing contains a failed wooden box culvert. Although partially collapsed and currently buried, the culvert continues to carry water. The earthen cover over the culvert is intact and is being used by visitors to cross Hell Creek. Pack stock may cross Hell Creek in its current condition.

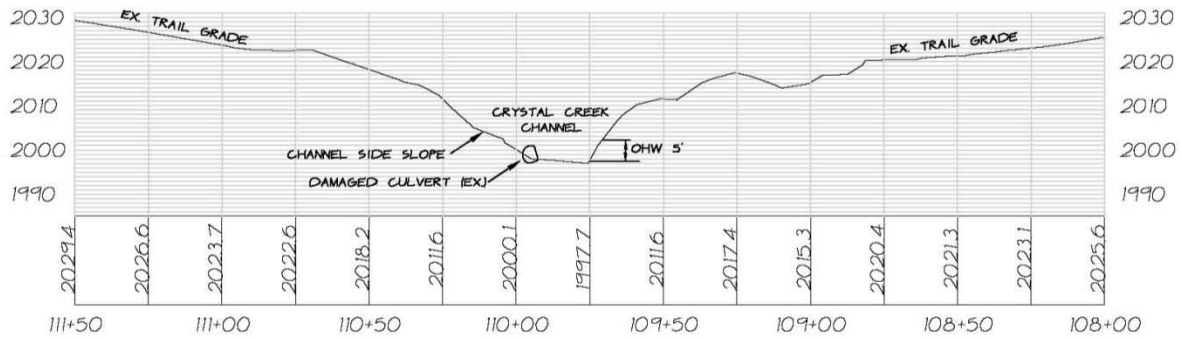
Figure 6: No Action Alternative, Hell Creek Crossing.



The trail crosses Crystal Creek in a highly eroded area with steep side slopes (Figure 7). A temporary footlog approximately 35 feet long is currently in place at the Crystal Creek crossing, at or below the ordinary high water (OHW) mark, to provide access for hikers (Figure 8). People must hike and climb down a steep set of switchbacks to reach the footlog. The Crystal Creek stream crossing is currently unsuitable for stock due to the steepness of the trail down to the streambed and the large amount of rock and debris in the stream channel.

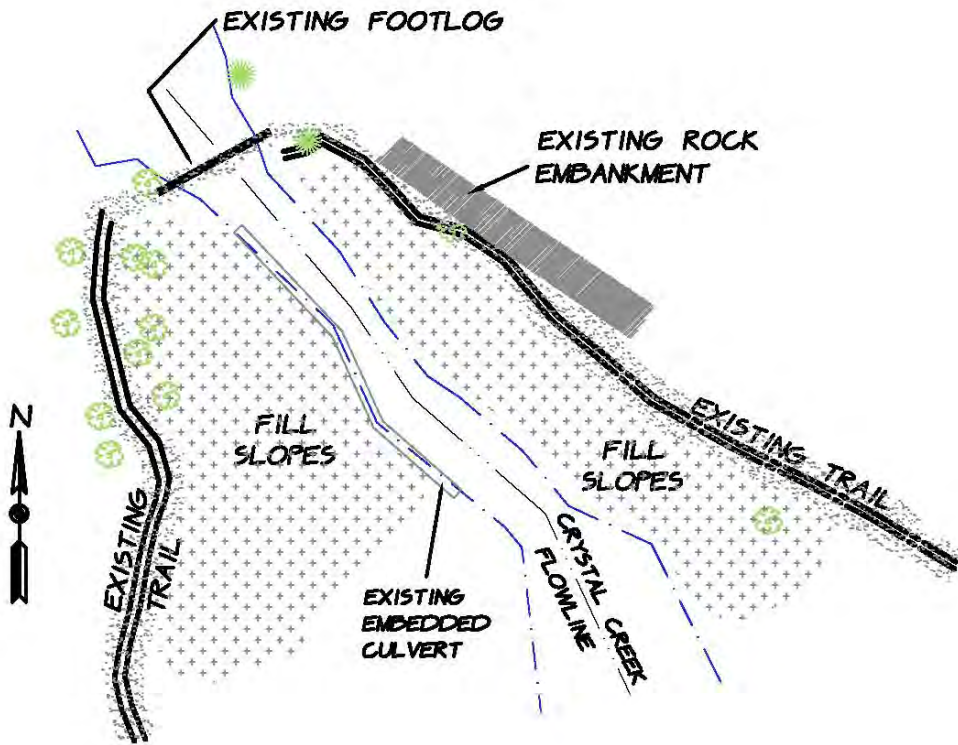
This stream crossing is located in an area that was originally constructed with a 60-inch diameter culvert set in a concrete headwall. Approximately 7,000 cubic yards of non-native fill was placed to cover the culvert and raise the level of the trail approximately 45 feet above the channel grade to match the adjoining trail approaches.

Figure 7: No Action Alternative, Crystal Creek Crossing Elevation.



The culvert was plugged with a large tree during a storm event, resulting in stormwater bypassing the culvert and eroding away the sides of the fill. The failed culvert remains partially exposed in the creek bed, buried beneath a large amount of debris. The concrete headwall remains intact. An estimated 5,000 cubic yards of fill material washed away. Approximately 2,000 cubic yards of fill material remain in place in the side slopes. This unstable fill is subject to further erosion into the creek.

Figure 8: No Action Alternative, Crystal Creek Crossing.



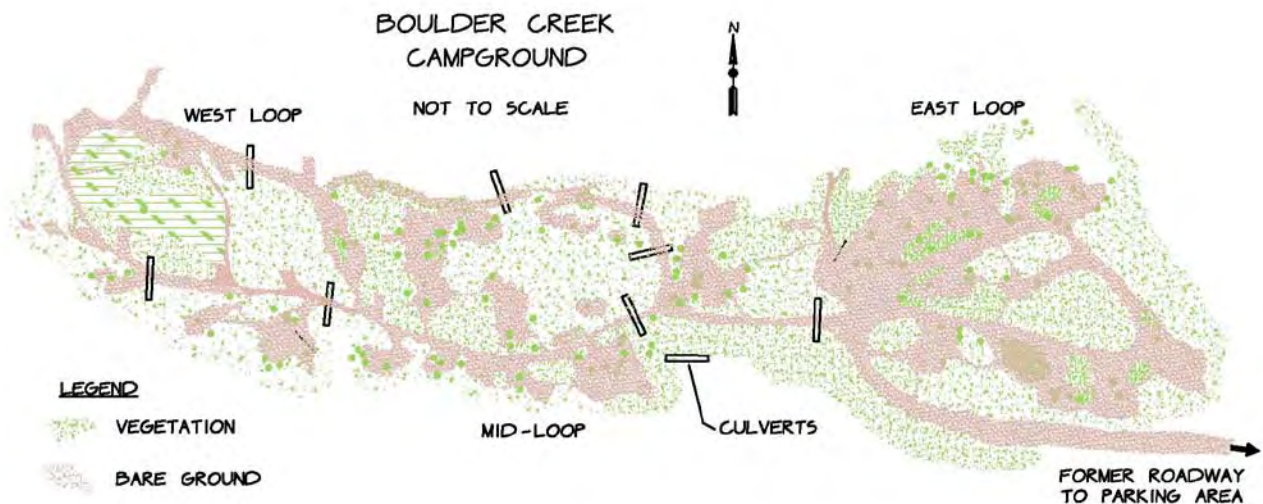
Abandoned Dump Site

An abandoned trash dump is located approximately 700 feet east of Crystal Creek, uphill from the Boulder Creek Trail. The dump site is approximately 30 by 50 square feet in size. The contents are partially buried, although there is visual evidence that people have continued to deposit trash at the site. Under the no action alternative the access to the abandoned trash dump would be allowed to recover naturally, leaving the trash dump in place.

Boulder Creek Campground Infrastructure

The Boulder Creek Campground (Figure 9) was once accessed by vehicles. Following closure of the Boulder Creek road, it is accessible to hikers but not stock users due to the failed stream crossing at Crystal Creek. The campground is comprised of numerous campsites, informal trail areas between campsites, a lower parking area separate from the campground and a short road segment between the former automobile parking area and the campsites. The former parking area is approximately 10,000 square feet and was once hardened, though it is currently eroded and deteriorated. The road segment to the campsites has experienced several small collapses of the uphill slope, resulting in a route of varying width now better defined as a trail. There are eleven CMP culverts along this trail between the former parking area and campground.

Figure 9: No Action Alternative, Campground Map.



Within the campground, previous development resulted in buried utility lines including sanitary sewer, water and storm drainage culverts. The buried utilities are not readily identifiable from the surface. There are two visible concrete foundations from restroom facilities which have been

removed. Two septic tank diversion boxes may also be present, although these have not been located. There are two pit toilets currently in use at the site, one in the campground and one in the former parking area. Approximately nine CMP culverts, ranging between 18 inches and 24 inches in diameter, are located within the campground. All have been partially or fully plugged and none function as intended. Trails throughout the campground have been built over the culverts and filled to raise the elevation of the trail between three and 15 feet. This results in altered topography and water flow patterns.

Under the No Action Alternative the campground would remain as-is, with the general circulation pattern of the former automobile campground. This would include the east, mid, and west loops, with the exception of the north end of the mid- and west-loops where wetlands have become established or expanded as a result of plugged culverts and altered water flow.

The remaining former campground road would remain at its current width except in areas where natural recovery occurs. Abandoned underground utilities would remain in place, as would the concrete foundations of the two former restrooms. Existing culverts would remain in place. The former campground parking lot would be left as-is, allowing natural recovery.

Campground Management

The campground contains approximately 30 campsites. The sites are not clearly delineated and camping occurs throughout the entire area of the campground. There are currently no designated group campsites or stock campsites. Some natural recovery of vegetation has occurred.

Campfires are currently permitted and one campfire ring is retained per campsite. In order to assist campers with proper food storage, bear wires are located within the campground to assist with the hanging of food out of the reach of park wildlife.

There are two pit toilets in the Boulder Creek campground; one in the campground area and one at the former campground parking lot. These would remain in place.

Both developed trails and social trails extend from the campground to the former parking lot, to Olympic Hot Springs, and to the Appleton Pass trail. These would remain in their current locations.

Approximately 1,640 overnight permits were issued for the Boulder Creek campground in 2008. In addition to overnight use, many visitors also picnic and hike through the campground on day trips and during longer backpacking trips through the area. In 2008 more than 70,000 visitors accessed the area via the Boulder Creek Trail (pers. Communication, M. Danisiewicz). Overnight wilderness permits are currently required for camping at the Boulder Creek

Campground. Permits may be obtained through the Wilderness Information Center (WIC) or at the Elwha Ranger Station. There is currently no limit on overnight or day use in the area.

Maintenance of the campground currently includes seasonal clearing of downed trees, cleaning and supply of the toilets and removal of garbage on an as-needed basis, generally once a week during the high visitor use season, as identified by rangers. Pit toilets must be reset and new holes dug approximately every seven years. The campground is patrolled by park rangers.

Resource management activities currently occurring in the campground include occasional treatment to eradicate non-native plants and ongoing monitoring of campsite conditions. Planting of denuded areas within the campground would not occur under the No Action Alternative.

Activities Common to All Action Alternatives

The following activities are included in all action alternatives (Alternatives 2, 3, 4). See Chapter III (Affected Environment) for a more detailed profile of the current environmental situation in the project area. To avoid adverse impacts to breeding northern spotted owls or marbled murrelets, any noise producing construction activities above ambient noise levels would not begin until after August 5, during or after the murrelet late breeding season (August 6 – September 15). During the project work period between August 6 and September 15, no work that generates above-ambient noise levels would take place at night or within two hours of sunrise and sunset, when murrelets are known to be most active. See Appendix A for a detailed list of mitigation measures common to all action alternatives.

Equipment and material storage and other staging activities would be located within the footprint of existing road, pullouts, and other areas that are currently disturbed unless otherwise indicated. Sections of the trail under construction would be closed to public access until asphalt removal and all activity involving the use of heavy equipment is complete. The conceptual design for trailhead improvements and trail and campground rehabilitation presented in this document may be modified during final design to best accommodate site-specific conditions and minimize resource impacts.

Boulder Creek Trailhead

Under all Action Alternatives the vehicle turnaround area would be expanded and paved to provide safe vehicular access, including vehicles towing stock trailers or other larger turning radius vehicles. This turnaround would be 80 feet in diameter and paved with approximately 2 to 3 inches of asphalt to provide a durable and lasting surface for the turning movements of

vehicles. The turnaround would be striped and signed “No Parking”. Construction of the turnaround would result in new clearing of approximately 4,750 square feet of vegetation and the placement of an estimated 5,100 square feet of asphalt pavement.

The turnaround would be constructed using heavy equipment, such as tracked excavators, wheeled loaders, backhoes, tractors, dump trucks and asphalt paving equipment (see Table 2). The work would take approximately 15 days and would be completed concurrently with removal of asphalt from the trail.

Additional animal-resistant trash receptacles and new recycling containers may be placed at the trailhead to accommodate increased visitor use. Additional restroom facilities may also be located at the trailhead if the existing toilet is found inadequate to meet visitor demand.

The Boulder Creek trailhead would be evaluated to determine if interpretive wayside exhibits are necessary to increase visitor understanding of the Olympic Hot Springs or other topics relevant to the park’s primary interpretive themes in the Olympic Hot Springs/Boulder Creek area.

Table 2: Equipment Required for Constructing New Vehicle Turnaround at Trailhead Parking Lot.

Equipment used	Duration (approx)	Noise Level (dBA)	Timing/Season
Tracked excavator	15 days	81-85	Aug. 6 - **
Wheeled front end loader	15 days	79-80	Aug. 6 - **
Dump truck	15 days	76-84	Aug. 6 - **
Paver	3 days	77-85	Aug. 6 - **
Compactor	5 days	80-83	Aug. 6 - **
Chainsaw	2 days	84-85	Aug. 6 - **
Dozer	5 days	82-85	Aug. 6 - **
Tractor	15 days	85	Aug. 6 - **
Pickup Truck	15 days	55-75	Aug. 6 - **
Hand tools	15 days	n/a	n/a

*** - seasonal shutdown due to winter weather conditions*

Boulder Creek Trail

Asphalt pavement would be removed from the Boulder Creek trail under all action alternatives. Removal of asphalt would affect an area of approximately 180,000 square feet, which includes the 155,000 square feet of asphalt paving to be removed. This disturbed area also includes disturbance of up to one foot along the outside edges of the asphalt and a limited amount of additional disturbance to route the trail outside of the established asphalt alignment, to provide adequate drainage.

Removal of all asphalt on the trail would require the use of heavy equipment, such as tracked excavators, backhoes, wheeled loaders, dump trucks, and hand equipment for approximately 55

days. Asphalt would be pulled up and stacked in piles using the excavators. The asphalt would then be loaded into dump trucks using the wheeled loaders. Where sensitive vegetation lines the edges of the trail, hand tools would be used to pull the remaining asphalt into the center of the trail where it would be loaded. The excavator and wheeled loader would be in continuous operation.

Table 3: Equipment Required for Removing Asphalt East of Crystal Creek Stream Crossing.

Equipment used	Duration (approx)	Noise Level (dBA)	Timing/Season
Tracked excavator	55 days	81-85	Aug. 6 - **
Wheeled front end loader	55 days	79-80	Aug. 6 - **
Backhoe / wheeled excavator	55 days	78-80	Aug. 6 - **
Dump trucks	55 days	76-84	Aug. 6 - **
Dozer	55 days	82-85	Aug. 6 - **
Tractor	55 days	85	Aug. 6 - **
Pickup Truck	55 days	55-75	Aug. 6 - **
Compressor	55 days	78-80	Aug. 6 - **
Hand tools	55 days	n/a	n/a

** - seasonal shutdown due to weather conditions

Asphalt located west of Crystal Creek, up to the campground parking lot, would be demolished and removed after September 15 or whenever heavy equipment could be delivered and operated without adversely affecting nesting marbled murrelets or northern spotted owls. This would require the delivery of an excavator and small wheeled backhoe/front loader to the campground parking lot by helicopter. Material would be demolished, collected into sling loads, and removed by helicopter to Sweets Field where it would be loaded into dump trucks for removal from the park. This would require an estimated 30 helicopter trips, each 30 minutes in length. Alternately, if the material can be moved to the east end of Crystal Creek without the use of a helicopter, it would be transported by dump trucks down the trail and out of the park.

Table 4: Equipment Required for Removing Asphalt West of Crystal Creek Stream Crossing.

Equipment used	Duration (approx)	Noise Level (dBA)	Timing/Season
Helicopter	30 trips - 30 min/ea	94	After September 15
Tracked excavator	10 days	81-85	After September 15
Backhoe / wheeled excavator	10 days	78-80	After September 15
Tracked or wheeled front end loader	10 days	79-80	After September 15
Flatbed Truck	10 days	79-80	After September 15
Hand tools	10 days	n/a	n/a

Temporary Large Vehicle Turnaround

Immediately east of Crystal Creek, a large slide area has covered the trail. In addition to clearing this slide from the trail to allow for removal of asphalt, additional material would be removed to allow for a vehicle turnaround for trucks hauling asphalt and soil out of the park. If necessary, this temporary turnaround would be maintained during construction using large native rocks or ecology blocks to prevent subsidence from the uphill slope. Construction of this turnaround would result in disturbance of approximately 2,200 square feet of the slide slope, which is a previously disturbed area.

Figure 10: Temporary Large Vehicle Turnaround.

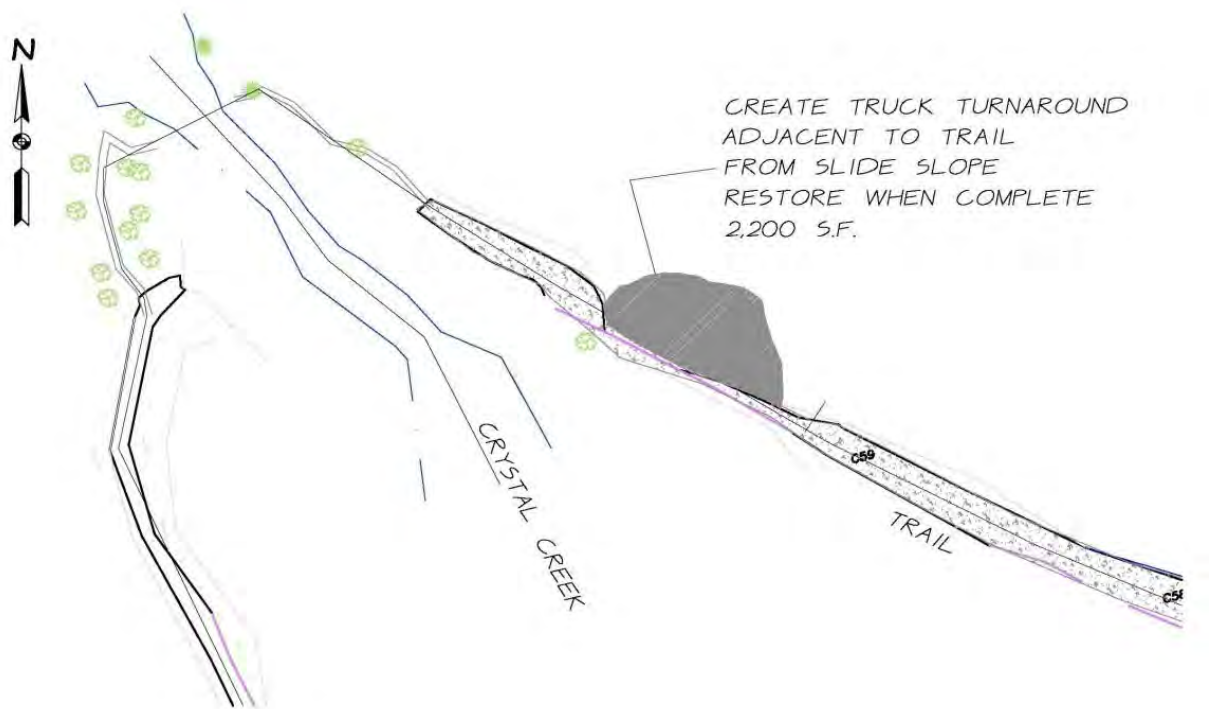


Table 5: Equipment Required for Constructing Temporary Large Vehicle Turnaround.

Equipment used	Duration (approx)	Noise Level (dBA)	Timing/Season
Tracked excavator	1 day	81-85	Aug. 6 - **
Dump Truck	1 day	76-84	Aug. 6 - **
Wheeled front end loader	1 day	79-80	Aug. 6 - **
Backhoe / wheeled excavator	1 day	78-80	Aug. 6 - **
Compactor	1 day	80-83	Aug. 6 - **
Hand tools	1 day	n/a	n/a

** - seasonal shutdown due to weather conditions

Boulder Creek Trail Culvert Removal

Under all Action Alternatives the existing culverts would be removed from the Boulder Creek trail. These culverts are between 3 feet and 8 feet deep and were placed to collect storm runoff from the road and hillside and divert it beyond the trail.

Removal of culverts would require the use of heavy equipment, such as tracked excavators, backhoes, wheeled loaders, dump trucks, and hand equipment for approximately six days. Culverts would be pulled up and stacked in piles using the excavators, then loaded into dump trucks for removal from the park. This work would not disturb any area outside of the trail corridor.

Table 6: Equipment Required for Removing Culverts from Trail.

Equipment used	Duration (approx)	Noise Level (dBA)	Timing/Season
Tracked excavator	6 days	81-85	Aug. 6 - **
Wheeled front end loader	6 days	79-80	Aug. 6 - **
Backhoe / wheeled excavator	6 days	78-80	Aug. 6 - **
Dump truck	6 days	76-84	Aug. 6 - **
Tractor	6 days	85	Aug. 6 - **
Pickup Truck	6 days	55-75	Aug. 6 - **
Hand tools	6 days	n/a	n/a

** - seasonal shutdown due to weather conditions

Improve Trail Grade at Former Culvert Locations

Following the removal of culverts, the trail grade would be improved using native soil to create a final grade matching the adjoining undisturbed trail. This work would be completed as part of the removal of asphalt along the trail. Re-establishment of the trail grade is necessary for the passage of equipment along the trail corridor. This work would require the use of a tracked excavator,

backhoe, wheeled loader, dump trucks and compactor. Construction of water bars or other appropriate trail building techniques would be used to manage water flow across the trail.

Table 7: Equipment Required for Improving Trail Grade at Former Culvert Locations.

Equipment used	Duration (approx)	Noise Level (dBA)	Timing/Season
Tracked excavator	5 days	81-85	Aug. 6 - **
Dump Truck	5 days	76-84	Aug. 6 - **
Wheeled front end loader	5 days	79-80	Aug. 6 - **
Backhoe / wheeled excavator	5 days	78-80	Aug. 6 - **
Compactor	5 days	80-83	Aug. 6 - **
Hand tools	5 days	n/a	n/a

*** - seasonal shutdown due to weather conditions*

Temporary Stream Crossings at Cougar and Hell Creeks

Temporary crossings would be placed over Cougar and Hell Creeks to allow the passage of trucks and equipment through the placement of equipment spanners. Spanners are self-contained bridging structures designed for the passage of heavy equipment and trucks. The spanners used would be approximately 50 feet in length and 12 feet wide, constructed of a steel framework and deck. Spanners would be painted a neutral color and would have a wood deck placed over the steel surfacing.

The equipment spanners would be transported to Cougar and Hell Creeks by truck. It would take approximately twenty minutes to deliver the spanner to Cougar Creek and approximately forty minutes to reach Hell Creek. They would be placed using tracked excavators, with installation taking an estimated thirty minutes for each temporary crossing. Once construction is complete, the spanner at Hell Creek would be removed to allow placement of a footlog. Removal of the spanner at Cougar Creek varies by alternative.

Figure 11: Temporary Spanner Bridge at Cougar Creek and Hell Creek.

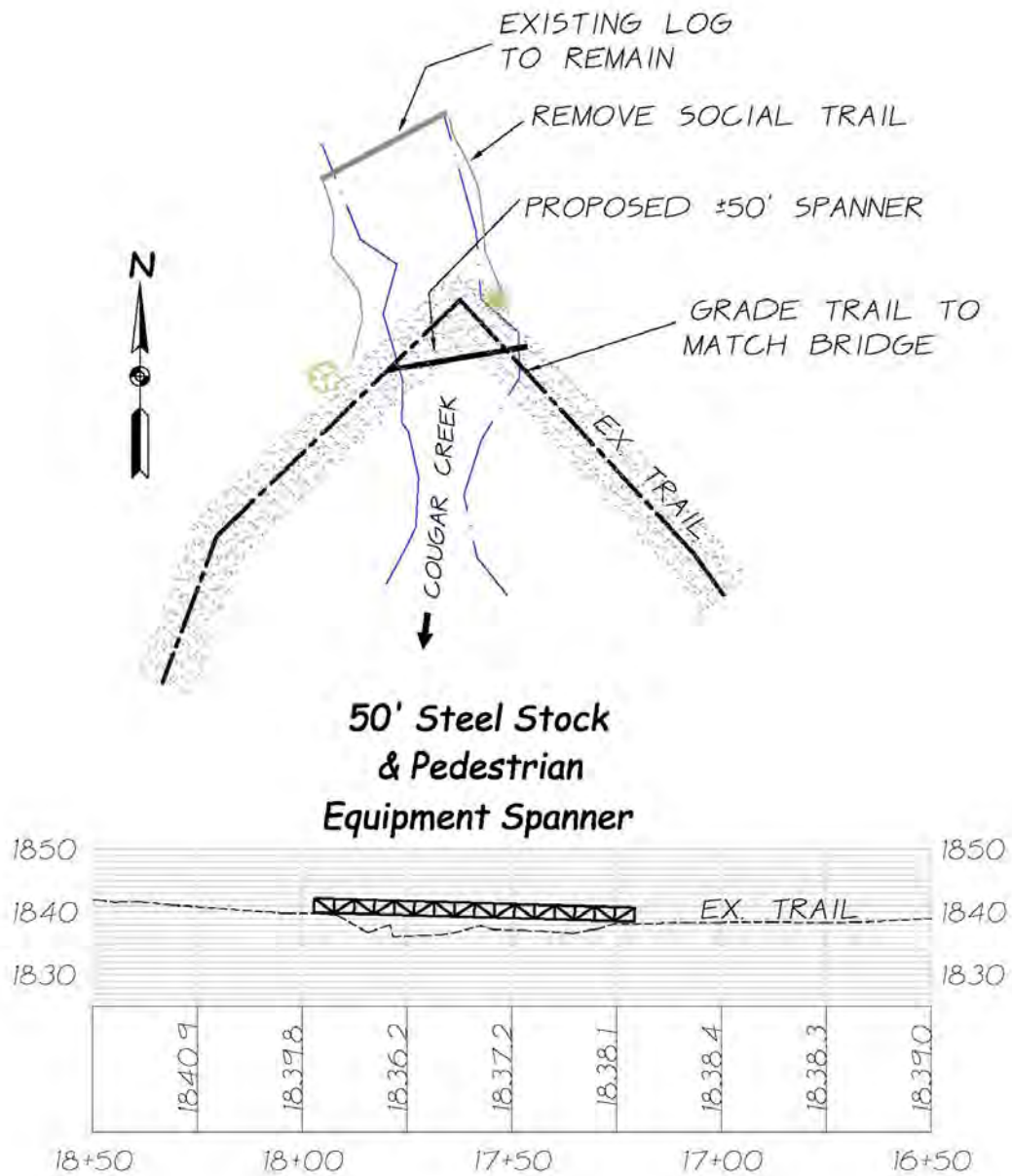
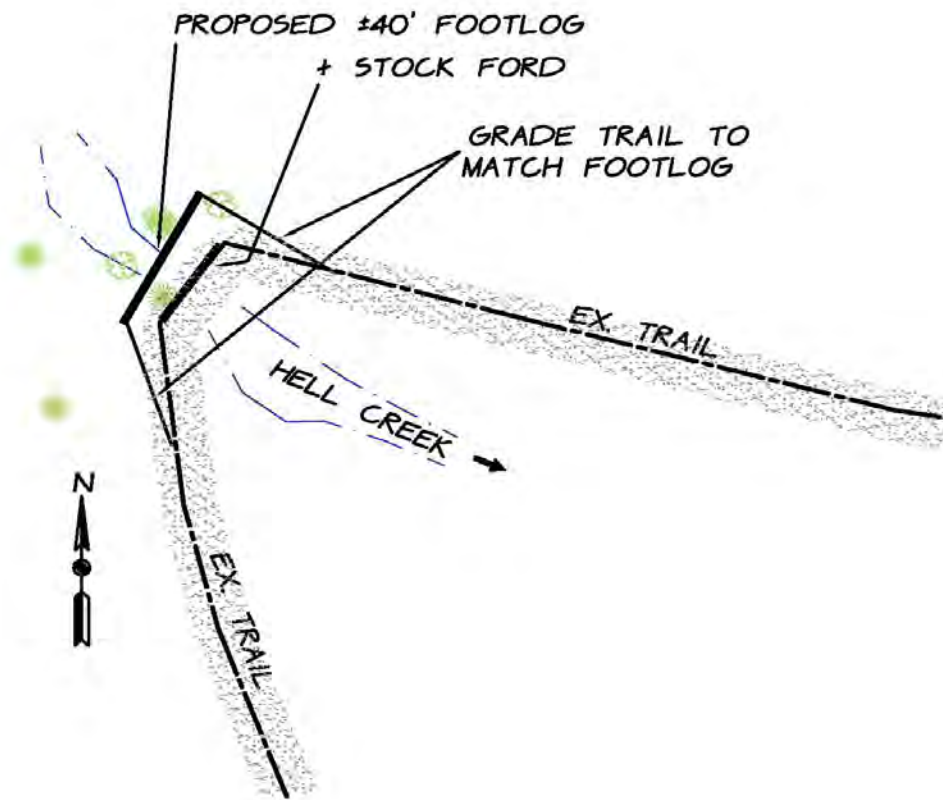


Figure 12: Footlog and Stock Ford at Hell Creek.



Hell Creek Stream Crossing

The partially collapsed wooden culvert at Hell Creek would be removed under all action alternatives. Following project completion, the Hell Creek crossing would be spanned by an approximately 40 foot long footlog for hikers and a ford for stock use along the existing trail alignment (Figure 12). The Hell Creek area would be surveyed to determine if a suitable fallen log is available nearby. If a suitable fallen log is not available, a fallen log would be located from another area of the park. If no suitable fallen log is available in the park, a log may be purchased from outside the park. The log would be transported to the stream crossing site either by motorized transport up the trail or by helicopter if trail access were infeasible.

If a log is transported to the stream crossing via the trail, work would utilize a truck and a loader. Temporary stream crossings would be placed across Cougar Creek to allow vehicles to drive up the trail. The work would last approximately 90 minutes. If transport over the trail is infeasible, the log would be flown to the project site using a helicopter. The log would be staged at Sweets Field (in the Elwha Valley) and transported using either a medium or heavy lift helicopter depending on the weight of the log. The duration of helicopter use needed to pick up the log, set

it in place, and leave the area would be approximately 30 minutes. This work would occur when the noise impact from the helicopter would not result in an adverse effect to nesting marbled murrelets. If a heavy lift helicopter were used, this would require a flight after September 15.

A stock ford would be created by constructing a spur trail from the main hiking trail down to the proposed ford. Any large rocks that may make the crossing unsafe for stock would be removed from the ford and placed nearby.

Table 8: Equipment Required for Removing Collapsed Culvert and Installing Footlog and Stock Ford at Hell Creek.

Equipment used	Duration (approx)	Noise Level (dBA)	Timing/Season
Wheeled front end loader	3 days	79-80	Aug. 6 - **
Flat bed truck	3 days	79-80	Aug. 6 - **
Backhoe / wheeled excavator	3 days	78-80	Aug. 6 - **
Helicopter (if needed – see text)	30 minutes	94	Aug. 6 - **
Chainsaw	1 day	84-85	Aug. 6 - **
Pickup Truck	3 days	55-75	Aug. 6 - **
Hand tools	3 days	n/a	n/a

*** - seasonal shutdown due to weather conditions*

Abandoned Trash Dump Site

The access route to an abandoned trash dump east of Crystal Creek would be blocked with large boulders or other natural materials where it intersects with the Boulder Creek Trail. This work would be done concurrently with asphalt removal from the trail using hand tools and a small excavator to loosen the soil and prepare it for rehabilitation. Treatment to restore the route would include placement of downed logs or rocks and planting of small to medium-sized native plants and trees. This placement of materials is expected to result in disturbance of approximately 60 square feet to match the placed material to the adjoining vegetation line.

The excavator and hand equipment would be driven to the site from the trailhead. This would require temporary vehicle crossings be placed over both Cougar and Hell Creeks. Treatment of the actual dump site will be determined after the site is evaluated by the National Park Service in accordance with federal law and policy. This includes an assessment of the site to determine if any contaminants are present that would require treatment. If removal of materials from the site is necessary, the area would be evaluated to determine if any historic materials requiring special treatment are present. If necessary, appropriate mitigation measures would be taken to address any adverse effects to historic properties.

Table 9: Equipment Required for Blocking and Rehabilitating Route to Abandoned Trash Dump.

Equipment used	Duration (approx)	Noise Level (dBA)	Timing/Season
Tracked excavator	1 day	81-85	Aug. 6 - **
Backhoe / wheeled excavator	1 day	78-80	Aug. 6 - **
Pickup Truck	1 day	55-75	Aug. 6 - **
Hand tools	1 day	n/a	n/a

*** - seasonal shutdown due to weather conditions*

Crystal Creek Culvert Removal

Within Crystal Creek, a failed 60 inch culvert that is partially buried in the stream channel would be excavated and removed. This would require the use of cutoff saws, cables, winches and tracked equipment staged on the trail above the culvert. The culvert would be chopped into pieces and removed from the park by transport down the trail. The concrete headwall located in the stream channel would also be removed. Removal of the culvert and headwall would allow for the natural movement of water within the channel and of slope material, both of which are not blocked by the culvert. This work would be concurrent with asphalt removal while temporary crossings are in place over Cougar and Hell Creeks to allow the movement of equipment along the trail.

Table 10: Equipment Required for Removing 60" Diameter Culvert and Concrete Headwall from Crystal Creek.

Equipment used	Duration (approx)	Noise Level (dBA)	Timing/Season
Tracked excavator	3 days	81-85	Aug. 6 - **
Dump Truck	3 days	76-84	Aug. 6 - **
Wheeled front end loader	3 days	79-80	Aug. 6 - **
Hand tools	3 days	n/a	Aug. 6 - **

Boulder Creek Campground Infrastructure

Under all Action Alternatives the culverts located in the campground would be removed. These culverts are between three to 15 feet deep and were placed to create a more level trail surface throughout the campground. After culverts are removed, any fill material present would be removed and graded to restore natural topography and drainage patterns in the area.

Concrete foundations from two former restrooms would also be removed and the area restored to natural grade. If located, concrete septic tanks would also be removed. Removal of the culverts and foundations as described above would result in disturbance of approximately 2,000 square feet.

Helicopter transport would be used to deliver and remove a small excavator with a front blade and tractor for the excavation and removal of culverts and foundations from the site. It is anticipated that this would require approximately two trips to deliver equipment, and eight trips to remove equipment, culverts, and restroom foundations from the campground. This work would be done in a manner that avoids adverse effects to northern spotted owls and marbled murrelets due to construction and noise impacts, and would be coincident with delivery of equipment for removal of asphalt from the trail on the west side of Crystal Creek.

The equipment would be driven to the east side of Crystal Creek and staged for helicopter lift to the campground parking lot. Each helicopter flight would be approximately 15 minutes long for delivery and removal of the equipment and materials using a heavy lift helicopter.

Table 11: Equipment Required for Removing Culverts and Restoring Natural Grades at Campground, Removing Concrete Foundations, and Preparing Site for Revegetation.

Equipment used	Duration (approx)	Noise Level (dBA)	Timing/Season
Helicopter	10 trips (15 min ea)	94	after September 15
Tracked excavator, small	10 days	81-85	after September 15
Backhoe / wheeled excavator	10 days	78-80	after September 15
Tractor	10 days	85	after September 15
Chainsaw	3 days	84-85	after September 15
Hand equipment	10 days	n/a	after September 15

Note that delivery of this equipment is coincident to delivery of equipment for asphalt removal west of Crystal Creek

Campfire Ban

Campfires and the collection of firewood would no longer be allowed at the Boulder Creek campground. Existing campfire rings would be broken down, and the rocks scattered to discourage this use.

Campground Revegetation and Maintenance

Campsites would be clearly delineated under all Action Alternatives, although the size and number of sites and varies by alternative. Trails from the campground to the former parking lot, hot springs, and Appleton Pass trail would remain in their current locations.

The road extending between the former parking lot and campground would be converted to a trail by narrowing any remaining wide sections. Areas outside of the trail would be scarified,

delineated with the placement of downed logs or boulders, and actively planted to enhance natural recovery. Downed logs would be obtained from the surrounding area, if available. If downed logs are obtained from outside the immediate area they may be brought to the site using a helicopter for transport. If helicopter support is necessary it would occur outside of the breeding season of listed species in the project area to avoid adverse effects associated with elevated noise levels from helicopter use that have the potential to harass sensitive species.

Maintenance of the campground would continue to include seasonal clearing of downed trees, cleaning and resupply of the toilets and removal of garbage on an as-needed basis, generally once a week during the high visitor use season. Relocating and excavating the pit for the pit toilets would be completed as required, generally every seven years, using hand tools. The type of toilet may be modified to allow for improved maintenance. The campground would continue to be patrolled by park rangers.

Active revegetation of denuded areas within the campground would occur outside of delineated campsites and visitor use areas under all Action Alternatives, although the extent of areas to be revegetated varies by alternative. Initial preparation of the ground for revegetation efforts would be completed using wheeled tractors with discs and tilling attachments. Work would also be done using hand tools. Any work performed with equipment would be staged to coincide with asphalt removal on the trail and potential helicopter flight time. The excavator and hand equipment would be driven to the east side of Crystal Creek and staged for a helicopter lift to the campground parking lot. The helicopter flight would be approximately 15 minutes each for delivery and removal of the equipment using a heavy lift helicopter. Additional restoration and revegetation work would continue to occur in the project area in a manner consistent with the park's wilderness restoration program.

Any downed logs used for trail or campsite delineation from outside of the immediate project area would be staged at either Sweets Field or another appropriate helicopter-accessible site. The helicopter flight would be approximately 30 minutes each for delivery using a heavy lift helicopter. The number of trips would be established based on the weight of logs and the number needed for trail and campsite delineation. Flights would be limited to after September 15.

Table 12: Equipment Required for Campground Revegetation and Maintenance.

Equipment used	Duration (approx)	Noise Level (dBA)	Timing/Season
Helicopter	1 trip (15 min)	94	after September 15
Tractor	5 days	85	after September 15
Chainsaw	2 days	84-85	after September 15
Hand Tools	15 days	85	after September 15

Note that delivery of this equipment is coincident to delivery of equipment for asphalt removal west of Crystal Creek

Future Wilderness Designation

The Washington Park Wilderness Act (1988) designated the Boulder Creek campground as potential wilderness. The Boulder Creek Trail (former road) is currently outside the potential wilderness designation area, but would become suitable for wilderness designation if the road is removed.

The Boulder Creek Campground and Trail would both be considered for designation as wilderness, within the National Wilderness Preservation System under all action alternatives upon the successful removal of abandoned infrastructure and restoration of natural conditions within previously disturbed areas.

Mitigation Measures to Avoid or Reduce Impacts to Natural and Cultural Resources

The National Park Service has identified mitigation measures that would be implemented under all Action Alternatives in order to avoid or minimize adverse effects to natural and cultural resources and visitor experience. Detailed descriptions of these actions are included in Appendix A.

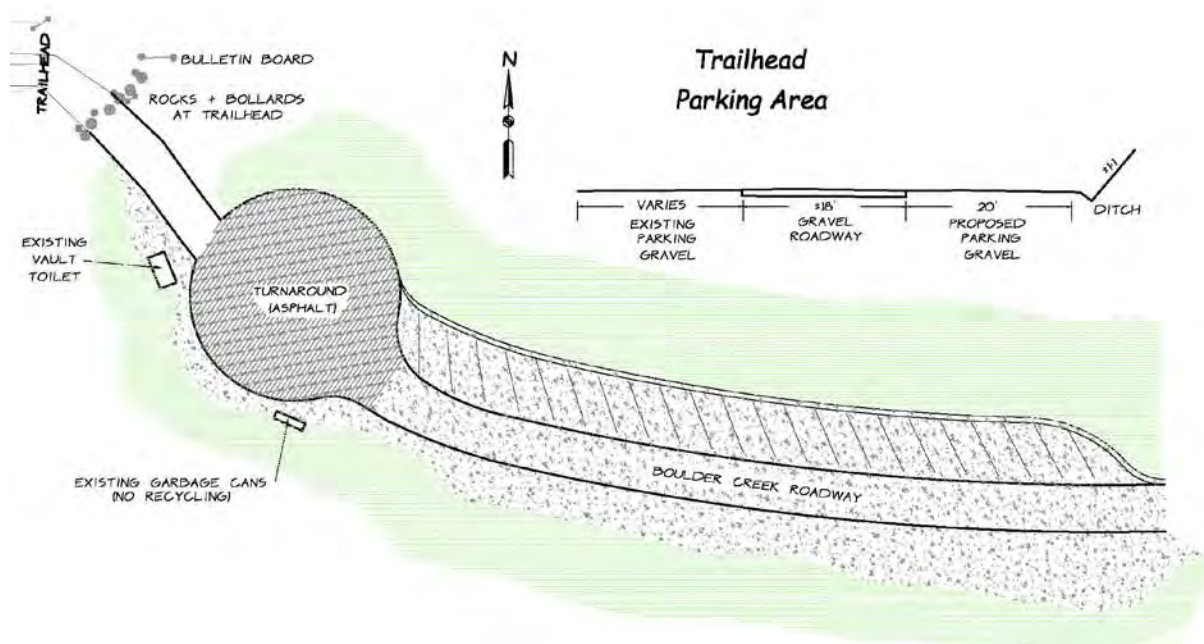
Alternative 2 – Minimum Visitor Services Infrastructure, Extensive Restoration

Under Alternative 2, the National Park Service would implement the actions identified for the Boulder Creek Trail and Campground in the 2008 General Management Plan so as to create and maintain the minimum amount of infrastructure necessary to achieve project objectives.

Boulder Creek Trailhead

Under Alternative 2 the Boulder Creek trailhead would be expanded to provide additional parking on the north side of the existing road for approximately 21 vehicles (Figure 13). This new parking area would be constructed using compacted gravel. New parking spaces would be approximately 12 feet wide and 24 feet long, and angled to maintain a road corridor that is approximately 20 feet wide. Vehicles would continue to park on the wide gravel shoulder on the south side of the road, providing space for approximately 15 additional vehicles. This would provide parking for a total of approximately 36 vehicles. Drainage would continue to be through sheet flow distributed across the south side of the roadway. As described in Activities Common to All Alternatives, the vehicle turnaround area would be expanded and paved in order to accommodate vehicles towing stock trailers.

Figure 13: Alternative 2, Expanded Trailhead Parking Area.



Expanding the parking area would require cutting approximately 2,100 cubic yards of soil from the northern slope of the existing road corridor. No fill would be required. After construction the trailhead parking area would include approximately 5,100 square feet of asphalt surface in the turnaround and approximately 22,000 square feet of gravel, including that already in place along the south edge of the roadway. Construction of the parking area (not including the vehicle turnaround area) would result in new clearing of an estimated 15,500 square feet of vegetation.

Construction of the expanded parking area would require the use of heavy equipment, including a wheeled loader, tracked excavator, backhoe, grader, dump trucks, tree felling equipment, and soil compactors. Work would require approximately 20 full days of construction to complete (in addition to the turnaround construction). Dump trucks hauling excavated soil to a disposal area outside the park would use the Olympic Hot Springs road and would pass adjacent to campgrounds and private residences immediately outside the park. Work would need to be completed after August 5 to minimize noise related impacts to marbled murrelets and northern spotted owls during the early nesting season.

Table 13: Equipment Required for Expanding Vehicle Parking at Trailhead on North Side (Compacted Gravel Surface).

Equipment used	Duration (approx)	Noise Level (dBA)	Timing/Season
Tracked excavator	20 days	81-85	Aug. 6 - **
Wheeled front end loader	20 days	79-80	Aug. 6 - **
Dump truck	20 days	76-84	Aug. 6 - **
Dozer	5 days	82-85	Aug. 6 - **
Tractor	20 days	85	Aug. 6 - **
Grader	5 days	85	Aug. 6 - **
Compactor	5 days	80-83	Aug. 6 - **
Chainsaw	1 day	84-85	Aug. 6 - **
Pickup Truck	20 days	55-75	Aug. 6 - **
Hand tools	20 days	n/a	n/a

*** - seasonal shutdown due to weather conditions*

Boulder Creek Trail

Under Alternative 2, approximately 155,000 square feet of asphalt, including pavement now covered by soil and vegetation, would be cleared and excavated using heavy equipment as described under Activities Common to All Alternatives. This would result in disturbance of up to 180,000 square feet of are on or surrounding the trail. The trail would be rehabilitated and managed as a hiking and stock use trail. The trail tread would be either natural tread or gravel, typically maintained on an annual basis. The trail corridor would be maintained to provide vegetation clearance to a width of 6 feet and vertical height of eight feet. The trail would be approximately 18 inches to 24 inches wide.

Areas outside of the trail width would be scarified using heavy equipment or hand tools to prepare the soil for revegetation and natural recovery.

Stream Crossings

Under Alternative 2, all stream crossing would be constructed using footlogs and stock fords to provide safe access for visitors and park staff. Removal of the temporary spanner bridges placed at Cougar and Hell Creeks during construction would occur prior to placement of the footlogs. Footlogs would be set on wood abutments at each end on flat and stable ground. Footlogs would be located at or below the level of ordinary high water. The footlog at Cougar Creek would be approximately 40-feet long with hand rails. The footlog at Hell Creek is described under activities common to all alternatives. The footlog at Crystal Creek would require placement of a log approximately 50-feet long with a handrail.

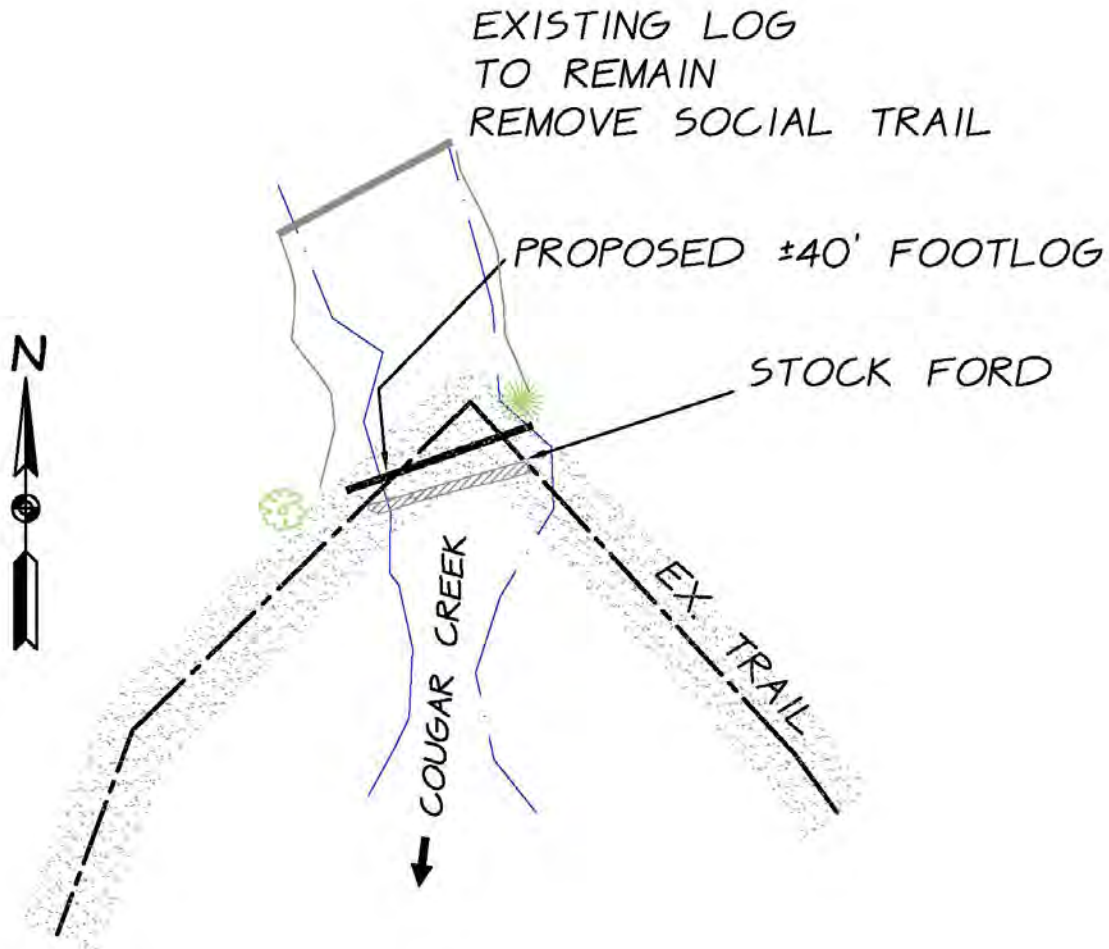
This would require locating and transporting suitable logs from outside of the immediate area of the stream crossings unless suitable downed logs are found immediately adjacent to the project area. The footlogs would be delivered by helicopter. The logs would be staged at Sweets Field (in the Elwha Valley) and transported using either a medium or heavy lift helicopter, depending on the weight of the log.

The duration of helicopter use would be an estimated thirty minutes. This would include picking up the log, delivering the log to the stream crossing, and setting it in place. This operation would take require three trips, one per stream crossing. Helicopter flights would be scheduled to avoid adverse effects to nesting marbled murrelets and northern spotted owls due to helicopter noise.

Table 14: Equipment Required for Delivering and Installing Footlog at Cougar Creek.

Equipment used	Duration (approx)	Noise Level (dBA)	Timing/Season
Helicopter	1 trip @ 30 min.	94	After September 15
Tracked excavator	5 days	81-85	After September 15
Backhoe / wheeled excavator	5 days	78-80	After September 15
Tracked or wheeled front end loader	5 days	79-80	After September 15
Dump truck	5 days	76-84	After September 15
Flatbed Truck	5 days	79-80	After September 15
Pickup Truck	5 days	55-75	After September 15
Hand tools	5 days	n/a	After September 15

Figure 14: Alternative 2, Cougar Creek Footlog Crossing.



At Cougar and Hell Creeks, the trail grade generally matches the proposed elevation of the footlogs. Only minimal grading would be required to match the trail grade to the footlog elevations. At Crystal Creek the footlog elevation is approximately 40 feet below the grade of the existing trail. The trail would be graded to match the elevation of the new Crystal Creek footlog and stock ford. This would require blasting and removal of approximately 1,400 cubic yards of rock from the eastern side of the trail. The trail would descend at a slope of approximately ten percent down to the footlog. An estimated 2,500 cubic yards of fill material would also need to be blasted and cut from the trail embankment to bring the trail to a stable slope at the elevation of the footlog.

Work at Crystal Creek would entail the use of a track-mounted rock drill, generator, air compressor and blasting materials. A wheeled loader, backhoe, tracked excavator, and dump trucks would be used to remove the material from the park. Drilling, blasting and removal of the material would extend over approximately fifteen days. Temporary fencing would be placed between the blast zone and the stream to reduce the quantity of material entering the stream. Best

management practices as described in Appendix A would be used to minimize the amount of material entering Crystal Creek during construction. However, it is anticipated that up to 250 cubic yards of rock and fill materials may enter the stream channel.

Figure 15: Alternative 2, Crystal Creek Footlog Crossing.

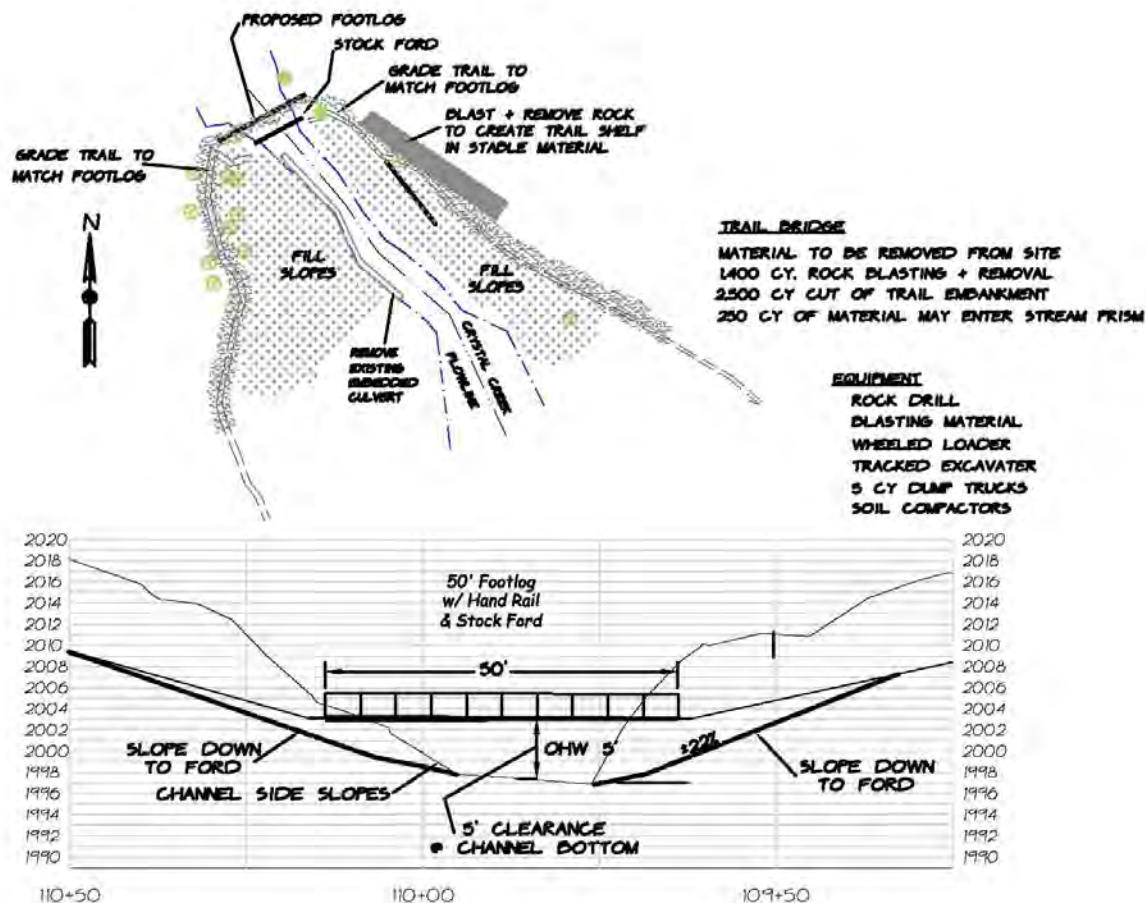


Table 15: Equipment Required for Delivering and Installing Footlog at Crystal Creek.

Equipment used	Duration (approx)	Noise Level (dBA)	Timing/Season
Helicopter	1 trip @ 30 min.	94	After September 15
Rock Drill w/ compressor	15 days	81-85	After September 15
Blasting	15 days	94-105	After September 15
Tracked excavator	15 days	81-85	After September 15
Backhoe / wheeled excavator	15 days	78-80	After September 15
Tracked or wheeled front end loader	15 days	79-80	After September 15
Dump truck	15 days	76-84	After September 15
Flatbed Truck	15 days	79-80	After September 15
Pickup Truck	15 days	55-75	After September 15
Hand tools	15 days	n/a	n/a

Construction of the stock ford would require splitting the stock trail from the pedestrian trail and constructing new trail down to the stream grade at the crossing and removing any large rocks or debris present in the stream channel in the location of the proposed ford. The stock trail would drop at a slope of approximately 20 percent. This work would be performed immediately following the completion of work to construct the trail to the footlog (above). It is anticipated that any blasting necessary would be completed as described above in constructing the trail segment. A wheeled loader, tracked excavator and dump trucks would be used to create the stock trail and remove excess material to outside the park. Work would extend over approximately eight days.

Table 16: Equipment Required for Creating Stock Fords at Cougar Creek and Crystal Creek.

Equipment used	Duration (approx)	Noise Level (dBA)	Timing/Season
Tracked excavator	8 days	81-85	After September 15
Dump Truck	8 days	76-84	After September 15
Wheeled front end loader	8 days	79-80	After September 15
Backhoe / wheeled excavator	8 days	78-80	After September 15
Hand tools	8 days	n/a	n/a

This work would be conducted in a manner that avoids adverse effects to northern spotted owls and marbled murrelets due to noise impacts during the early breeding season. Blasting and preparation of the trail bed would be the first element of the project and would occur after September 15th. Temporary crossings would be placed across Cougar and Hell Creek to allow the required equipment to reach the east side of Crystal Creek. This schedule would provide for construction activities outside of the breeding window for special status species, but would likely require that the contractor mobilize to complete the work, demobilize for the winter and remobilize the next spring to continue the work.

Boulder Creek Campground

Under Alternative 2 all of the obsolete infrastructure within the campground would be removed, including the abandoned underground sanitary sewer and water utilities, storm drain culverts, and the concrete foundations of two former restrooms. This would require extensive excavation and recontouring to allow for removal of buried materials and the restoration of natural topography. As much as 10,000 square feet of disturbance would occur during this removal, spread out throughout the campground and centered over the utility lines and foundations.

A trail would be delineated through the former campground parking lot toward the hot springs trail and the existing pit toilet. Equipment would be used to recontour the compacted soil of the parking lot. Active site restoration would include soil scarification and revegetation.

Under Alternative 2 seven campsites would be delineated within the east (CCC) loop using downed logs and other natural materials. Campsites would be located in traditionally used areas where removal of mature vegetation would not be required. Two of the campsites would be designed to accommodate large groups of 7 to 12 people.

The mid and west loops of the campground would be closed to camping and restored to natural conditions. Extensive rehabilitation would occur in the denuded areas outside of designated campsites and visitor use zones. Soil scarification, active revegetation and natural recovery would help restore previously disturbed sites to natural conditions.

No new infrastructure would be installed to support stock use under this alternative. No hitching posts would be built, and no campsite for stock users would be developed.

Alternative 3 – Provide Moderate Visitor Services, Active Revegetation

Under Alternative 3, the National Park Service would implement the actions identified for the Boulder Creek Trail and campground in the 2008 General Management Plan by taking actions necessary to achieve project objectives as identified in Alternative 2, while providing limited additional visitor services.

Boulder Creek Trailhead

Under Alternative 3 the Boulder Creek trailhead would be expanded to provide additional parking on the north side of the existing road for approximately 21 vehicles (Figure 16). This new parking area would be constructed using a permeable non-asphalt surfacing material. New parking spaces would be approximately 12 feet wide and 24 feet long, and angled to maintain a road corridor that is approximately 20 feet wide. Vehicles would also continue to park on the wide gravel shoulder on the south side of the road, providing space for approximately 15 additional vehicles. This would provide parking for a total of approximately 36 vehicles. Drainage would continue to be through sheet flow distributed evenly across the south side of the roadway, aided by the permeability of the surfacing material.

As described in Actions Common to All Alternatives, the vehicle turnaround area would be expanded and paved to accommodate vehicles towing stock trailers.

Expanding the parking lot and vehicle turnaround area would require cutting approximately 2,100 cubic yards of soil from the northern slope of the existing road corridor. No fill would be required. After construction, the surface of the trailhead would include approximately 5,100 square feet of asphalt in the turnaround, 16,700 square feet of permeable paved surfacing in the new parking area and replacing the existing asphalt roadway, with 5,300 square feet of gravel remaining along the south side of the road. Construction of the parking area (not including the turnaround) would result in new clearing of approximately 15,500 square feet of vegetation.

Construction of the expanded parking lot and vehicle turnaround would require the use of heavy equipment, including a backhoe, wheeled loader, tracked excavator, grader, dump trucks, tree felling equipment, soil compactors, and a paving machine. Work would occur during daylight hours. Work would require approximately 30 full days of construction to complete. Trucks hauling excavated soil to a disposal area outside the park would use the Olympic Hot Springs road and thus pass adjacent to campgrounds and private residences located immediately outside the park. Work would be scheduled to minimize noise related impacts to special status species and to provide for temperatures suitable for asphalt placement.

Figure 16: Alternative 3, Expanded Parking at Trailhead.

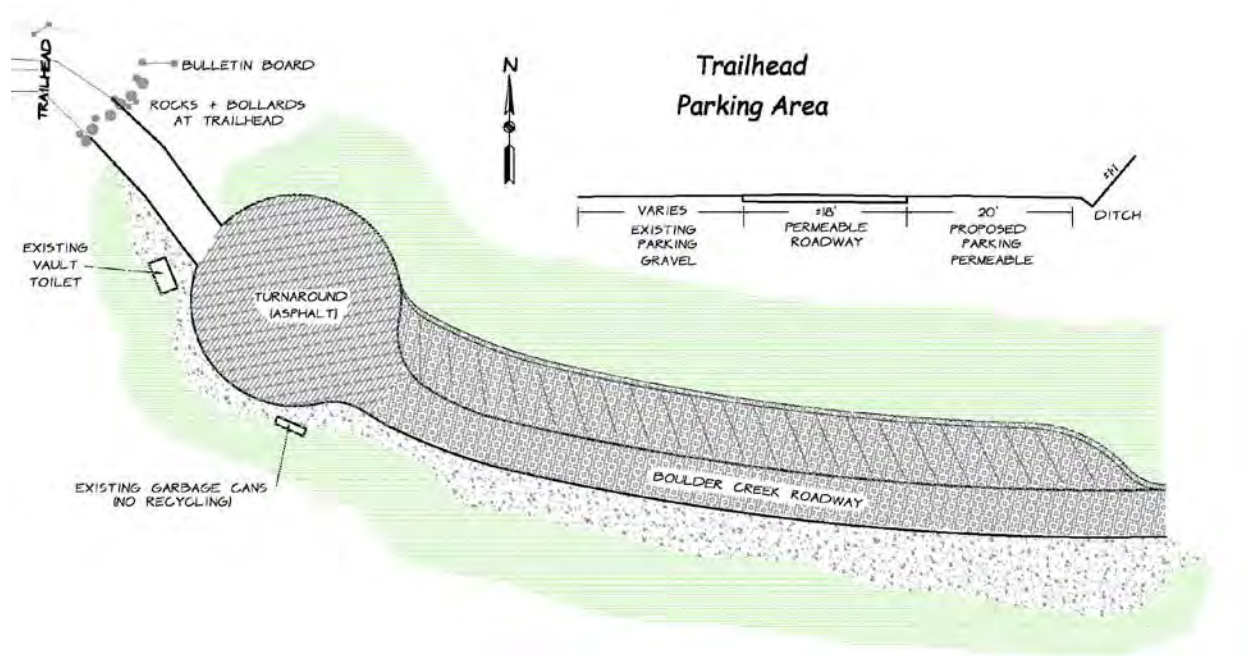


Table 17: Equipment Required for Expanding Vehicle Parking at Trailhead on North Side (Permeable Non-asphalt Surface).

Equipment used	Duration (approx)	Noise Level (dBA)	Timing/Season
Tracked excavator	30 days	81-85	Aug. 6 - **
Wheeled front end loader	30 days	79-80	Aug. 6 - **
Dump truck	30 days	76-84	Aug. 6 - **
Grader	30 days	85	Aug. 6 - **
Compactor	30 days	80-83	Aug. 6 - **
Chainsaw	30 days	84-85	Aug. 6 - **
Paver		77-85	Aug. 6 - **

Boulder Creek Trail

Under Alternative 3, approximately 155,000 square feet of asphalt, including pavement now covered by soil and vegetation, would be cleared and excavated using heavy equipment as described under Activities Common to All Alternatives. This would result in disturbance of up to 180,000 square feet of area on or surrounding the trail. The trail would be rehabilitated and managed as a hiking and stock use trail. The trail tread would be either natural tread or gravel, typically maintained on an annual basis. The trail corridor would be maintained to provide

vegetation clearance to a width of 8 feet and vertical height of 10 feet. The trail would be approximately 24 inches to 30 inches wide.

Areas outside of the trail width would be scarified using heavy equipment or hand tools to prepare the soil for revegetation and natural recovery.

Stream Crossings

Under Alternative 3, the stream crossings at both Cougar and Hell Creeks would be accomplished by installing footlogs and stock fords as described in Alternative 2.

The stream crossing at Crystal Creek would be through the placement of a weathering steel bridge approximately 80 feet long and 6 feet wide. The bridge would have handrails for safety and would have a wood deck. The bridge would provide an estimated 12 feet of clearance from the bottom of the creek channel, and approximately 7 feet of clearance above the ordinary high water mark (OHW).

The bridge would be designed to accommodate both pedestrian and stock use, and sized to account for snow loads. This would require the professional design and construction of a bridge offsite and transport by truck for staging prior to helicopter delivery. Concrete abutments for the bridge would be constructed during the course of asphalt removal along the trail. Abutments would be set according to design drawings of the bridge. The size of the reinforced concrete abutments would be approximately 8 feet by 4 feet by 4 feet deep, although final size may change during design, and would be placed on each end of the bridge. Little or no new disturbance would occur, as the work would take place within the existing trail corridor.

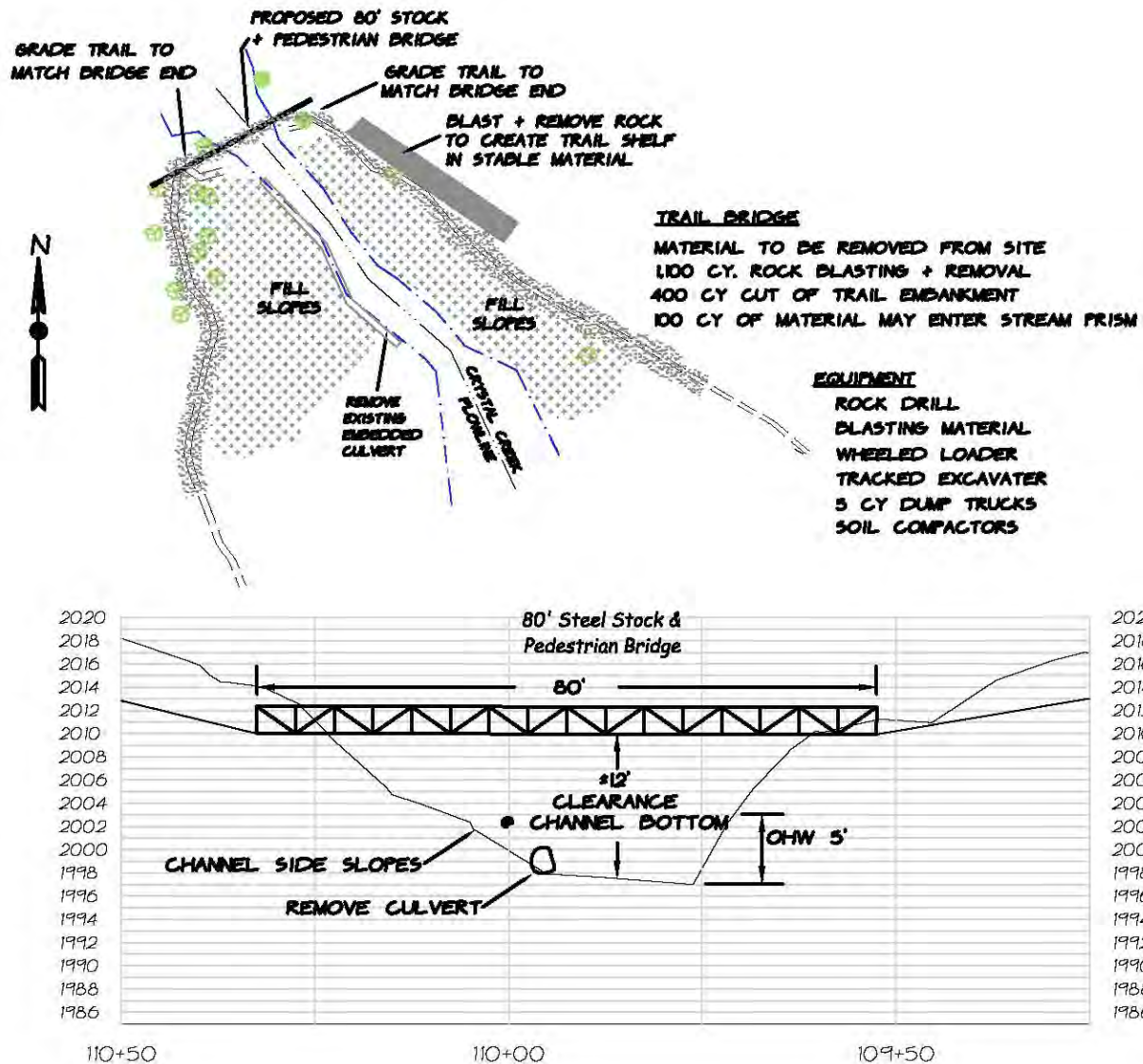
Concrete for the uphill abutment at Crystal Creek would be delivered by helicopter. Concrete for the downhill abutment would be delivered up the trail.

Transport of the bridge would be via helicopter. The bridge would be staged at Sweets Field and transported using a heavy lift helicopter. The trip from picking up the bridge to setting it in place on the prepared abutments would take approximately one hour. This work would be timed to occur outside of the nesting season for marbled murrelets and northern spotted owls to avoid adverse effects due to the noise of the helicopter.

The proposed bridge elevation at Crystal Creek is approximately 25 feet below the grade of the existing trail. The trail would be graded to match the elevation of the new Crystal Creek bridge, requiring blasting and removal of approximately 1,100 cubic yards of rock from the eastern side of the trail. The trail would descend at a slope of approximately 10 percent down to the bridge. An estimated 400 cubic yards of fill material would also need to be blasted and cut from the trail embankment to establish a stable slope at the elevation of the bridge.

Work at Crystal Creek would require the use of a track-mounted rock drill, generator, air compressor and blasting materials. A wheeled loader, tracked excavator and dump trucks would be used to remove the material to outside the park. The decibel level of the rock drill would be for sustained periods while the blasting would be for very short periods during the course of work.

Figure 17: Alternative 3, Crystal Creek 80' Span Bridge.



Drilling, blasting and removal of the material will extend over approximately fifteen days. Temporary fencing would be placed between the blast zone and the stream to reduce the quantity of material entering the stream. Best management practices as described in Appendix A would be used to minimize the amount of material entering Crystal Creek during construction.

However, it is anticipated that up to one hundred cubic yards of rock and fill materials may enter the stream channel.

Table 18: Equipment Required for Delivering and Installing 80' Bridge at Crystal Creek.

Equipment used	Duration (approx)	Noise Level (dBA)	Timing/Season
Helicopter	1 trip @ 60 min for bridge 12 trips @ 30 min for concrete	94	After September 15
Tracked excavator	15 days	81-85	After September 15
Backhoe / wheeled excavator	10 days	78-80	After September 15
Wheeled front end loader	15 days	79-80	After September 15
Rock Drill	8 days	81-85	After September 15
Blasting	8 days	94-105	After September 15
Dump Truck	15 days	76-84	After September 15
Tracked excavator	15 days	81-85	After September 15
Generator	15 days	81-82	After September 15
Hand Tools	15 days	n/a	After September 15

This work would be conducted in a manner that avoids adverse effects to northern spotted owls and marbled murrelets due to noise impacts during the early breeding season. Blasting and preparation of the trail bed would be the first element of the project and would occur after September 15th. Temporary crossings would be placed across Cougar and Hell Creek to allow the required equipment to reach the east side of Crystal Creek. This schedule would provide for construction activities outside of the breeding window for special status species, but would likely require that the contractor mobilize to complete the work, demobilize for the winter and remobilize the next spring to continue the work.

Boulder Creek Campground

Under Alternative 3 the culverts and visible concrete foundations of the former restrooms would be removed as described under Activities Common to All Alternatives.

A trail would be delineated through the former campground parking lot toward the hot springs trail and the existing pit toilet. Equipment would be used to recontour the compacted soil of the parking lot. Active site restoration would include soil scarification and revegetation.

Under Alternative 3, five campsites would be delineated within the east (CCC) loop and three sites would be delineated within the mid-loop using downed logs and other natural materials.

Campsites would be located in traditionally used areas where removal of mature vegetation would not be required. Three of the campsites would be designed to accommodate large groups of seven to twelve people.

The west loop of the campground would be closed to camping and restored to natural conditions. Extensive rehabilitation would occur in the denuded areas outside of designated campsites and visitor use zones. Soil scarification, active revegetation and natural recovery would help restore previously disturbed sites to natural conditions.

New infrastructure to support stock use under this alternative would be limited to the installation of a wood hitching post in the area of the former campground parking to support day-use of the area by people traveling with pack stock. No campsite for stock users would be developed.

Alternative 4 – Provide Enhanced Visitor Services, Active Revegetation (Management Preferred)

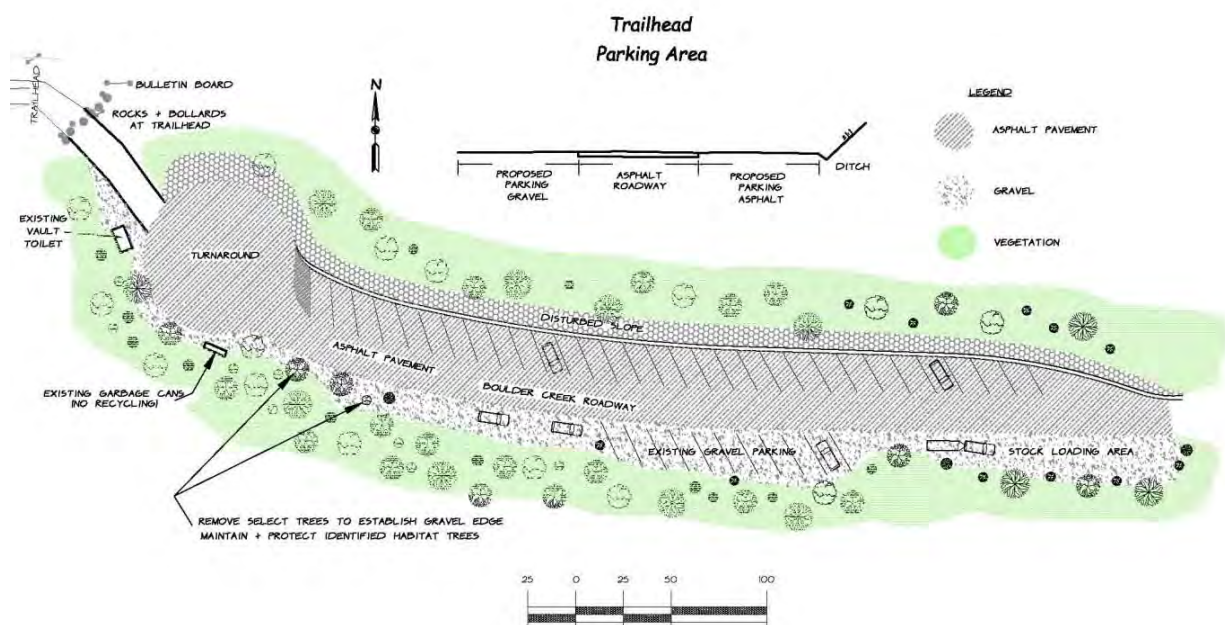
Under Alternative 4, the National Park Service would implement the actions identified for the Boulder Creek Trail and campground in the 2008 General Management Plan by taking actions necessary to achieve project objectives, while providing additional visitor services by further expanding the parking lot at the Boulder Creek trailhead, installing bridges at the Cougar Creek and Crystal Creek stream crossings to allow safe access at higher water levels, and by providing additional visitor services at the Boulder Creek campground for backpackers and pack stock users.

Boulder Creek Trailhead

Under Alternative 4, the Boulder Creek Trailhead would be expanded to provide asphalt paved parking on the north side of the existing road for approximately 31 vehicles. New parking spaces would be approximately 12 feet wide and 24 feet long, and angled to maintain a road corridor that is 23 feet wide. Additional parking would be available on existing gravel shoulder located on the south side of the road.

Surface drainage of the parking lot would be through sheet flow distributed evenly across the south side of the roadway. As described in Activities Common to All Alternatives, the vehicle turnaround area would be expanded and paved in order to accommodate vehicles towing stock trailers.

Figure 18: Alternative 4, Expanded Parking Lot.



A designated pack stock staging area for loading and unloading stock would be established at the eastern end of the parking lot outside of the road corridor. A hitching post 20 feet in length would be placed adjacent to the loading area.

Expanding the parking lot on both the north and south side of the road, and increasing the vehicle turnaround area would require cutting approximately 2,400 cubic yards of soil from the northern slope of the existing road corridor. After construction, the parking lot would contain approximately 23,000 square feet of paved asphalt surface, with approximately 5,300 square feet of gravel remaining along the south side of the roadway, including the stock use area. Construction of the parking area (not including the vehicle turnaround area) would result in new clearing of approximately 21,000 square feet of vegetation.

Construction of the expanded parking lot and vehicle turnaround would require the use of heavy equipment, including a wheeled loader, tracked excavator, backhoe, grader, dump trucks, tree felling equipment, soil compactors, and a paving machine. Work would require approximately 40 full days of construction to complete. Trucks hauling excavated soil to a disposal area outside the park would use the Olympic Hot Springs road and would pass adjacent to campgrounds and private residences immediately outside the park.

Work would be completed between August 6th and September 30th to minimize noise related impacts to special status species during the nesting season and to provide for temperatures suitable for asphalt placement.

Table 19: Equipment Required for Expanding Vehicle Parking at Trailhead on North and South Side.

Equipment used	Duration (approx)	Noise Level (dBA)	Timing/Season
Tracked excavator	40 days	81-85	Aug. 6 - **
Wheeled front end loader	40 days	79-80	Aug. 6 - **
Dump truck	40 days	76-84	Aug. 6 - **
Paver	3 days	77-85	Aug. 6 - **
Compactor	15 days	80-83	Aug. 6 - **
Chainsaw	2 days	84-85	Aug. 6 - **
Dozer	7 days	82-85	Aug. 6 - **
Tractor	40 days	85	Aug. 6 - **
Pickup Truck	40 days	55-75	Aug. 6 - **
Hand tools	40 days	n/a	Aug. 6 - **

*** - seasonal shutdown due to weather conditions*

Boulder Creek Trail

Under Alternative 4, all visible asphalt would be cleared and excavated using heavy equipment as described under Activities Common to All Alternatives. The trail would be rehabilitated and

managed as a hiking and stock use trail. The trail tread would be either natural tread or gravel, typically maintained on an annual basis. The trail corridor would be maintained to provide vegetation clearance to a width of 8 feet and vertical height of 10 feet. The trail would be approximately 24 inches to 30 inches wide.

Areas outside of the trail width would be scarified using heavy equipment or hand tools to prepare the soil for revegetation and natural recovery.

Approximately 148,000 square feet of visible asphalt would be cleared and excavated using heavy equipment. This would result in disturbance of up to 180,000 square feet of area on or surrounding the trail as described in Activities Common to All Alternatives. Areas where soils have slid over the asphalt and where vegetation has become established would remain in place to maintain the stability of uphill trail slopes.

Stream Crossings

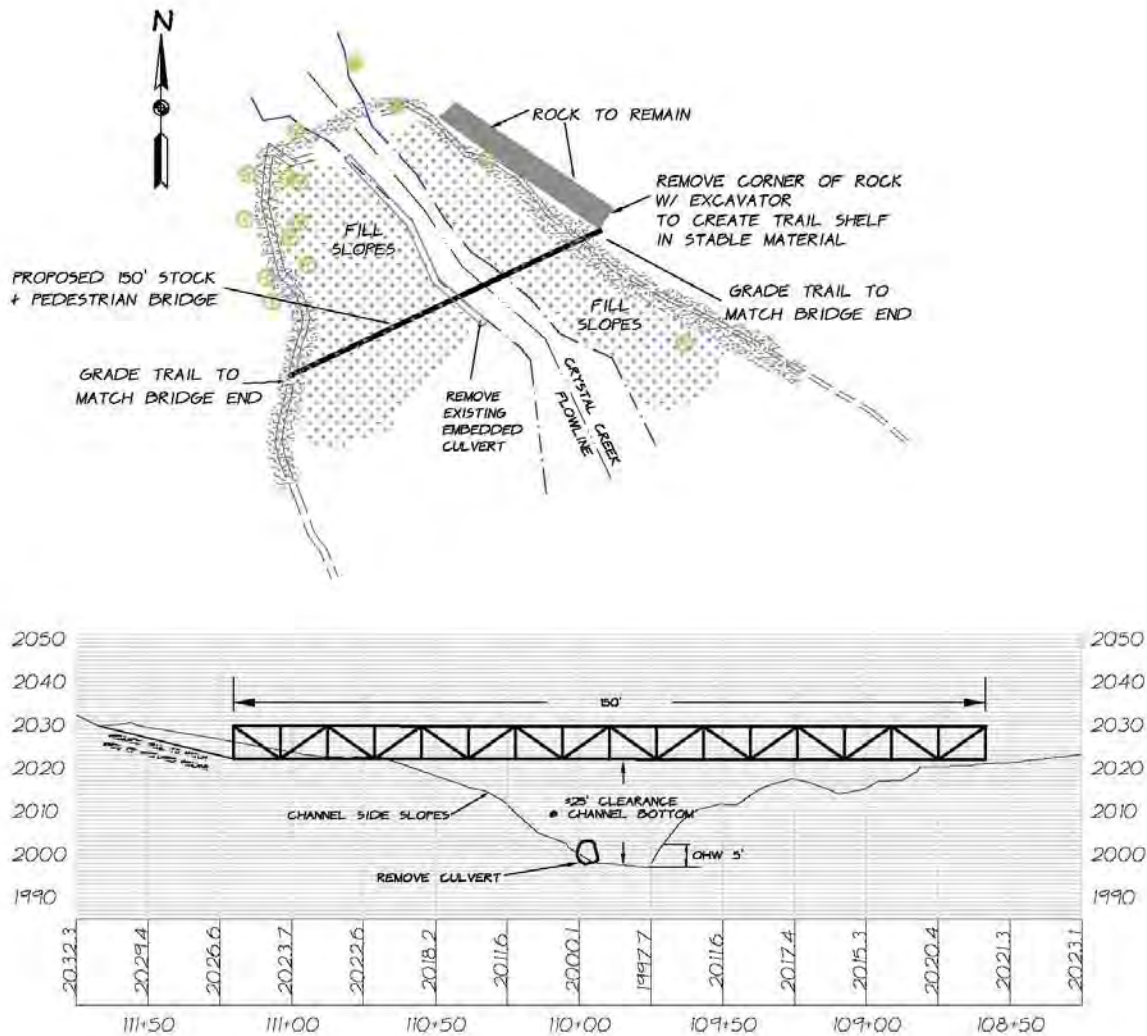
The Hell Creek stream crossing would be accomplished through the placement of a footlog and stock ford as described under Activities Common to All Alternatives. The spanner bridge installed during construction would remain in place at Cougar Creek, with the 12 foot width reduced to 6 feet wide. A handrail would be installed on the bridge, and wood decking would be in place to support both pedestrian and stock use.

The Crystal Creek bridge would be 150 feet long and up to 12 feet wide to provide stability for the longer structure, based on engineered design calculations. The Crystal Creek bridge would provide approximately 40 feet of clearance from the bottom of the stream channel, and approximately 25 feet of clearance above the ordinary high water mark (OHW). Both bridges would be designed to accommodate pedestrian and stock use, and sized to account for snow loads. This would require the professional design and construction of a bridge offsite and transport by truck for staging prior to helicopter delivery. Little or no new disturbance would occur in previously undisturbed areas, as this work would take place within the existing trail corridor.

Reinforced concrete abutments for the bridges may be constructed during the course of asphalt removal along the trail. Abutments would contain approximately 5 cubic yards of concrete each at Cougar Creek and 10 cubic yards each at Crystal Creek. Abutments would be set according to design drawings of the bridge. Abutments approximately 8 feet by 4 feet by 4 feet deep (may change during design) would be on each end of the bridge at Cougar Creek. Abutments approximately 12 feet by 6 feet by 5 feet deep (may change during design) would be on each end of the bridge at Crystal Creek. Concrete for the uphill abutment at Crystal Creek would be flown in by helicopter if another delivery method proves infeasible. Concrete for the downhill abutment would be delivered over the trail.

Transport of the bridges would be via helicopter. The bridges would be staged at Sweets Field and transported using a heavy lift helicopter. Each trip from picking up the bridge to setting it in place on the prepared abutments would take approximately one hour. This work would be timed to occur outside of the nesting season for marbled murrelets and northern spotted owls to avoid adverse effects due to the noise of the helicopter.

Figure 19: Alternative 4, Crystal Creek 150' Span Bridge.



The trail grade would generally match the proposed elevation of the bridges at Cougar and Crystal Creeks, requiring only minimal grading to match the trail grade to the bridge elevations. At Crystal Creek the rock face adjoining the trail abutment would require excavation to accommodate the placement of the abutment. This would require a tracked excavator with a rock hammer and removal of approximately 10 cubic yards of rock from the rock face on the eastern side of the trail.

Construction of stock fords at Cougar and Crystal Creeks would not be necessary as the bridges would support both pedestrian and stock use.

Table 20: Equipment for Delivering and Installing 50' Bridge at Cougar Creek and 150' Bridge at Crystal Creek.

Equipment used	Duration (approx)	Noise Level (dBA)	Timing/Season
Helicopter	4 trips @ 60 min. for bridges 30 trips @ 30 min for concrete	94	After September 15
Tracked excavator	15 days	81-85	After September 15
Tracked excavator w/ hammer	2 days	85	After September 15
Backhoe / wheeled excavator	15 days	78-80	After September 15
Wheeled front end loader	15 days	79-80	After September 15
Dump Truck	15 days	76-84	After September 15
Generator	15 days	81-82	After September 15
Hand Tools	15 days	n/a	After September 15

Boulder Creek Campground

Under Alternative 4, the culverts and visible concrete foundations of the former restrooms would be removed as described under Activities Common to All Alternatives.

A trail would be delineated through the former campground parking lot toward the hot springs trail and the existing pit toilet. Equipment would be used to recontour the compacted soil of the parking lot. Active site restoration would include soil scarification and revegetation.

Under Alternative 4, seven campsites would be delineated within the east (CCC) loop and four sites would be delineated within the mid-loop using downed logs and other natural materials. Campsites would be located in traditionally used areas where removal of mature vegetation would not be required. Up to three of the campsites would be designed to accommodate large groups of seven to twelve people.

The west loop of the campground would be closed to camping and restored to natural conditions. Extensive rehabilitation would occur in the denuded areas outside of designated campsites and visitor use zones. Soil scarification, active revegetation and natural recovery would help restore previously disturbed sites to natural conditions.

New infrastructure to support stock use under this alternative would include the replacement of a hitching rail for day use in the area of the former campground parking lot or near the bridge to the Olympic Hot Springs area. One campsite for stock users would be developed in the former

campground parking lot apart from the newly delineated trail. In addition to campsite delineation consistent with the backpacker camping areas, this would require placement of an additional stock hitching rail for overnight use by campers traveling with pack stock. The area outside of the campsite would be revegetated in a manner consistent with the rest of the Boulder Creek campground site restoration.

Alternatives Considered but Dismissed

The following management actions were identified during internal and public scoping for this plan, but are not included in any of the Action Alternatives being considered for adoption by the park. Actions are dismissed from full consideration when they do not achieve the purpose and need for taking action, when they are infeasible, or when the actions proposed are outside of the scope of the plan. The reasons for not pursuing each action are identified below.

Manage the Boulder Creek Trail as a paved asphalt multi-use trail that allows bicycle use

The National Park Service received a comment suggesting that Olympic National Park consider repair of the damaged asphalt surface and management of the Boulder Creek Trail as a multi-use trail that would also accommodate bicycle use.

This alternative was considered, but is not retained for full analysis in the Boulder Creek EA because it would not achieve the purpose and need for taking action and would be inconsistent with the park's 2008 GMP which directs that the Boulder Creek Trail would be rehabilitated to provide access for hikers and stock users. A paved asphalt multi-use trail that allows hiking, bicycling and stock use is being constructed in the park as an extension of the Olympic Discovery Trail near Lake Crescent. This new six mile long trail is under construction and will be open to public use in 2010.

Remove the Trail and Rehabilitate the area to natural conditions

The National Park Service received a comment suggesting that Olympic National Park consider removing the existing trail and rehabilitating the area to natural conditions. This alternative was considered, but is not retained for full analysis in the Boulder Creek EA because it would not meet the purpose and need for taking action, and it would be inconsistent with the park's 2008 GMP which directs that the Boulder Creek Trail would be rehabilitated to provide access for hikers and horseback riders.

Establish Limits on Overnight Use, Ban Open Campfires, and Require Use of Food Canisters for Food Storage

The National Park Service considered changing the management approach of the Boulder Creek Campground to be more consistent with management of high visitor use areas in the park's

backcountry. It was determined that these decisions would be more appropriately made through the park's upcoming Wilderness Management Plan.

Fracture asphalt and till into the soil of the trail, rather than going to the expense of asphalt removal

The National Park Service considered tilling the asphalt into the soil of the trail, however it was determined that this would be inconsistent with the park's approach to managing backcountry trails, and would potentially contribute to the leaching of contaminants from the asphalt into the soil and adjacent streams. This was determined to be an unacceptable impact that would be inconsistent with the purpose and need for taking action.

Remove asphalt using hand tools only

The National Park Service considered removing the 2.2 miles of asphalt using hand tools only. Although feasible, it was determined that the risk of injury to park staff and volunteers would be unacceptably high due to the strenuous nature of this activity, the distance from the trail to the parking area where the asphalt would be loaded into trucks for removal, and the large volume of asphalt (approximately 150,000 square feet) that needs to be removed.

The Environmentally Preferred Alternative

In accordance with DO-12, the NPS is required to identify the "environmentally preferred alternative" in all environmental documents, including EAs. According to CEQ guidelines, the environmentally preferable alternative is the alternative that will promote the national environmental policy as expressed in Section 101 of NEPA, which considers:

1. Fulfilling the responsibilities of each generation as trustee of the environment for succeeding generations;
2. Assuring for all generations safe, healthful, productive, and esthetically and culturally pleasing surroundings;
3. Attaining the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences;
4. Preserving important historic, cultural and natural aspects of our national heritage and maintaining, wherever possible, an environment that supports diversity and variety of individual choice;
5. Achieving a balance between population and resource use that will permit high standards of living and a wide sharing of life's amenities; and

6. Enhancing the quality of renewable resources and approaching the maximum attainable recycling of depletable resources (NEPA, section 101).

The following paragraphs compare how well each of the alternatives considered meet criteria 1 – 4 described above. The alternatives considered in this document do not measurably vary in how well they meet criteria 5 and 6.

1) Fulfilling the responsibilities of each generation as trustee of the environment for succeeding generations;

- Alternative 1 is least successful in meeting this objective due to continued risk of contaminants leaching from the degraded asphalt trail into the adjacent environment, and the continued impacts associated with the kinds and amounts of visitor use occurring in the Boulder Creek Campground.
- Alternatives 2,3, and 4 all result in improvements over existing conditions by removing asphalt, minimizing the potential for impacts associated with the kinds and amounts of visitor use in the campground, and the extensive revegetation efforts proposed along the length of the trail and in the campground and former campground parking lot areas.

2) Assuring for all generations safe, healthful, productive, and esthetically and culturally pleasing surroundings;

- Alternative 1 is least successful in meeting this objective due to the lack of safe stream crossings at Cougar and Crystal Creeks, the unacceptable appearance of the degrading asphalt trail surface, and the areas of compacted soil and vegetation loss in the campground due to trampling and extensive collection of wood for campfires.
- Alternative 2 provides safe and healthful access for pedestrians and stock users during the low water season by providing footlogs and stock fords at stream crossings. The lack of visible infrastructure would likely be seen by some visitors as having the least scenic impacts. The retention of campsites in the east (CCC) loop of the campground would help preserve the historic use and layout of the area.
- Alternative 3 would provide safe and healthful access for pedestrians and stock users during a slightly longer season due to the presence of a bridge at Crystal Creek, which would provide safe crossing during higher stream levels than Alternatives 1 or 2. Although some visitors may not enjoy seeing a bridge along the trail, others would appreciate the ease of access and view from the bridge. Additionally, this alternative provides less dense camping due to the dispersal of campsites between the east and mid loops. However, the lower number of campsites retained in the east (CCC) loop may not preserve the historic use and layout to the extent of Alternatives 2 and 4.
- Alternative 4 provides safe and healthful access for pedestrians and stock users over the longest period of time due to the additional clearance over Cougar and Crystal Creeks due to the placement of bridges in these locations. Although some visitors

may not enjoy seeing bridges in these locations, others would appreciate the ease of access and view from the bridges. This alternative retains the highest number of campsites in the east and mid loops, and also provides a new campsite for visitors traveling with pack stock. The use of the east (CCC) loop would help preserve the historic use and layout of the east (CCC) loop of the campground.

3) Attaining the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences;

- Alternative 1 is least successful in meeting this objective due to the lack of safe stream crossings at Cougar and Crystal Creeks, the lack of access for stock users beyond Crystal Creek, and the unacceptable appearance of the degrading asphalt trail surface, and the areas of compacted soil and vegetation loss in the campground due to trampling and extensive collection of wood for campfires.
- Alternative 2 provides safe and healthful access for pedestrians and stock users during the low water season by providing footlogs and stock fords at stream crossings. However, this alternative requires extensive modification of soils and native bedrock at Crystal Creek to bring the trail down to the level of the creek for stock users. This alternative would also require replacement of the footlogs periodically as they are destroyed by high water events or degrade in place over time. This would require the transport of new footlogs, most likely via helicopter, on a recurring basis. Additionally, the maintenance of stock fords at three stream crossing locations would require extensive annual maintenance to keep these corridors clear for safe stock use.
- Alternative 3 would provide safe and healthful access for pedestrians and stock users during a slightly longer season due to the presence of a bridge at Crystal Creek, which would provide safe crossing during higher stream levels than Alternatives 1 or 2. However, alternative 3 would also require blasting and recontouring of soils and bedrock at Crystal Creek to construct a trail down to the elevation of the 80' long bridge.
- Alternative 4 provides safe and healthful access for pedestrians and stock users over the longest period of time due to the additional clearance over Cougar and Crystal Creeks due to the placement of bridges in these locations. This alternative results in the least soil disturbance, as the stream crossings would be placed at the same level as the trail and would not require extensive disturbance to soils and bedrock. The noise impacts during construction would be least under this alternative and the amount of annual and ongoing maintenance would be least under this alternative.

4) Preserving important historic, cultural and natural aspects of our national heritage and maintaining, wherever possible, an environment that supports diversity and variety of individual choice;

- Alternative 1 is least successful in meeting this objective due to continuing impacts to natural and cultural resources in the campground due to the adverse effects of current visitor use patterns. This includes compacted soils and lack of vegetation in many areas. Additionally, the presence of the asphalt trail, failed culverts, and fill materials

throughout the project site is adversely affecting surface hydrology, resulting in increased erosion in many areas and resulting in unnatural vegetation patterns in others.

- Alternative 2 preserves historic features by retaining use patterns in the east (CCC) loop of the campground, and in actively removing abandoned infrastructure and revegetating the trail corridor, campground, and former campground parking lot. However, this alternative does require the most disturbance to soil and bedrock due to the need to blast and excavate materials from the Crystal Creek stream crossing to allow installation of a footlog and stock ford, and also to excavate buried utilities from the campground.
- Alternative 3 does not preserve historic features in the campground as well as alternatives 2 and 4, due to the altered layout of campsites and lower density development pattern in the east loop. This alternative, like Alternative 2, would result in improved natural conditions due to the removal of asphalt from the trail and the active revegetation of the trail corridor, campground and former campground parking lot. However, this alternative still requires soil disturbance and blasting at Crystal Creek to allow for construction of a trail that meets the elevation of the 80' long bridge.
- Alternative 4 preserves historic features by retaining use patterns in the east (CCC) loop of the campground. This alternative also avoids impacts to soils and bedrock due to the ability to connect the trail with a 150' long bridge over Crystal Creek without the need for blasting or extensive removal of soil and fill materials. This alternative results in the active revegetation of the trail corridor, campground, and former campground parking lot; and also provides enhanced day use and camping opportunities for visitors traveling with pack stock.

Although all Action Alternatives meet the criteria listed above to varying degrees, it was determined that Alternative 4 is the Environmentally Preferred Alternative. This alternative provides safe access to pedestrians and stock users during the longest period of time with the least amount of impact to natural and cultural resources during construction and through ongoing maintenance. Each of the action alternatives results in the removal of asphalt from the trail, restoration of natural drainage patterns in the campground, and active revegetation outside of designated visitor use areas. Alternative 4 reduces the number of campsites from current levels, but provides adequate facilities to support both backpackers and people camping with pack stock. This determination was upheld during an interdisciplinary workshop that found Alternative 4 was superior to the other alternatives in terms of providing for visitor safety, sustainability, natural and cultural resource protection, and visitor experience.

Table 21: Summary Table of Environmental Consequences.

Factor	Alt 1: No action	Alt 2: Minimize Built Environment	Alt 3: Provide Moderate Visitor Services	Alt 4: Provide Enhanced Visitor Services (Preferred)
Trailhead (construction Aug 6 - end season)				
Vehicle Turnaround	N/A	80' diameter paved asphalt; 5,100 ft²asphalt/4,750 ft² new disturbed area	same as alt 2	same as alt 2
Accommodates stock trailers	No	yes	same as alt 2	same as alt 2
Surface material and estimated extent of surface cover and vegetation clearance	7,020 ft² asphalt/ 5,300 ft² gravel	22,000 ft² gravel/15,500 ft² new disturbed area	16,700 ft² permeable/5,300 ft² gravel/ 15,500 ft² new disturbed area	23,000 ft² asphalt/5,300 ft² gravel/ 21,000 ft² new disturbed area
# parking spaces	No delineated parking, between 15-55 park on gravel road shoulders	approx 36 vehicles/ gravel	approx 36 vehicles/21 paved, 15 gravel	Up to 45 spaces (avoiding lg trees/arch site)
Stock Staging Area	located approx 1/8 east of parking lot	same as alt 1	same as alt 1	new staging area near trailhead
Trail (construction east of Crystal Creek Aug 6 - end season, west of Crystal Creek Sept 16 - end season)				
Surface	eroding asphalt	natural tread and/or gravel	same as alt 2	same as alt 2
Revegetation	natural recovery only	active revegetation	same as alt 2	same as alt 2
Trail width	varies, typical 14'	18 - 24"	24 - 30"	24" - 30"
Trail clearance	12-20 feet	6' wide X 8' high	8' wide X 10' high	8' wide X 10' high
Asphalt removal	no removal	remove all asphalt (155,000 ft²) 180,000 ft² footprint	same as alt 2	remove visible asphalt only (148,000 ft²), not under slumps; 180,000 ft² footprint
Culvert removal	no removal	remove all culverts	same as alt 2	same as alt 2
Temporary large vehicle turnaround	N/A	temporary during construction (2,200 ft² disturbed area)	same as alt 2	same as alt 2
Trail stabilization method	N/A	grade areas where culverts removed	same as alt 2	same as alt 2
Temporary Stream Crossings (Hell & Cougar)	N/A	install spanner bridges at Hell and Cougar Creeks with wood decking to support project work during asphalt removal and revegetation	same as alt 2	same as alt 2
Long-term Cougar Creek Crossing	natural fallen log/stock ford	40' footlog/stock ford	same as alt 2	50' long steel bridge (6' max width)
Long-term Hell Creek Crossing	collapsed wooden culvert	40' footlog/stock ford	same as alt 2	same as alt 2
Long-term Crystal Creek Crossing	35' footlog/no stock ford	50' footlog/stock ford	80' long steel bridge (6' max width)	150' long steel bridge (12' max width)

Factor	Alt 1: No action	Alt 2: Minimize Built Environment	Alt 3: Provide Moderate Visitor Services	Alt 4: Provide Enhanced Visitor Services (Preferred)
Trail (construction east of Crystal Creek Aug 6 - end season, west of Crystal Creek Sept 16 - end season)				
Crystal Creek (culvert/headwall)	crushed partially exposed 60" cmp/concrete headwall remain	remove culvert & concrete headwall	same as alt 2	same as alt 2
Former road to abandoned trash dump	remain as is	block entry, revegetate (60 ft² disturbed area)	same as alt 2	same as alt 2
Abandoned trash dump east of campground	remain in place	evaluate dump site per law & policy	same as alt 2	same as alt 2
Campground Infrastructure (construction from Sept 16 to end of season for heavy equipment/helicopter use)				
Revegetation	natural recovery only	active revegetation	same as alt 2	same as alt 2
Campfire Ban	Continue to allow campfires	Ban campfires and wood collection to allow for revegetation efforts to be successful	same as alt 2	same as alt 2
Former campground parking lot	remain as is (compacted soil)	Delineate trail to restroom and hot springs trail, major recontouring and revegetation	same as Alt 2 and minor recontouring and revegetation	same as alt 3
Abandoned underground utilities	leave in place	remove underground utilities (10,000 ft² disturbed area)	leave buried utilities in place (2,000 ft² disturbed area)	leave buried utilities in place (2,000 ft² disturbed area)
Existing culverts between campground and former parking area	leave in place	remove all culverts	same as alt 2	same as alt 2
Former road through campground	natural recovery only	convert to trail in remaining visitor use areas	same as alt 2	same as alt 2
Existing culverts and concrete foundations from old restrooms in campground	leave in place	remove culverts and concrete/restore natural grade	same as alt 2	same as alt 2
Toilet facilities	one pit toilet in campground, one pit toilet in old parking lot area	same as alt 1	same as alt 1	Retain existing and construct additional toilet if necessary, replace/upgrade existing as needed
Campground Loops Retained	leave as is (remaining east, mid, west loops)	east loop only	east and mid loop	east and mid loop
# of campsites	~ 30 campsites	7 sites in east (CCC) loop	5 sites in east (CCC) loop, 3 sites in mid-loop	Up to 7 sites in east (CCC) loop, and up to 4 sites in mid-loop
Group Campsites	none designated	2 group sites	same as alt 2	Up to 3 group sites
Stock Campsites	none designated	same as alt 1	same as alt 1	one stock campsite designated in former campground parking area
Stock Hitching Post	none provided	none provided	day use hitching post in old parking lot area (wood)	hitching posts: day use in old parking lot area (metal or wood), & campsite (metal or wood)