

Mount Rainier National Park

FINDING OF NO SIGNIFICANT IMPACT Carbon River Wonderland Trail Reroute Pierce County, Washington

November 2008

This finding of no significant impact (FONSI) and the environmental assessment (EA) constitute the record of the environmental impact analysis and decision-making process for the Carbon River Wonderland Trail reroute project. The National Park Service (NPS) will implement Alternative 3: Reroute Trail to Higher Ground, which was identified in the Mount Rainier National Park EA as the management preferred alternative and the environmentally preferred alternative.

Purpose and Need for Federal Action

The National Park Service plans to reroute to higher ground a flood-damaged section of the Wonderland Trail in the Carbon River watershed within Mount Rainier National Park (MORA). The purpose of the 0.28-mile reroute is to provide safe, reliable access to the Carbon Glacier and Carbon River wilderness; to provide hiking opportunities within the historic Wonderland Trail corridor; to preserve the wilderness character; and to protect other natural and cultural resources under the park's care.

Need for Action

Mount Rainier National Park experienced severe flooding in November 2006, which resulted in extensive damage to park roads, campgrounds, and trails, including a segment of the historic Wonderland Trail (WT) in the Carbon River Valley. Approximately 0.4 miles of the WT was washed away two miles east of the Ipsut Creek Campground. The WT is a contributing element of the MORA National Historic Landmark District (NHLD). The 93-mile trail encircles Mount Rainier and is traversed by thousands each year, including those who hike it in sections, one weekend at a time. Before the trail was heavily damaged by the November 2006 flood, the Carbon River segment of the WT also served as a popular route to the terminus of the Carbon Glacier and was a part of the Mother Mountain loop trail.

Route conditions along the damaged segment of trail are unsafe for visitors and park staff because of missing trail tread, glacial river crossings, and steep terrain. Currently, trail users are being rerouted via a spur trail to the Northern Loop Trail, which parallels the damaged section of the WT on the east side of the Carbon River. However, the foot logs that provide passage over the Carbon River via this spur trail generally wash out at least once per year.

The park's approved Wilderness Management Plan (MORA 1989) identifies the desired resource condition for the zone the Carbon River WT traverses. The facilities and

activities that are desired in this zone are designated trails, camps, and other wilderness-appropriate structures, with activities oriented toward hiking.

Objectives in Taking Action

The objectives for this project include the following:

1. Provide a trail that is less susceptible to damage from flooding and geologic hazards in the Carbon River Valley and is a safe visitor experience for users of the WT.
2. Protect natural and cultural resources under the park's care and minimize adverse environmental impacts.
3. Maintain the historic alignment and character of the WT as closely as possible.
4. Provide a sustainable trail design to minimize annual maintenance repairs.

Range of Alternatives Considered

The environmental assessment analyzed three alternatives. Under Alternative 1, the no action alternative, hikers would bypass the damaged section of the WT by using the Northern Loop Trail (NLT). The NLT would not be upgraded to Wonderland Trail standards, and the spur trail and foot logs used to access the NLT would be subject to periodic flooding and would require frequent repair or replacement. Under Alternative 2, the damaged segment of trail would be abandoned. The WT would be officially rerouted to the NLT, which would be widened and upgraded to meet WT standards, resulting in a durable trail requiring minimal maintenance. The spur trail and foot logs used to access the NLT would be subject to periodic flooding and would require frequent repair or replacement. Under Alternative 3, the management preferred alternative, the damaged segment of trail would be rerouted to higher ground above the floodplain of the Carbon River. The rerouted segment would be built to WT standards and would require minimal maintenance.

Two additional alternatives were considered but dismissed from further review. One of these alternatives explored the feasibility of reconstructing the damaged section of trail in the same location and alignment. The other alternative explored the feasibility of constructing a permanent bridge over the Carbon River to replace the existing foot log crossing along the spur trail to the NLT.

Selected Alternative

The Preferred Alternative, described in the environmental assessment (EA) as Alternative 3: Reroute Trail to Higher Ground, is selected for implementation. Alternative 3 is also identified as the Environmentally Preferred Alternative in the EA. The selected action is the same as that described in the EA, and no substantive changes have been incorporated into the FONSI as a result of public comments.

General Description

Under the selected alternative, about 1,500 feet (0.28 miles) of new trail tread will be built on higher ground just above the washed out area. The rerouted section will tie into the undamaged segments of the trail. The new route will pass through forest and across open rock slopes and bedrock cliffs, beginning at an elevation of approximately 2,840 feet and ending at approximately 3,200 feet. The project will occur over a two-year

period during the summer and fall seasons. Actual construction will take six months to complete, depending on weather and work progress.

Trail Standards

The new trail segment will be constructed to WT standards, including a 36- to 60-inch wide tread at a 5 to 15 percent grade. Backsloping will be incorporated into the new trail, and drain logs or drain dips will be used where needed to facilitate water movement across the trail. Tread will be graded into mineral soil. Organic soil, duff, and woody debris will be dispersed into the surrounding forest, away from streams or wet areas. Explosives will be used to cut approximately 500 feet of suitable tread into the bedrock cliff face. The fractured rock material created by the blasting will likely vary from two inches to two feet in diameter. This rock material may be incorporated into the trail or side-cast as scree above/below the trail.

The trail will be constructed to high standards to minimize the need for future repairs. Minor trail maintenance, such as clearing downed woody debris, will occur at least annually. Major trail maintenance due to storm, avalanche, or other damage would be expected to occur approximately every ten years.

Revegetation Measures

Where feasible, vegetation will be salvaged and replanted in ecologically appropriate habitat. Because large shrubs and trees are difficult to salvage effectively, emphasis for salvage will be on herbaceous vegetation and small shrubs and trees.

Tools, Equipment, and Materials

Tools and equipment needed to construct the trail through the forested area (digging through roots and duff to mineral soil, clearing downed logs, etc.) will likely include axes, rockbars, shovels, chain saws, pulaskis, and McCleods. Tools and equipment necessary to construct the trail through the bedrock cliff (crossing approximately 500 feet of bedrock) will include an air compressor, pneumatic rock drill, and explosives (ammonium nitrate packaged emulsion). Because the drilling equipment is too heavy to transport by people or stock, a type-III helicopter (Bell Jet Ranger or similar) will be used to fly the air compressor, hoses, and pneumatic rock drill to and from the site. Tread materials will be available on site as a product of bedrock removal and the construction of the trail backslope. Tread materials will be transported within the construction area using non-mechanized equipment, such as wheel barrows or high line.

Chain Saw and Helicopter Use and Blasting Operations

The proposed work will involve chain saw, helicopter, and blasting operations in wilderness in the park. As noted in the environmental assessment, these operations met the wilderness minimum requirement and were deemed the "wilderness minimum tools" required to achieve project objectives. That is, the action is (1) necessary for administration of the area because repairing the trail provides appropriate access to wilderness and (2) will not cause a significant adverse impact on wilderness resources and character because the impacts are no more than moderate over the short term and minor over the long term. Chain saw use is the minimum tool needed for removal of standing and downed trees due to the number and size of the trees and the difficulty of using crosscut saws on steep slopes where positioning a two-person saw team is unsafe. Expected duration of chain saw use is a maximum of two hours per day for approximately 30 days over an estimated six-month construction period. There are also areas of bedrock along the proposed route. The minimum tools required to cut a trail into

the bedrock slope include an air compressor, pneumatic rock drill, and explosives because no known alternative to explosives is effective on bedrock. Holes will be drilled in the bedrock with a pneumatic rock drill and air compressor because use of hand drills would significantly increase project time and hazards to workers. Drilling would take place for a maximum of three hours a day, and there would be two to six blasting shots per week. Overall, there would be an estimated total of 100 intermittent blasts conducted over a period of six months. Drilling equipment would be flown to and from the site by helicopter. Helicopter flights, drilling, and blasting would occur only between August 6 and early November during the two years of construction to minimize effects on sensitive bird species during the breeding and nesting season.

How the Selected Alternative Meets Project Objectives

Of the alternatives considered, the selected alternative best meets the project objectives, as described below.

Provide a trail that is less susceptible to damage from flooding and geologic hazards in the Carbon River Valley and is a safe visitor experience for users of the WT. The project fully meets this objective. The new reroute will be above the floodplain, offering a relatively safe and reliable route for hikers. The rerouted trail segment will be moved from a Case III Debris Flow Zone (1-100 year occurrence time interval) to a Case I Debris Flow Zone (500-1000 year occurrence time interval).

Protect natural and cultural resources under the park's care and minimize adverse environmental impacts. Of the alternatives considered, the selected alternative best meets this objective. The new reroute will be above the floodplain and will not be subject to repeated flooding, thus reducing the need for future repairs and related environmental impacts. The reroute will disturb 0.2 acre of soil and vegetation, and intermittent blasting will temporarily disturb wildlife in the area. However, construction methods will minimize overall impacts to natural and cultural resources.

Maintain the historic alignment and character of the WT as closely as possible. The project fully meets this objective. The selected alternative will retain about 0.5 mile of undamaged WT that would otherwise be abandoned, and the 0.28 mile reroute section will be built just upslope of the original alignment that was destroyed by flooding. The new segment of trail will be constructed to WT standards.

Provide a sustainable trail design to minimize annual maintenance repairs. The project fully meets this objective. The trail will be designed to minimize erosion. Trail structures and tread will be durable and suitable to the amount and type of use.

Summary of Other Alternatives Considered and Fully Analyzed in the EA

Alternative 1, the No Action Alternative would entail abandoning approximately 0.8 mile of the Wonderland Trail. Under Alternative 1, hikers accessing the WT from Ipsut Creek would continue to bypass the damaged section by crossing over to the Northern Loop Trail (NLT) via an existing spur trail. The route would cross the Carbon River via foot logs about one mile north of the suspension bridge crossing, would follow the NLT along the east side of the Carbon River, and would then rejoin the WT at the Carbon River suspension bridge just below the Carbon Glacier. The NLT would be used to

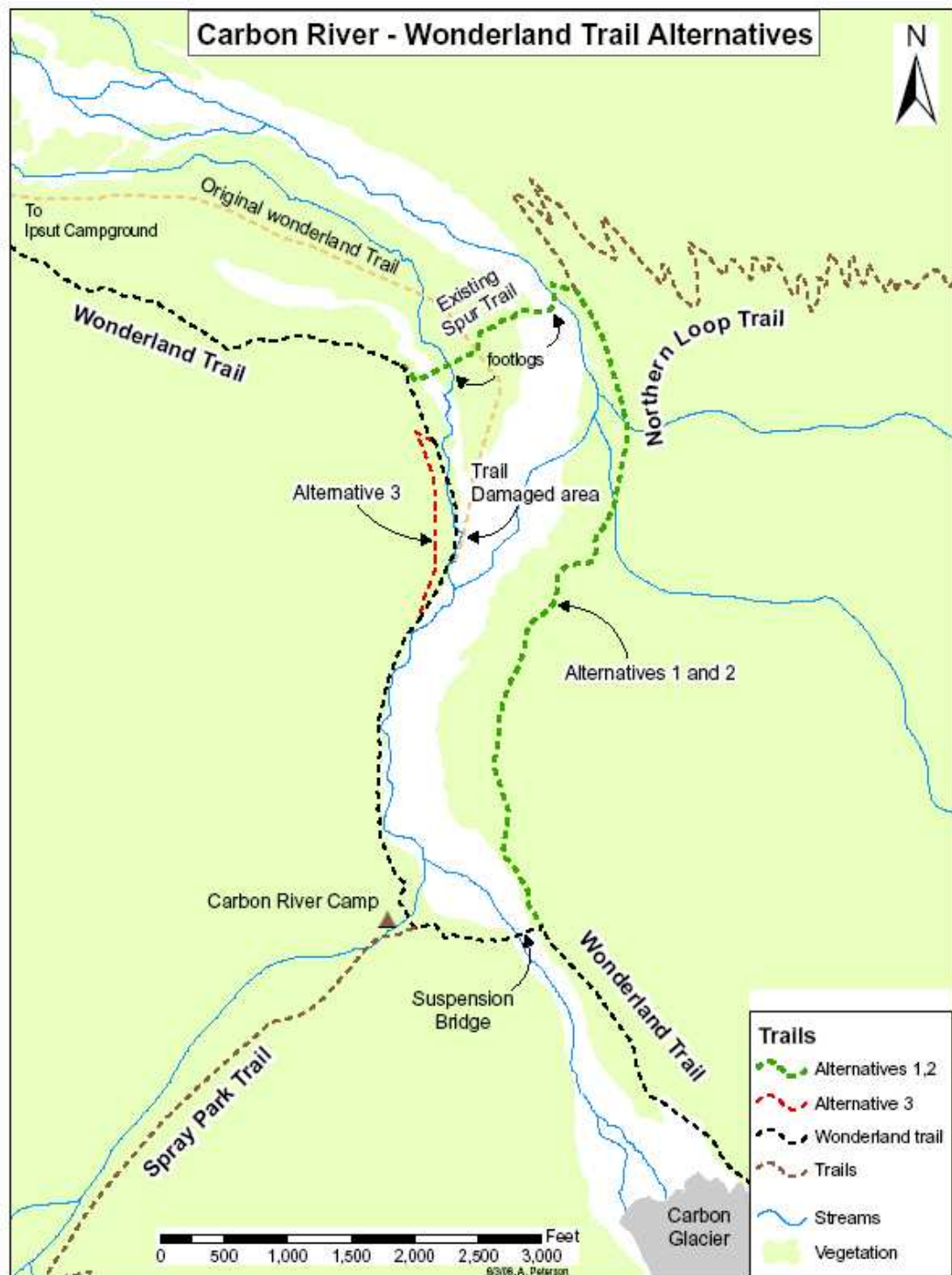


Figure 1: Location of Alternatives 1-3

access the Carbon Glacier area and points to the east on the WT and would also be used to complete the circuit of the Mother Mountain loop.

The NLT, from the spur trail junction south to the Carbon River suspension bridge, would not be upgraded to WT standards, and no improvements would be implemented other than those necessary for routine maintenance. Since the spur trail crosses unstable braided channels and river bars across the valley floor, sections of the spur trail would need to be annually realigned and delineated with river rock. These transitory, flood-prone areas of trail would be constructed to the minimum standard necessary to provide a relatively smooth and clear path for hikers, but there would be no attempt to provide a uniform grade or tread width. The spur access to the NLT under this alternative would continue to be vulnerable to flooding and geological hazards and pose potential serious risks to public and employee safety. This alternative does not meet all the objectives of the project and was not preferred for implementation because it would cause long-term resource impacts and safety issues.

Alternative 2, Abandon the Damaged Segment of Trail and Reroute the WT to the NLT would entail abandoning approximately 0.8 mile of the WT. Similar to Alternative 1, hikers accessing the WT from Ipsut Creek would continue to bypass the damaged section by crossing over to the NLT via an existing spur trail. The route would cross the Carbon River at the lower crossing of the Carbon River via foot logs, would follow the NLT along the east side of the Carbon River, and would then rejoin the WT at the Carbon River suspension bridge just below the Carbon Glacier. The NLT would be used to access the Carbon Glacier area and points to the east on the WT and would also be used to complete the circuit of the Mother Mountain loop.

The segment of the NLT that the WT would be rerouted onto does not currently meet WT standards (as defined in the National Historic Landmark District designation). Under Alternative 2, this 0.7-mile segment would be upgraded to meet WT NHLD standards (including a 24- to 36-inch-wide tread at a 5 to 15 percent grade) and would officially become part of the WT. The trail crew would improve the tread, widen the trail, and remove downed logs. Trail widening activities would result in removal of soil duff and organic layers as well as approximately 20 trees (all less than 20 inches in diameter) and 0.5 acre of vegetation to reach mineral soil. This method of construction would create a reasonably sustainable trail, and the improved trail section, which is located above the floodplain, would require minimal routine maintenance. The spur access to the NLT under this alternative would continue to be vulnerable to flooding and geological hazards and pose potential serious risks to public and employee safety. This alternative does not meet all the objectives of the project and was not preferred for implementation because it would cause long-term resource impacts and safety issues.

Alternatives Considered But Dismissed From Further Review

During the early scoping process, the park's interdisciplinary planning team considered a range of options suggested by park staff and the public to address the trail damage. In addition to the three alternatives considered for full analysis in the EA, two alternatives were discussed but dismissed from further review. The following options had major logistical or other constraints that would keep them from fully meeting the purpose and objectives of the project. These alternatives were therefore dismissed for the reasons described below.

Alternative 4: Reconstruct the Damaged Trail Section in the Same Location and Alignment

Under this alternative, approximately 2,000 feet (0.4 mile) of new trail tread would be reconstructed in approximately the same location the trail occupied before the November 2006 flood. The Carbon River is currently flowing through this segment. In order to reconstruct the trail, hundreds of cubic yards of fill materials would need to be imported by helicopter to the project area. Reconstruction would take place in the streambed at the base of steep eroded slopes and bedrock cliffs. It is likely the trail would need to be reconstructed periodically due to expected future flood events. Frequent maintenance or reconstruction over the long term would not meet the park's goal for a sustainable trail; hiker exposure to geologic hazards and flooding would continue; annual or periodic maintenance and/or reconstruction would likely require importing large amounts of materials and repeated helicopter use in wilderness; and frequent reconstruction over the long term could significantly impact wilderness characteristics and values in this area of the park and could have cumulative impacts to other natural and cultural resources along the trail corridor. Therefore, this alternative was not evaluated further in the EA.

Alternative 5: Construct a Permanent Bridge Over the Carbon River Lower Crossing to Replace the Foot Log Crossings

Under this alternative, a permanent structure (e.g., suspension bridge) would be built to span the Carbon River valley floor in the location of the current foot log crossing. The bridge would be above the floodplain and would eliminate the need to frequently repair the spur trail and replace foot logs. Like alternatives 1 and 2, the WT would be rerouted to the NLT to bypass the damaged section of the WT. In order to anchor the bridge footings in appropriate substrate and to span the dynamic braided river system in this location, the bridge would need to be approximately 500 to 700 feet long. The park's two existing wilderness trail suspension bridges are about 200 feet long and required extensive effort and cost to build, and these two bridges were already in place at the time of wilderness designation. This alternative would be technically and economically infeasible because of the length of span required. Installation of the bridge would require a substantial construction effort, including extensive helicopter use, and it would have greater adverse impacts on sensitive resources, including wilderness resources and values, than other viable alternatives. Therefore, this alternative was not evaluated further in the EA.

Environmentally Preferred Alternative

In accordance with Director's Order 12, *Conservation Planning, Environmental Impact Analysis, and Decision-making* and Council on Environmental Quality (CEQ) requirements, the NPS is required to identify the "environmentally preferred alternative" in all environmental documents, including Environmental Assessments. The environmentally preferred alternative is determined by applying the criteria suggested in the National Environmental Policy Act (NEPA) of 1969, which is guided by the CEQ. The CEQ (46 FR 18026-46 FR 18038) provides direction that the "environmentally preferable alternative is the alternative that would promote the national environmental policy as expressed in NEPA's Section 101," including the criteria to

- 1) Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;
- 2) Assure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings;

- 3) Attain the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences;
- 4) Preserve important historic, cultural and natural aspects of our national heritage and maintain, wherever possible, an environment that supports diversity and variety of individual choice;
- 5) Achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities; and
- 6) Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources (NEPA Section 101(b)).

Generally, these criteria mean the environmentally preferable alternative is the alternative that causes the least damage to the biological and physical environment and best protects, preserves, and enhances historic, cultural, and natural resources (46 FR 18026-46 FR 18038).

On balance, the selected alternative (Alternative 3) best meets the criteria for the environmentally preferred alternative because it provides long-term cultural and natural resource protection and preservation and long-term benefits to visitor safety and experience. Compared to Alternatives 1 and 2, the selected alternative best meets criteria 1 through 4 since the reroute to higher ground minimizes the need for future major repairs and the associated adverse environmental impacts of those repairs; provides long-term safe and reliable access because it removes the trail from the floodplain and does not rely on the foot log crossing of the flood-prone Carbon River; and best preserves the trail alignment and character of the historic Wonderland Trail. Although the selected alternative creates short-term noise impacts from blasting and short- and long-term local impacts to vegetation and soils in the footprint of the reroute, these impacts are not likely to adversely affect species or habitat on a larger spatial or temporal scale. Alternatives 1 and 2 may avoid some of the short-term impacts associated with blasting, but over the long term, repeated repairs to the section of trail within the floodplain would result in greater adverse effects and degradation of floodplains and bull trout streams than Alternative 3. All three alternatives generally meet criterion 5, and criterion 6 is not applicable to this project.

Alternatives 1 and 2 do not meet all the criteria for the environmentally preferred alternative because they fail to provide long-term cultural and natural resource protection and preservation and they incur greater risks to visitor health and safety than Alternative 3.

Why the Selected Plan Will Not Have a Significant Effect on the Human Environment

As documented in the Environmental Assessment, the National Park Service has determined that the selected alternative can be implemented with no significant adverse effects on air quality, geology and exposure to geologic hazards, soil and vegetation, water resources, wetlands and floodplains, wildlife, special status species and designated critical habitat, prehistoric and historic archeology, ethnographic resources, cultural resources, designated wilderness, soundscapes, visitor experience, and park operations and safety. The National Environmental Policy Act requires that decision-making regarding the analysis of significance be based on analysis of the proposed action with respect to the following factors:

Degree of beneficial and adverse effects: The selected alternative has a wide range of beneficial and adverse effects. These short- and long-term negligible to moderate effects would not reach the level of significance triggering an EIS.

- *Air quality:* The selected alternative may create short-term minor effects on local air quality from emissions created by work vehicles traveling to and from the trailhead and from the use of chain saws and blasting for tree felling, log relocation, and creation of trail tread.
- *Geologic hazards/geology:* Under this alternative, the trail segment will be removed from the floodplain and high-occurrence debris flow zone, reducing exposure to geologic hazards. Rock blasting to create a 4-foot-wide trail bench along 500 feet of bedrock slope will cause localized minor long-term adverse impacts on geologic resources.
- *Vegetation and soils:* The implementation of the selected action will disturb approximately 0.2 acre of ground, resulting in localized minor to moderate impacts to vegetation and soils. Excavation to mineral soil will be required to create 1,500 feet of new trail tread. This will result in mixing of soil layers and an area initially subject to erosion prior to plant re-establishment. Short-term and long-term minor to moderate adverse impacts to vegetation will occur in the immediate project area. No threatened or endangered plants were detected during surveys of the reroute area, and the likelihood of presence is negligible. Approximately 10 trees will be removed during construction of the reroute, all less than 20 inches in diameter. At least one exotic species, foxglove (*Digitalis purpurea*), is found near the area of the proposed construction, but none was found along the proposed reroute, and measures to minimize the spread of exotic species will be implemented.
- *Water resources:* There may be short-term negligible to minor impacts on water resources during construction as a result of small-charge blasting of bedrock. A total of 100 shots during the six months of construction is expected. Following each blast, a small amount of debris or fly rock may reach the Carbon River, which is 50 to 100 feet below the proposed blasting site. Once the project is complete there would be negligible effects on water resources.
- *Floodplains:* The selected alternative will reroute the trail above the floodplain, creating short-term negligible adverse effects during construction and minor beneficial effects over the long term.
- *Wetlands:* No wetlands occur along the reroute; consequently there would be negligible effects on wetlands.
- *Wildlife:* There will be long-term minor and short-term moderate impacts to individual wildlife in the immediate project area. Wildlife in the area may be temporarily disrupted or displaced by the noise and disturbance from chain saws, blasting, helicopter flights, and increased human presence during construction. Wildlife will likely return to the area following construction activities. Forest and habitat fragmentation, habitat loss (about 0.2 acre), noise, and other direct disturbances associated with construction, maintenance, and use of the trail will create minor to moderate adverse impacts on wildlife in the local area.
- *Special status species:* The effects of the project on special status species (including sensitive species not covered by the Endangered Species Act) would be localized and negligible to moderate. The U.S. Fish and Wildlife Service (FWS) and the National Marine Fisheries Service (NMFS) concurred with the

park that the project may affect, but is not likely to adversely affect, five federally listed threatened species (northern spotted owl, marbled murrelet, bull trout, Chinook salmon, and steelhead) and bull trout critical habitat. Consultation with FWS concluded on October 14, 2008. Consultation with NMFS concluded on October 23, 2008. Several special status species that are not protected by the Endangered Species Act may be affected by the project. Twelve state or federal species of concern may be affected, but are not likely to be adversely affected, and four other species of concern (federal and/or state) that may be present near the construction area may be adversely affected.

- *Cultural resources:* Archeological surveys found no evidence of prehistoric archeological resources along the proposed reroute of the WT. There will be negligible effects on archeological and ethnographic resources as a result of the selected action. The WT is a contributing element of the Mount Rainier National Park Historic Landmark District (NHL). WT design features will be incorporated into the new section of trail. Since this alternative would retain cultural resource values, including the character-defining features of the WT, for the purposes of Section 106 of the National Historic Preservation Act, the determination of effect is *no adverse effect*. The State Historic Preservation Officer (SHPO) concurred with the park's determination of no adverse effect on August 19, 2008.
- *Wilderness:* A new 0.28-mile section of trail will be constructed in designated wilderness, replacing an equal length flood-destroyed trail segment. Construction of the rerouted trail will create long-term minor effects (beneficial and adverse) and short-term localized moderate adverse effects on wilderness values. The trail will restore long-established visitor access to wilderness and a primitive and unconfined type of recreation, a minor beneficial effect similar to conditions existing before the flood. Removal of 0.2 acre of vegetation and alteration of bedrock will create localized minor adverse impacts on natural conditions in wilderness. During the six-month construction period, two to four helicopter flights and intermittent power tool use and blasting will create short-term moderate adverse impacts on wilderness character and outstanding opportunities for solitude in the project area, but these effects will be temporary.
- *Natural soundscapes:* The selected alternative will create short-term moderate adverse impacts on soundscapes related to power tool use, brief helicopter use, and periodic drilling and blasting during the six-month construction period.
- *Visitor experience, park operations, and safety:* Construction of a safe and reliable trail from Ipsut Creek to Carbon Glacier will provide long-term moderate benefits to visitor experience, park operations, and safety in the local area. During the construction period, construction activities will cause short-term minor adverse impacts to trail users. Periodically during construction, the use of chain saws and explosives will create noise louder than the ambient noise that visitors would normally experience when traveling through the area.

Degree of effect on public health or safety: The selected alternative will have a moderately beneficial long-term effect on public safety by providing a safe and reliable trail above the floodplain. During hazardous construction activities, such as blasting or tree felling, trail guards will control visitor access to prevent exposure to rock fall or other hazards.

Unique characteristics of the geographic area, such as proximity to historic or cultural resources, park lands, wetlands, wild and scenic rivers, or ecologically critical areas: The

selected alternative will not have an adverse effect on park lands, wetlands, wild and scenic rivers, ecologically critical areas, or the historic or cultural resources in the Carbon River area.

Degree to which effects on the quality of the human environment are likely to be highly controversial: The project and impact analysis have not been highly controversial. Comments received by state and federal agencies and the public during consultation and public review did not raise highly controversial issues. (See *Public Engagement* section below for a summary of comments.)

Degree to which the potential impacts are highly uncertain or involve unique or unknown risks: The effects on the human environment are known and have been described in the environmental assessment. No highly uncertain, unique, or unknown risks were identified during preparation of the Environmental Assessment or during the public comment period.

Degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration: The selected alternative neither establishes a National Park Service precedent for future actions with significant effects nor represents a decision in principle about a future consideration.

Whether the action is related to other actions with individually insignificant but cumulatively significant effects: A cumulative impact analysis was completed for each impact topic discussed in the EA. No significant cumulative effects were identified during the environmental analysis process.

Degree to which the action may adversely affect districts, sites, highways, structures or objects listed on the National Register of Historic Places or may cause the loss or destruction of significant scientific, cultural, or historic resources: The Wonderland Trail is a contributing feature to the Mount Rainier National Historic Landmark District. The State Historic Preservation Officer concurred with the park that there would be *no adverse effect* on cultural resources in a letter dated August 19, 2008. The project will not result in the loss or destruction of significant scientific, cultural, or historic resources. The rerouted segment will be located just upslope of the washed-out trail, will be built to be compatible with the character of the Wonderland Trail, and will tie into the remaining sections of the trail along the Carbon River. An archeological survey of the proposed reroute found no evidence of prehistoric archeological resources within the area of potential effect.

Degree to which the action may adversely affect an endangered or threatened species or its critical habitat: The project may affect, but is not likely to adversely affect, five federally listed species (northern spotted owl, marbled murrelet, bull trout, Chinook salmon, steelhead) and bull trout critical habitat. Consultation was conducted with the U.S. Fish and Wildlife Service (FWS) and concluded on October 14, 2008. FWS concurred with the park's determination of *may affect, not likely to adversely affect* northern spotted owl, marbled murrelet, bull trout, and bull trout critical habitat. Consultation was conducted with the NOAA National Marine Fisheries Service (NMFS) and concluded on October 23, 2008. NMFS concurred with the park's determination of *may affect, not likely to adversely affect* Chinook salmon and steelhead. Northern spotted owls have been detected approximately 0.5 miles from the project site, and there are 600 acres of occupied suitable marbled murrelet habitat within one mile of the

project site. There is no suitable marbled murrelet or northern spotted owl nesting habitat within 65 yards of the project area. As many as 10 trees less than 20 inches in diameter may be removed, but none of these trees are suitable nesting habitat for either marbled murrelets or northern spotted owls. To avoid noise disturbance to these species during critical nesting and breeding seasons, chain saws will only be used after July 15, and helicopter flights and blasting operations will only occur after August 5. Blasting and helicopter operations will not occur within 2 hours of dusk or dawn to avoid noise disturbance during the periods when murrelets are most likely to deliver food to hatchlings on the nest.

The Carbon River is rearing and foraging habitat for bull trout, Chinook salmon, and steelhead and is considered critical habitat for bull trout. Small amounts of fly rock produced during blasting may fall into the riverbed, which is approximately 50 to 100 feet below the reroute area, but the deposition of small amounts of debris is unlikely to have an adverse effect on these species.

Whether the action threatens a violation of federal, state or local environmental protection law: The selected alternative will not violate any federal, state, or local environmental protection laws.

Measures to Minimize Environmental Harm

The following table identifies the environmental effects and mitigations documented and discussed in the Environmental Assessment. All mitigation measures described in this section will be provided to responsible staff and division chiefs to be implemented. The measures identified below are designed to ensure that impacts to park natural and cultural resources, visitor use/experience, and park operations are avoided, minimized, or mitigated.

Table 1: Measures to Minimize Environmental Harm

Resource	Impact	Measures to Avoid, Minimize or Mitigate Impact	Responsible Staff
Air Quality	Helicopter use, power tool use, administrative vehicle use, and blasting operations may create short-term minor adverse impacts on local air quality.	Minimize equipment idling. Use motorized tools and equipment and helicopters only when hand tools/transportation are not feasible or are inappropriate due to safety or other concerns. Use only well maintained and properly functioning equipment.	Trail Crew Leader
Geology and Exposure to Geologic Hazards	Blasting of bedrock will cause minor long-term adverse impacts on geologic resources.	Minimize blasting of the bedrock slope to the amount needed to create a safely traversable trail tread (about 4 feet wide).	Trail Crew Leader
Vegetation and Soil	Approximately 0.2 acre of vegetation and soil will be disturbed by the project, resulting in localized minor to moderate impacts on vegetation and soils.	Clean materials and equipment prior to use in the project area to avoid the potential introduction of non-native plants or pathogens or the transfer of soil organisms between sites. Take extra care when building trail around large trees to minimize impacts	Trail Crew Leader Revegetation Specialist will lead effort to salvage and replant plants and to identify and remove any non-native

Resource	Impact	Measures to Avoid, Minimize or Mitigate Impact	Responsible Staff
		<p>to roots.</p> <p>Only remove vegetation directly in the line of the new trail corridor.</p> <p>Where practicable and ecologically appropriate, salvage vegetation from the construction site and replant in disturbed areas nearby.</p> <p>Manage blasting to minimize fly rock that could damage trees and other vegetation.</p> <p>Restore disturbed ground using appropriate best management practices, which may include planting or seeding with native vegetation, or, in the case of small or narrow treatment areas where natural reestablishment is likely to occur within 2 years, allowing native vegetation to reclaim the area naturally. Active revegetation should be emphasized in sites susceptible to erosion or invasive plants.</p> <p>Before construction begins, survey the area for foxglove and other exotics. Before and during construction, manually remove and dispose of any observed exotic plants in order to manage non-native species in the project area and to prevent them from spreading elsewhere.</p>	<p>plants.</p> <p>Chief Park Blaster will work with trail crew to minimize fly rock during blasting operations.</p>
Water Resources/ Floodplains	<p>Soil disturbance, small-charge blasting of bedrock, and other trail construction activities may deposit debris into the Carbon River and floodplain below the reroute. Construction of the trail may affect drainage patterns. As a result, there may be short-term negligible to minor impacts to water resources and negligible impacts on floodplains.</p>	<p>Place unneeded materials removed during trail construction off-trail in areas where the materials will not inhibit the natural free flow of water.</p> <p>Manage blasting operations to prevent or minimize fly rock from reaching the Carbon River/floodplain.</p> <p>Follow a hierarchy of drainage structures to support the trail drainage systems; the least obtrusive structure possible is preferred over the heavily constructed. The type of structure to be used will depend upon the trail layout, terrain and the minimum structure required to support the natural drainage pattern and minimize erosive impact. The minimum structure is outsloping of the trail tread, allowing water to flow across the trail. Another alternative would be using a dip drain, or dip in the trail edge that facilitates water-flow off the trail. As required, various</p>	<p>Trail Crew Leader</p> <p>Chief Park Blaster will work with trail crew to minimize fly rock during blasting operations.</p>

Resource	Impact	Measures to Avoid, Minimize or Mitigate Impact	Responsible Staff
		<p>configurations of water bars and structures will be constructed to reinforce cross-trail flow. In areas where drainages may cross multiple segments of the same trail, a drainage system will be established which supports the natural drainage pattern and the efficient removal of flowing water from the trail alignment.</p> <p>Do not conduct refueling of power tools within 100 feet of water bodies.</p>	
Wildlife and Habitat	Construction activities are expected to have long-term minor and short-term moderate adverse impacts on wildlife as a result of the loss of 0.2 acre of habitat, minor forest/understory fragmentation, trail use by hikers, and the noise disturbance associated with construction of the trail.	<p>Conduct no work at night.</p> <p>Minimize removal of trees, woody debris, and vegetation to the extent possible in order to preserve habitat.</p> <p>Limit power tool use, helicopter use, and blasting to the extent possible.</p> <p>When amphibians or other small wildlife are found in downed logs or woody debris that will be disturbed, carefully relocate the wildlife to appropriate habitat. Carefully move logs and debris out of the way to avoid disturbing nests.</p>	Trail Crew Leader
Special Status Species and Critical Habitat	<p>Vegetation/tree removal and noise from helicopter use, chain saw use, drilling, and blasting <i>may affect, but are unlikely to adversely affect</i>, northern spotted owls and marbled murrelets due to minimization or avoidance measures, including project timing.</p> <p>During blasting, there is potential for some fly rock to enter the river. Sediment from blasting would be insignificant when compared to the baseline natural turbidity in the Carbon River. Therefore, blasting <i>may affect, but is unlikely to adversely affect</i>, bull trout, bull trout critical habitat, Chinook salmon, and steelhead.</p> <p>No sensitive, threatened, or endangered plants were detected during botanical surveys of the project area.</p>	<p>Minimize power tool use, helicopter use, and blasting to the extent possible.</p> <p>Conduct drilling, blasting, and helicopter operations after August 5.</p> <p>Conduct chain saw operations after July 15.</p> <p>Do not conduct drilling, blasting, and helicopter operations within 2 hours of dusk or dawn.</p> <p>Use the minimum effective amount of explosives per shot, generally 2 pounds or less.</p> <p>Use Non-electric Detonators (Non-el) instead of standard detonation cord when blasting.</p> <p>Transport blasting equipment using the smallest helicopter capable of accomplishing the work without increasing the number of flights needed.</p> <p>If special status plants are encountered during construction activities, avoid them to the extent possible during construction or, if necessary and feasible, salvage and replant them in</p>	<p>Trail Crew Leader</p> <p>Chief Park Blaster will work with trail crew to minimize blasting impacts.</p> <p>Revegetation Specialist will lead effort to identify and salvage any special status plants, if needed.</p>

Resource	Impact	Measures to Avoid, Minimize or Mitigate Impact	Responsible Staff
		appropriate habitat elsewhere.	
Cultural Resources	<p>Park archaeological surveys found no evidence of prehistoric archeological resources along the proposed reroute of the WT.</p> <p>The WT is a contributing element of the Mount Rainier National Historic Landmark District. WT features, such as structures, signs, and trail design, will be incorporated into the reroute construction, resulting in <i>no adverse effect</i> on the historic WT and the National Historic Landmark District.</p>	<p>Inadvertent discovery: If concealed archeological resources are encountered during construction activities, work will be stopped and the archeologist will be notified immediately so that the site can be evaluated and recorded and any required consultation completed before work could resume.</p> <p>Use hand tools for brushing if possible. Minimize use of chain saws.</p>	<p>Trail Crew Leader</p> <p>Park Archeologist will evaluate site/initiate consultation if there is an inadvertent discovery.</p>
Wilderness Values and Natural Soundscapes	Power tool use, compressor use, helicopter use, and blasting operations will have short-term moderate adverse impacts on wilderness values and soundscapes.	<p>Minimize the use of power tools and mechanized equipment.</p> <p>Use the minimum amount of explosive needed, if possible 2 pounds or less, and arrange drill holes to minimize noise and fly rock.</p> <p>Conduct blasting on clear days to minimize carrying of sound.</p> <p>Use Non-Electric Detonators instead of standard detonation cord.</p> <p>Use the smallest helicopter possible that will accomplish the work without increasing the number of flights needed.</p>	<p>Trail Crew Leader</p> <p>Chief Park Blaster will work with trail crew to minimize blasting impacts.</p>
Visitor Use and Experience/Park Operations and Safety	The use of chain saws, rock drills, helicopters, and explosives would create short-term minor adverse impacts on visitor use and experience and park operations and safety during construction.	<p>Provide a safe alternative trail during trail construction.</p> <p>Minimize construction activities during weekends and holidays.</p> <p>Post trail guards to avoid exposing visitors to hazards during construction.</p> <p>Post signs alerting visitors to the project.</p>	Trail Crew Leader

Public Engagement

Mount Rainier National Park conducted internal scoping with an interdisciplinary team of NPS staff to determine the range of issues to be discussed in the environmental assessment. This interdisciplinary process helped the NPS define the purpose and need, identify potential actions to address the need, determine the likely issues and impact topics, and identify the relationship of the alternatives to other planning efforts in the park.

Four preliminary alternative concepts were developed internally through interdisciplinary team discussions and site visits. These alternatives were released to the public for a 30-day review opportunity (April 16–May 15, 2008) as part of an early scoping process to identify issues, constraints, and other potential alternatives. Announcements inviting public input were mailed to individuals and organizations, tribes, area libraries, and area newspapers for publication. The announcement was also posted on the park's web page. No public meetings or site visits were held or requested. Four individuals and one organization provided written comments during this early scoping period. The main concerns that emerged from the scoping feedback were impacts to the wilderness experience, habitat fragmentation, invasive weeds, increased predation, ensuring trail routes were out of the flood zone, and cumulative effects on the Carbon River watershed. All alternatives and concerns expressed during the early scoping process were considered and/or evaluated in the EA, including a fifth alternative (construction of a permanent bridge) suggested by the National Parks Conservation Association.

The environmental assessment was available for a 32-day public review period from September 17 through October 18, 2008. News releases were sent to more than 250 individuals, agencies, libraries, newspapers and other media, state and federal legislators, and American Indian tribes affiliated with Mount Rainier. CD copies of the EA were also sent to the six tribes affiliated with Mount Rainier. Hard copies of the EA were sent to the following libraries: Enumclaw Public Library, Buckley Library, Eatonville Library, and Tacoma Public Library. Public notices or articles were published by local news outlets, including the Tacoma News Tribune (in the September 25, 2008, issue of the newspaper as well as online at www.thenewstribune.com). During the public review period, the EA was linked to the park's website located at <http://www.nps.gov/mora> and was posted on the Planning, Environment and Public Comment (PEPC) website located at <http://www.parkplanning.nps.gov/mora>. In addition to distributing copies of the EA to agencies, libraries, and affiliated tribes, the park responded to five individual requests for printed or CD copies of the EA. A total of 5 printed copies and 10 CD copies were distributed.

The park received 14 responses during the public review period. These included 3 letters from federal and state agencies (U.S. Fish and Wildlife Service, NOAA National Marine Fisheries Service, and Washington State Department of Archaeology and Historic Preservation) and 11 letters from individuals and organizations (including the National Parks and Conservation Association and members of the Washington Trails Association and the Mount Rainier National Park Associates). The comments did not generate revisions to the proposal nor did they change the determinations of significance for potential impacts.

The U.S. Fish and Wildlife Service concurred that the preferred alternative would not likely adversely affect northern spotted owl, marbled murrelet, bull trout, or bull trout critical habitat. The National Marine Fisheries Service concurred that the preferred alternative would not likely adversely affect Puget Sound Chinook salmon or Puget Sound steelhead. The State Historic Preservation Office (Washington State Department of Archaeology and Historic Preservation) concurred that the project would have no adverse effect on archeological resources, historic structures, historic districts, and the MORA National Historic Landmark District. (Further details on agency consultation are provided below.)

Of the 11 comments from individuals and organizations, 8 respondents supported the preferred alternative to reroute the trail above the floodplain. One of these respondents stated that an especially valuable aspect of the Carbon area trails is the year-round accessibility: "While the high country is buried in snow, the Carbon/Ipsut area remains very user friendly throughout the off season with minimal amounts of snow." This respondent further observed that "The lower crossing route is generally not available in winter and is not dependable in the spring and early summer. Twice I have been nearly stranded on the far side of the Carbon River by high water flowing over the bridge on the lower crossing route." Another respondent stated that the reroute would prevent resource damage caused by detours and save maintenance costs for other vital park projects.

While expressing concern about the use of explosives and drills in designated wilderness and the effects on natural soundscapes, the National Parks and Conservation Association stated support for the preferred alternative because it is the most sustainable option, minimizes impacts on federally threatened species, will provide for a safe visitor experience, and will remove the trail from the floodplain.

Three respondents opposed the preferred alternative, supporting either Alternative 2 (rerouting the Wonderland Trail to the Northern Loop Trail and upgrading the NLT to WT standards) or proposing additional alternatives, such as (1) building a trail on the north side of the Carbon River that would go through U.S. Forest Service lands and connect to the NLT or (2) abandoning the washed-out section of trail and adopting the Spray Park route as the official WT. Their reasons for rejecting the preferred alternative included adverse impacts on wilderness values from blasting a trail through bedrock; the contention that repairing the trail is not necessary because there is an existing alternate trail (the segment of the NLT discussed in Alternatives 1 and 2); the belief that not many hikers would be using the Ipsut Creek route to Carbon Glacier if the Carbon River Road is closed to vehicles; the belief that those who do use the trail and are affected by foot log outages would be able to cross the washout, especially if the park installs steel cable in steep sections to provide handholds; and reservations about efforts to repair the trail when other segments of the route are also vulnerable to damage from flooding, rockfall, and avalanches. Respondents were also concerned that the EA did not analyze the change in visitor use caused by flood damage to the Carbon River Road and did not analyze future human use of the Carbon River area related to the road damage. In addition, one respondent commented that frequent washouts should not be used as justification for rejecting the foot log crossing of the Carbon River if the same situation is considered acceptable at other WT foot log crossings (e.g., South Mowich River).

For the following three reasons, the comments noted above did not result in changes to the alternatives, impact analysis, or determination of significance already described in the EA:

1. The issue raised in the comment was already fully addressed in the EA.

The impacts of (1) blasting in wilderness and (2) using the existing alternate route (the spur trail and NLT) were evaluated in the EA. The degree/intensity of impacts for blasting was disclosed (localized/moderate adverse impacts to wilderness and visitor experience). Use of the existing spur trail and the NLT was fully evaluated in the EA under Alternatives 1 and 2, and in weighing the effects of each alternative, the park concluded the best overall choice over the long term is to reroute the damaged portion of the Wonderland Trail to higher ground rather than relying on the spur trail/NLT.

2. The suggested alternative did not meet the project purpose and need.

The project's objectives are to maintain the historic alignment and character of the WT as closely as possible; provide a safe, sustainable trail above the floodplain/geologic hazard zone; and minimize environmental impacts. A new route along the north bank of the river would require construction of at least seven miles of new trail and two major stream crossings, creating greater adverse environmental effects than the selected alternative, and it would not preserve the historic alignment of the WT. Because both the Spray Park section and the Ipsut Creek section of the WT are included in the National Historic Landmark District designation, abandoning the Ipsut section and designating the Spray Park route as the official WT would not preserve the historic alignment of the WT since both segments are contributing elements. The option of bypassing or crossing over the washout when foot logs are washed out would require hikers to scramble across excessively steep terrain. MORA trail workers and natural and cultural resource staff assessing the damage and surveying potential reroutes have described the process of bypassing and/or crossing the washout as difficult and hazardous, even for experienced hikers. In steep sections where a steel cable would be feasible to install (such as in bedrock), the near-vertical slope would preclude safe use of the cable unless hikers were prepared to clip into the cable with climbing equipment. This cable route would not be in keeping with the historic character of the WT.

3. The issue raised in the comment was outside the scope of the project.

The park recognizes that other sections of the Carbon River Wonderland Trail will continue to be vulnerable to flooding, landslides, and rockfall, as is the case for many roads and trails in the park, including the NLT. However, addressing the vulnerability of trail sections adjacent to the project area was outside the scope of this project. While the park strives to build sustainable trails, the nature of the terrain means that damage may occur along a particular segment of trail at some time in the future, and it would be infeasible to design a trail system that is indestructible. Repairing or rerouting damaged trails to maintain established access to wilderness areas, preserve cultural resources, and protect natural resources is consistent with the park's General Management Plan (2002) and is addressed case by case through the NEPA process as the need arises. Issues related to the Carbon River Road are also outside the scope of this project and are being evaluated through a separate planning and environmental compliance process. Addressing problematic stream crossings along the WT is outside the scope of this project; the purpose of the discussion in the EA regarding the spur trail/foot log crossing to the NLT was to enable comparison of the effects and environmental consequences of each alternative.

Agency Consultation

Native American Indian Tribes: Letters and CD copies of the EA were sent to the following Native American Indian tribes on September 18, 2008, formally inviting the tribes to comment on the proposed actions: Muckleshoot Indian Tribe, Puyallup Tribe of Indians, Nisqually Indian Tribe, Yakama Nation, Squaxin Island Tribe, and Cowlitz Indian Tribe. No Native American Indian tribes submitted comments on the EA.

U.S. Fish and Wildlife Service (FWS): In accordance with local implementing procedures for Section 7 of the Endangered Species Act, a species list was downloaded from the FWS website and crosschecked with species that may occur in the project area. Because the proposed project may affect northern spotted owls, marbled murrelet, bull

trout, and bull trout critical habitat, consultation with the FWS was necessary. A Biological Assessment was prepared by the park and sent to the FWS Western Washington Fish and Wildlife Office on September 18, 2008. In a response letter dated October 14, 2008, the FWS concurred with the park's determination that the proposed action *may affect, but is not likely to adversely affect* northern spotted owl, marbled murrelet, bull trout, and designated bull trout critical habitat. In addition, the FWS stipulated that "this action should be re-analyzed if new information reveals effects of the action that may affect listed species or designated critical habitat in a manner or to an extent that was not considered in this consultation; if the action is subsequently modified in a manner that causes an effect to a listed species or designated critical habitat that was not considered in this consultation; and/or, if a new species or critical habitat is designated that may be affected by this project."

NOAA National Marine Fisheries Service (NMFS): In accordance with local implementing procedures for Section 7 of the Endangered Species Act, a species list was downloaded from the NMFS website and crosschecked with species that may occur in the project area. Because the NPS determined that the proposed project may affect Chinook salmon and steelhead, consultation with the NMFS was necessary. A Biological Assessment was prepared by the park and sent to the NMFS Washington State Habitat Office on September 18, 2008. In a response letter dated October 23, 2008, the NMFS concurred with the park's determination that the proposed action *may affect, but is not likely to adversely affect* Puget Sound Chinook salmon and Puget Sound steelhead.

State Historic Preservation Office (SHPO): The NPS initiated consultation with the State Archaeologist at the Department of Archaeology and Historic Preservation on August 6, 2008. In a response letter dated August 19, 2008, the SHPO concurred with the park's determination of *no adverse effect* on the National Historic Landmark District. In addition, the SHPO requested that if archaeological materials are discovered during project activities, the park would halt work in the area of discovery and contact appropriate Native American tribes and the Department of Archaeology and Historic Preservation for further consultation.

Impairment Disclosure

The NPS has determined that implementation of the selected action will not constitute an impairment to Mount Rainier National Park resources and values. This conclusion is based on a thorough analysis of the environmental impacts described in the project's environmental assessment, relevant scientific studies, public comments received, and the professional judgment of the decision maker guided by the direction in NPS *Management Policies 2006*. As described in the environmental assessment, project implementation will not result in major adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation, (2) key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or (3) identified as a goal in the park's general management plan or other relevant National Park Service planning document.

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Finding


On the basis of the information contained in the environmental assessment as summarized above, it is the determination of the National Park Service that the proposed project as described in the selected alternative is not a major federal action significantly affecting the quality of the human environment. Nor is it an action without precedent or similar to an action that normally requires an Environmental Impact Statement. The conclusions of non-significance are supported by the conservation planning and environmental impact analysis completed and the capability of listed mitigation measures to reduce or eliminate impacts. No adverse effects to cultural or historical resources will occur; there are no unacceptable impacts, nor will any impairment of cultural or natural resources or park values occur. This determination also included due consideration of public comments. Therefore, in compliance with the National Environmental Policy Act, an Environmental Impact Statement will not be prepared, and the selected plan will be implemented immediately.

Recommended:

 12/2/08

David V. Uberuaga, Superintendent Date
Mount Rainier National Park

Approved:

 12/10/08

Jonathan B. Jarvis, Regional Director Date
Pacific West Region