

# **ENVIRONMENTAL ASSESSMENT**

**Upper Stehekin Valley Road  
Flat Creek to Cottonwood Camp**

**North Cascades National Park  
1997**

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## PURPOSE AND NEED

The purpose of this environmental assessment is to evaluate alternative treatments for a flood damaged section of the Stehekin Valley Road, North Cascades National Park (Figure 1). In November 1995, a major flood resulted in changes in the river channels of the Stehekin River above the confluence with Flat Creek (mile 20). During the flood the river flowed out of its banks and down the road, deeply eroding the roadbed and establishing a new river channel. This channel enters the road from the southwest, flows down the roadbed for approximately 2000 feet, then leaves the road to the northeast and flows parallel to the road for another 1000 feet before again crossing the road back towards its former course (Figure 2). Approximately 60% of the river flows down the entire 3000 feet of road during high spring and fall runoff.

Early in 1996, the NPS created a temporary trail alongside the damaged section of road, making the last three miles accessible to horses and hikers. Bicycles also may use the temporary trail; however, it is not recommended, as the trail is quite narrow and requires crossing the river channel on two foot logs.

In addition to the washout described above, several other sections of the Stehekin Valley Road were damaged during the November 1995 flood. In late 1996 the NPS began repairs to the road adjacent to Car Wash Falls (mile 13). In 1997 the NPS will begin repairing scour damage on the roadbed from Car Wash Falls to Flat Creek and will replace the abutments of the bridge over Park Creek (Figure 1), making the road accessible to shuttle vans and private vehicles as far as Flat Creek.

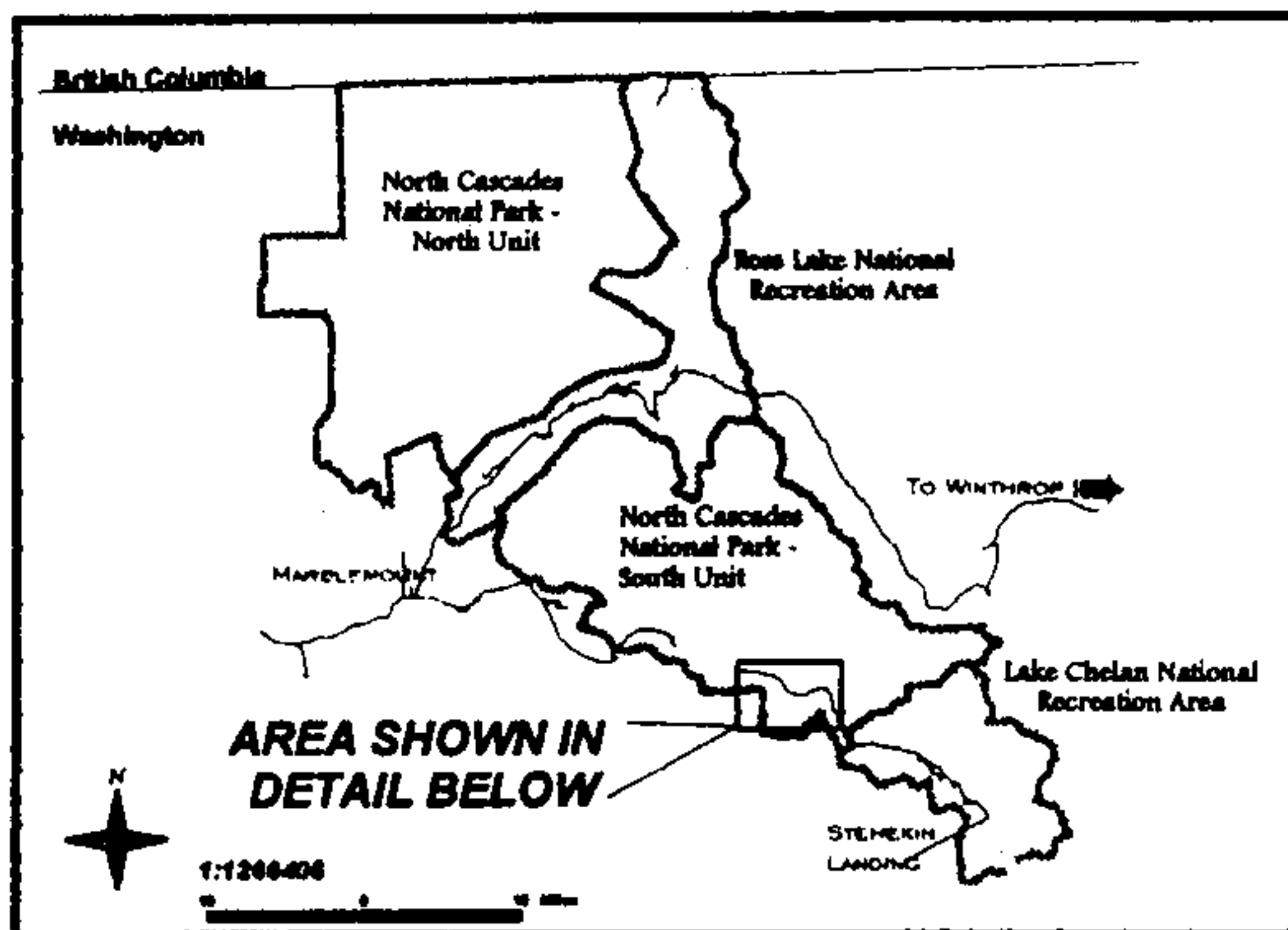
Due to the severity of the damage and the current activity of the river, we are considering four alternative treatments to the section of road above Flat Creek: A-No Action; B-Rebuild the Road; C-Temporarily Close the Road Until the Return of Acceptable Conditions for Rebuilding (Preferred Alternative); and D-Remove the Road from Flat Creek to Cottonwood. Additional alternatives considered, but rejected are discussed at the end of the document.

In the General Management Plan for North Cascades National Park, Ross Lake National Recreation Area, and Lake Chelan National Recreation Area (1988) it was determined that the Stehekin Valley Road

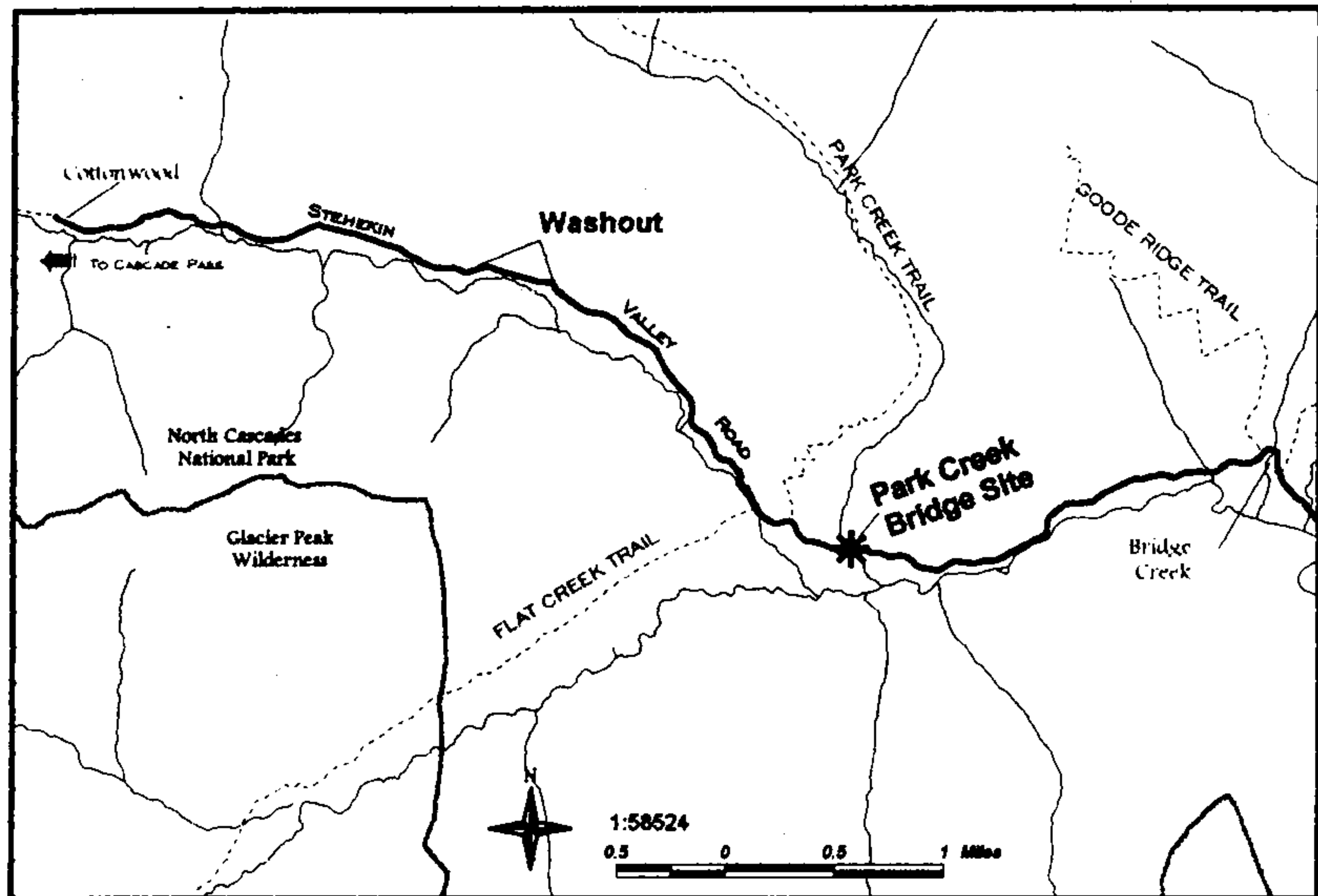
*...will be maintained at its current length, width, and character... Beyond Harlequin Bridge, work to maintain the road surface will be the minimum necessary to remove damage done by natural processes, such as rock slides or flooding, or to avoid major vehicle damage or threats to visitor safety. With the exception of the first 4 miles, the road will be maintained at an average width of 14 feet, which allows room for only one vehicle at a time (pp.30-31).*

A General Management Plan and Environmental Impact Statement for Lake Chelan National Recreation Area was completed in 1995 (LACH GMP/EIS). Although the Stehekin Valley Road above High Bridge is not in Lake Chelan National Recreation Area, maintenance of the entire road, including that above High Bridge, was addressed in the LACH GMP/EIS and its attendant Transportation Plan. In accordance with the LACH GMP/EIS the:

*...section of road from High Bridge to Cottonwood would be maintained for heavy-duty, high-clearance shuttle vehicles (p.34).*

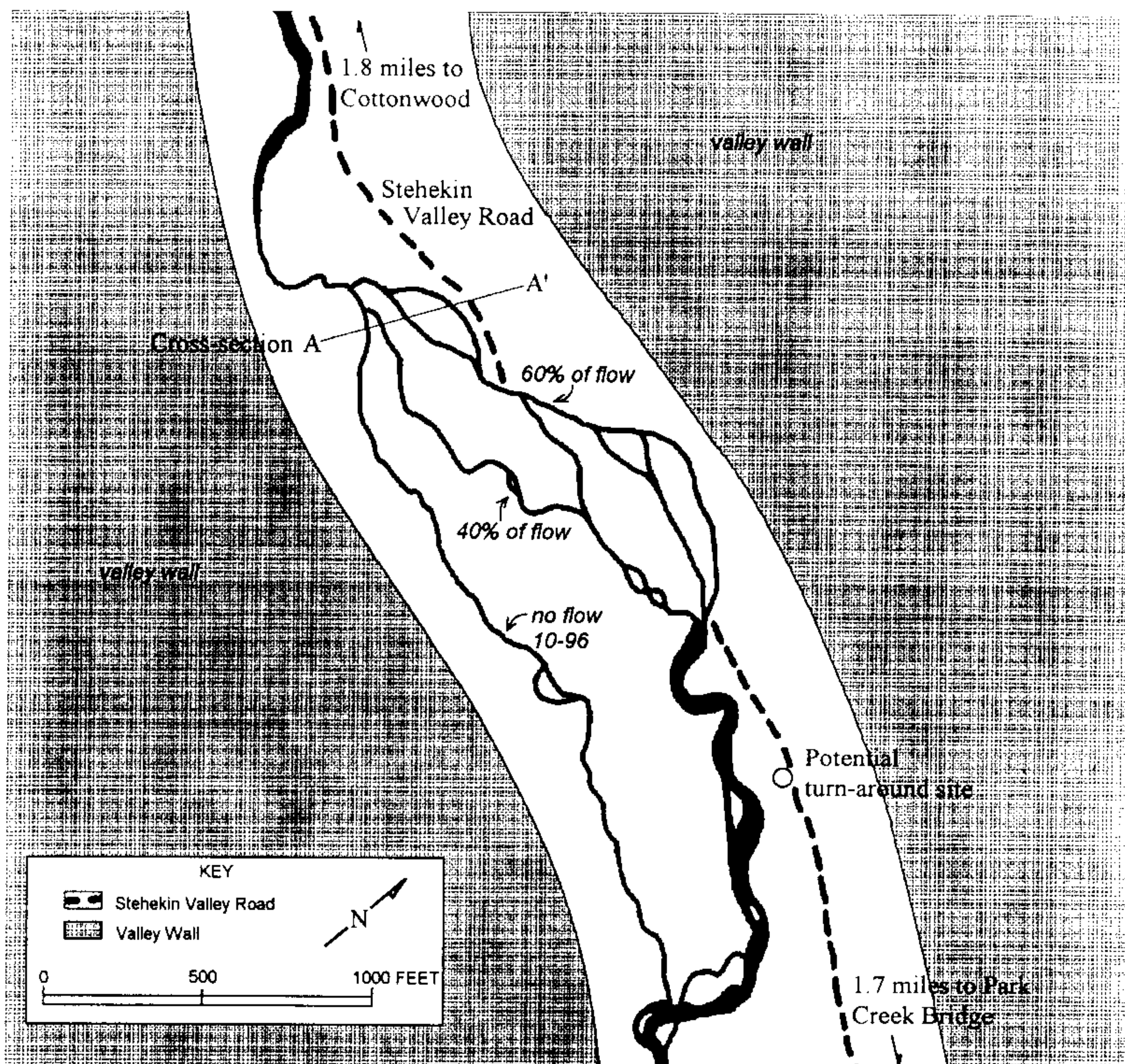


Map prepared by the North Cascades  
National Park Service Complex Geographic  
Information System, 3/25/1987



**Figure 1. Location of washout on the upper Stehekin Valley Road, Lake Chelan National Recreation Area.**





**Figure 2. River channel changes in vicinity of washout, October 1996.**

## POLICY AND CONSTRAINTS

**National Park Service Management Policies (1988)** regarding development in floodplains and wetlands states:

*The occupancy and modification of floodplains and wetlands will be avoided wherever possible. Where no practicable alternatives exist, mitigating measures will be implemented to minimize potential harm to life, property, and the natural values of floodplains and wetlands. Management of floodplains and wetlands is subject to the provisions of Executive Order 11988, "Floodplain Management" (42 USC 4321), and Executive Order 11990, "Protection of Wetlands" (42 USC 4321), the Rivers and*



*Harbors Act (33 USC 401 et seq.), and Section 404 of the Clean Water Act (33 USC 1344) (p.4:16).*

However, the NPS guideline for implementation of the Executive Orders on Floodplain Management and Protection of Wetland lists certain actions that may be excepted from compliance with the Orders. Specifically, "*Entrance, access, and internal roads to or within units of the NPS...*" are excepted from the Order regarding floodplain management but not from wetland protection.

**General Management Plan and Environmental Impact Statement, Lake Chelan National Recreation Area, 1995 (LACH GMP/EIS):** Acceptable actions affecting the Stehekin River are described in the LACH GMP/EIS:

*The National Park Service would not manipulate the Stehekin River to protect public federal property except roads and bridges according to the following criteria. Existing public roads would be protected in erosion/river conflict zones only if (1) there are no feasible alternatives, (2) funds are available, (3) proposed actions would have lesser impacts than other alternatives, and (4) the proposed actions are permitted by the county, state, and other federal agencies (p.20).*

Measures to minimize the environmental impacts associated with implementation of the LACH GMP/EIS are identified in the following management plans:

**Sand, Rock, and Gravel Plan:** *The management objectives are to allow mining of sand, rock, and gravel in the valley but restrict mining to the Company Creek pit for NPS maintenance and public use and minor reconstruction only and to allow for importing of material from outside the valley for new construction. ...Sand, rock, and gravel will be conserved and recycled whenever possible (for example, consider conservation through maintenance and road system design)....To ensure conservation of sand, rock, and gravel, the National Park Service proposes to limit the use of in-park material to 1,400 cubic yards per year: 1,200 cubic yards for NPS use and 200 cubic yards per year for private use over a proposed 10-year excavation cycle - i.e., in the event of a large flood, the remaining 10-year stockpile could be used in one year....The superintendent will have the option to exceed the established limit in the event of an emergency such as a major flood;... (pp.3, 10-11).*

**Transportation Plan:** *Unconstrained private vehicle use will end at High Bridge. Private vehicle use from High Bridge to Bridge Creek will be allowed, but traffic flow will be regulated by season and/or hour of day. Public shuttle service will be provided from the Landing to Cottonwood. Only the public shuttle service, hikers, horses, and bicycles will be allowed to use the road from Bridge Creek to Cottonwood during the season when the shuttle is operating....The section of road from High Bridge to Cottonwood will be maintained to sustain heavy-duty, high-clearance shuttle vehicles....Public roads below Cottonwood will be protected in active river erosion zones only if (1) there are no feasible alternatives, (2) funds are available, (3) the actions will have less impacts than other alternatives, and (4) the actions are permitted by county, state, and other federal agencies (p.9).*

**Stehekin Landing and Valley Development Concept Plan:** *The natural character of the lake and river edge on public lands (which includes areas within 200 feet of the lake and river shoreline) will be restored (p.1).*

## DESCRIPTION OF THE ENVIRONMENT

The Stehekin Valley Road follows the Stehekin River from Stehekin Landing in Lake Chelan National Recreation Area to Cottonwood Camp in North Cascades National Park, a distance of approximately 23 miles (Figure 1). The damaged section of the road of concern in this assessment is approximately 20 miles up valley from Stehekin Landing.

**Geology and Soils:** The upper Stehekin valley is cut into resistant Skagit Gneiss bedrock. Glaciers have carved a deep canyon in this area, with steep valley sides and a relatively flat, straight valley floor. Local relief measures over 6000 feet from the summit of McGregor Mountain to the valley bottom. The valley floor is covered with surficial deposits left by ice age glaciers 11,000 years ago, and more recently, by landslides and deposits from small tributaries.

At the upstream end of the washout site, the valley bottom is narrowed by a large landslide deposit. This landslide appears to have initiated on the northern valley wall. In the washout area, the valley bottom widens to its normal width of approximately 1500 feet. River channels of various ages crisscross the area adjacent to the washed-out road (Figure 2). Prior to the 1995 flood damage, the road crossed several shallow river channels, requiring driving through water running across the road.

The November 1995 flood caused significant erosion of a large gravel terrace near Cottonwood Camp, 2 miles upstream of the washout. Sediment eroded from this site came to rest, along with a large amount of woody debris, in the stream channel just above the washout. As a result of this deposition, the south side of the valley floor was raised 5 to 6 feet above the area near the road. Cross-section A-A' (Figure 3) was surveyed in this area, and illustrates how the road is as much as 8 feet below the sediment-clogged river channel.

Numerous channels emanate from the sediment plug above the washout. Several of these flow down-gradient and join just before they meet the road (Figure 2). At the upper end of the washout, two of these channels merge and flow down the old roadbed. Just below the washout, a small portion of this water flows along the valley wall in a channel to the northeast of the road. The new channels that impact the road presently carry approximately 60% of the total flow of the river, whereas the old channels now carry less than half of the total river flow.

In the vicinity of the washout the Stehekin River is a high-gradient stream with a cobble and boulder bed. These coarse sediments are introduced to the river from its tributary streams and by erosion of the river's bed and banks.

**Hydrology:** At an elevation of approximately 2440 feet, the washout site lies near the headwaters of the Stehekin River. Numerous glaciers feed the upper Stehekin, supplementing low flow in summer. Steep slopes and high drainage density, combined with heavy precipitation in the headwaters areas results in rapid, frequent flooding.

The Stehekin River watershed is particularly prone to flooding because of its geographic position and steep, rocky slopes. The headwaters of the river are located near Cascade Pass on the Pacific Crest of the Cascade Range. This location places the upper part of the valley farther west, in an area of higher precipitation than the headwaters of other east side streams, such as the Twisp and Methow Rivers. As a result of its geography, the Stehekin River is prone to severe flooding at two times each year, as indicated in Table 1.

# Stehekin Valley Profile

## Mile 21, 200 ft upstream of washout

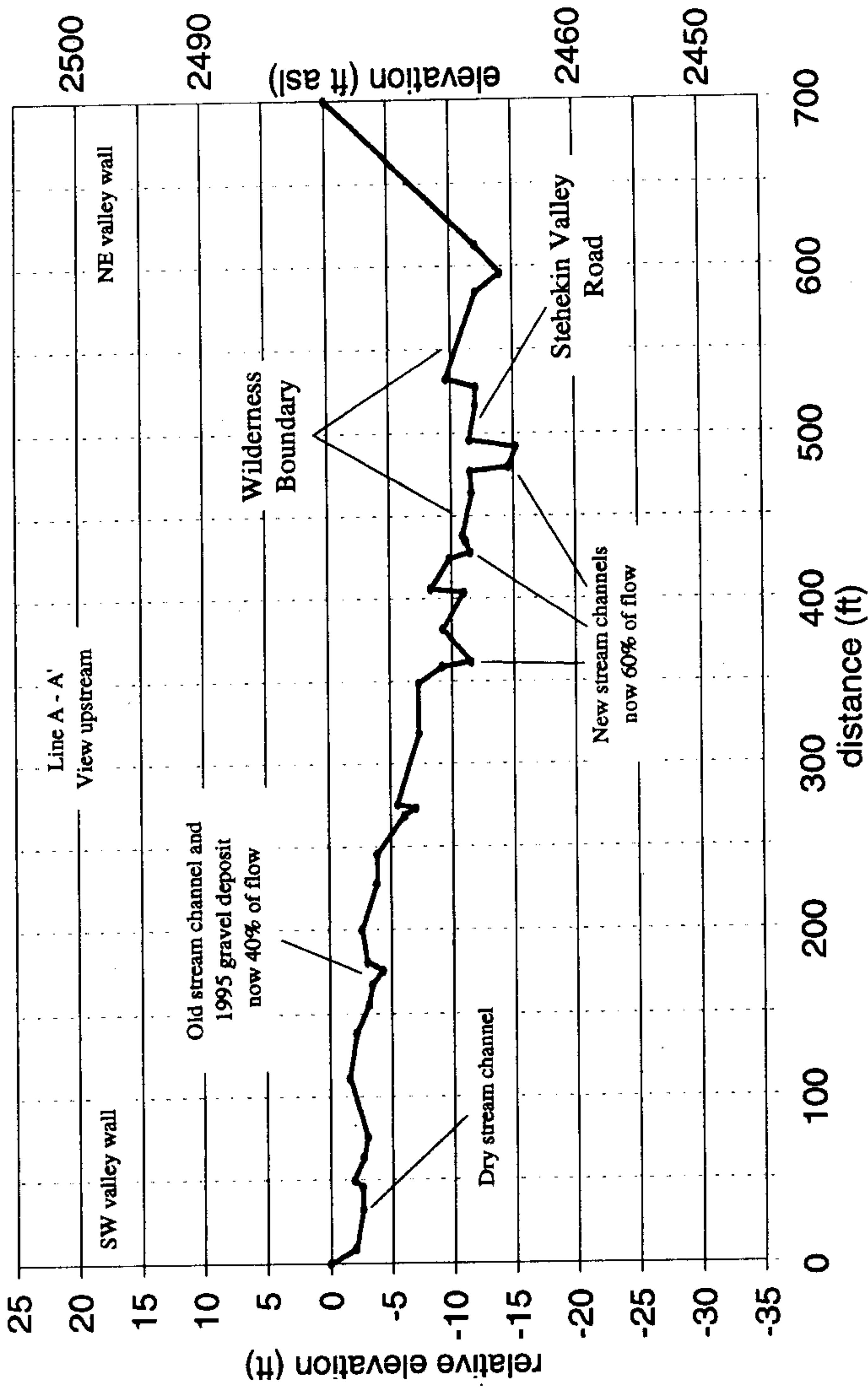


Figure 3. Profile of Stehekin Valley floor at cross-section A-A' in Figure 2.



Spring snowmelt floods occur in May and June, and are more severe on the lower river and eastern tributaries, Boulder and Rainbow creeks. The average (1950-1992) peak spring flood on the Stehekin River was 8,891 cubic feet per second (cfs) at the USGS gage (located 1.34 miles upriver from Lake Chelan). These floods are occasionally much larger however, when snowpack persists into late May and June. Warm late spring rains then cause rapid rates of snow melting. Five of the eight largest floods on record were spring events, including the large 1948 and 1950 spring floods.

Fall and early winter rain-on-snow floods primarily affect the upper valley and the remainder of its tributaries located in the western watershed. These floods have shorter durations (typically one day or less) than the spring floods, which can last for several days. The 1990 and 1995 floods were fall rain-on-snow floods.

Table 1. Largest floods on record for the Stehekin River.

date of flood	discharge (cubic ft sec.)
11-29-95	21,000
5-29-48	18,900
6-20-50	18,400
12-26-81	17,300
6-16-74	16,600
11-24-90	14,700
6-02-68	14,400
6-10-72	14,400

Data collected from the Stehekin River gage since 1911 has enabled the USGS to predict the frequencies and magnitudes of large floods on the Stehekin River (Table 2).

Table 2. Estimated frequency of large magnitude floods on the Stehekin River (USGS gage # 12451000). Frequency estimates based on log-Pearson Type III analysis by Zembruzski, USGS, Water Resources Division (personal communication, 1996).

discharge (cfs)	recurrence interval
14,570	every 10 years
18,400	every 50 years
19,920	every 100 years
23,270	every 500 years

The steep valley walls in this area receive heavy winter snowfall in excess of 10 feet. As a result, most of the valley wall and adjacent valley floor are annually inundated by snow avalanches. These

avalanches determine what vegetation can survive in the area, limit potential reroutes of the road, and occasionally cover parts of the road in deep snow and debris.

**Water Quality:** The surface water in North Cascades National Park is Class AA (extraordinary), having excellent quality with few exceptions. Class AA waters are given maximum protection under state water quality regulations (Washington Administrative Code 173-201 A).

**Air Quality:** The upper Stehekin Valley in North Cascades National Park is designated as a Class I air quality area under the Clean Air Act. Air quality is important for health, visitor enjoyment, scenic vistas, and preservation of ecosystems and cultural resources. Regular sources of air pollution from within the valley include: vehicle emissions; fires at campgrounds and prescribed burns; wood burning stoves; and emissions from a diesel generator operated by Chelan PUD. Occasional increases in emissions from within the valley are created by road construction, repairs, and gravel pit operations. Pollution from outside the valley may also affect the air quality in the Stehekin watershed.

**Wilderness:** Boundaries of the Stephen Mather Wilderness Area in the upper Stehekin Valley are depicted on a map entitled *Wilderness Boundary, North Cascades National Park Service Complex, Washington*, map number 168-80-186, August 1988 (Figure 4) and designated in the Washington Park Wilderness Act of 1988 (Public Law 100-668, Title IV b.2.). Boundary descriptions accompany the map for the area above High Bridge:

*3H to 3I: Follow a line up the Stehekin River Road 50ft on either side of center line, around Cottonwood camp at the end of the road, excluding the developed campsites. When this line falls within the river itself, the line becomes the mean high water mark on the river edge opposite the road. Follow back to the NRA (National Recreation Area) boundary and up to the 500m contour.*

**Vegetation:** Most of the Stehekin Valley is forested; Douglas-fir (*Pseudotsuga menziesii*), Ponderosa pine (*Pinus ponderosa*), and big-leaf maple (*Acer macrophyllum*) predominate. In the immediate vicinity of Flat Creek the road bank is vegetated with young western red cedar (*Thuja plicata*) and Douglas-fir trees, with a thick understory of blackberries and other shrubs. Before construction of the trail alongside the roadbed a plant survey was conducted for sensitive, threatened and endangered species. None were found, and the habitat was evaluated as inappropriate for any plant species listed with the U.S. Fish and Wildlife Service and the Washington Department of Natural Resources.

The introduction of exotic plants to the upper Stehekin Valley is of concern in this project. The NPS is constrained through the Sand, Rock, and Gravel Plan, LACH 1995, from obtaining rock from the Stehekin Valley except from the existing gravel pit on Company Creek Road. Exotic plants are found along the access road into Company Creek pit. Transportation of exotic plants along with pit material would be minimized under all alternatives by removing exotics from the pit area.

Much of eastern Washington is infested with weeds that the NPS and Stehekin Valley residents have been trying to control in the valley. The possibility that seeds may be imported with any material brought into the valley must be considered. In any contract for obtaining material, the NPS would specify measures to reduce the possibility of importing exotic plants.





Figure 4. Wilderness Boundary (southeast section), North Cascades National Park Service Complex, Washington, August 1988.

**Wetlands:** In the Stehekin Valley wetlands serve a multitude of functions. The wetlands surrounding the Stehekin River serve as spawning, rearing, and resting habitat for fish; as protective cover and foraging areas for many species of terrestrial wildlife; as important storage areas for flood and storm waters; as natural filters, protecting the main channel from many pollutants; and as important areas for ground water recharge.

There are numerous wetlands in this area, which mark the location of past river channels. To the northeast of the road, against the valley wall, is an extensive wetland. Impacts on wetlands of the actions considered here are described under each alternative.

**Wildlife:** The Stehekin Valley has been identified as important riparian habitat for many animals. Species of concern in this assessment are those listed as threatened or endangered by either the U.S. Fish and Wildlife Service or the Washington Department of Fish and Wildlife. In addition, species which are candidates under review for consideration as threatened or endangered (candidate species) and species about which there is insufficient information, but for which there is concern (species at risk) have been considered in this assessment.

The U.S. Fish and Wildlife Service (USFWS) lists five animal species as federally endangered or threatened for which there is suitable habitat in the vicinity of the project area: gray wolf (*Canis lupus*), grizzly bear (*Ursus arctos horribilis*), bald eagle (*Haliaeetus leucocephalus*), northern spotted owl (*Strix occidentalis caurina*), and peregrine falcon (*Falco peregrinus*).

There are two federal candidate species for which there is suitable habitat in the vicinity of the project area: spotted frog (*Rana pretiosa*) and bull trout (*Salvelinus confluentus*); and thirteen species at risk: California wolverine (*Gulo gulo luseus*), North American lynx (*Felis lynx canadensis*), Pacific fisher (*Martes pennanti pacifica*), northern goshawk (*Accipiter gentilis*), olive-sided flycatcher (*Contopus borealis*), Cascades frog (*Rana cascadae*), tailed frog (*Ascaphus truei*), and six bat species: Pacific Townsend's bat (*Plecotus townsendii townsendii*), small-footed myotis (*Myotis ciliolabrum*), long-eared myotis (*Myotis evotis*), fringed myotis (*Myotis thysanodes*), long-legged myotis (*Myotis volans*), Yuma myotis (*Myotis yumanensis*).

The Washington Department of Fish and Wildlife (WDFW) also lists the grizzly bear, gray wolf, peregrine falcon, and spotted owl as endangered in the state. Three animal species for which there is suitable habitat in the vicinity of the project area are listed as threatened by the WDFW: western gray squirrel (*Sciurus griseus*); North American lynx; and bald eagle.

#### Site-Specific Information on Species of Concern:

**Mammals**-Although the valley contains suitable habitat, no grizzly bears, gray wolves, wolverine, lynx, or fisher have been sighted in the valley below Cottonwood Camp. However, the habitat affected by the project may be important for their recoveries.

Western gray squirrels are occasionally sighted in the lower Stehekin Valley. However, none of the alternatives proposed here would affect their food sources or habitat.

Little is known about bat populations in the Stehekin Valley. Riparian areas and open meadows are important foraging habitats for bats and care should be taken to protect them. All bat species of concern in North Cascades National Park use caves and abandoned mines, as well as crevices under the bark of large Douglas-fir trees as roosting sites.



*Birds*-In their 1990 report, the Interagency Scientific Committee identified most of the Stehekin Valley as important habitat for the northern spotted owl.

Nesting habitat for northern goshawks and olive-sided flycatchers is present in the vicinity of the washout.

Peregrine falcons and bald eagles have been sighted in the valley, but not in the vicinity of the washout. Although surveys have not been conducted, the area affected by this project is not considered suitable breeding or foraging habitat and the actions proposed here are not expected to affect these species.

*Fish*-Lake Chelan, the Stehekin River, and its tributaries provide spawning, incubation, rearing, and feeding habitat for a variety of salmonid species, including rainbow and cutthroat trout, kokanee and chinook salmon and bull trout. The multiple overflow channels observed in the project area are important for young fish overwintering in the Stehekin River. These channels act as refugia from the late fall and early winter floods, as well as providing additional cover and feeding areas. Fish of unknown species have been observed in the roadbed/river channel. The channel does provide appropriate habitat for spawning. Rainbow trout may spawn in this area April through June and cutthroat and bull trout may spawn in this area in the fall. The natural accumulation of woody debris and the creation of gravel beds in the vicinity of the road provides excellent habitat for many fish species.

*Amphibians*-A survey conducted in 1991 found both Cascades frogs and spotted frogs in the lower valley in riparian habitats dominated by deciduous plants. In September 1996 a Cascades frog was identified on the trail adjacent to the road. Although tailed frogs have not been documented in the valley, the Stehekin River and its fast-flowing tributaries are suitable habitats for them.

**Archeological and Historical Resources:** The project area has been surveyed for the presence of cultural resources at a general, reconnaissance level. No archeological or other cultural resources have been located in the project area, the area is not within a historic district, nor have any historic resources eligible for, nominated to, or listed on the National Register of Historic Places been identified.

**Access and Transportation:** The Stehekin Valley Road provides the only vehicle access to the Stehekin Valley above Lake Chelan. In addition to private vehicles of residents and their guests, there are several services that carry visitors and residents up the valley. Of these, the NPS shuttle bus has been the only regular service that operates above High Bridge (about mile 11).

In November 1995 the road from High Bridge to Cottonwood was badly damaged by flooding. In Summer 1997 the NPS will be repairing scour damage to several sections between Car Wash Falls (mile 13) and Flat Creek (mile 20). These include rebuilding the bridge over Park Creek with improved abutments. The road will be open to private traffic as work is completed, with some delays caused by safety concerns near heavy equipment.

The road from Park Creek to Cottonwood Campground has served as an important access from Stehekin to trailheads for Cascade Pass, Trapper Lake, and Horseshoe Basin. In 1995, the last year shuttle buses went above High Bridge, the NPS shuttle buses made 369 round trips to Cottonwood Camp. Of 3,430 riders using the service in 1995, 917 people got off and 973 people got on the shuttle bus at Cottonwood Camp (the only shuttle bus stop above Flat Creek). No counts were made of private vehicles using this portion of the road. In 1996, the NPS operated a shuttle service up to

High Bridge from mid-May to mid-June and October 1 to October 14. The Stehekin Adventure Company operated a shuttle service up to High Bridge from June 14 through September 30.

Traffic on the Stehekin Valley and Company Creek roads will increase during 1997 due to flood repair work in numerous places on both roads. These repairs are necessary to return the roads to their pre-flood conditions. Increased traffic delays and congestion may create an inconvenience to visitors and residents.

**Recreation and Visitor Experience:** The Stehekin Valley Road serves as the primary access route for recreational activities in the valley. There are approximately 100 year-round residents in the Stehekin Valley, with the population increasing to at least 175 as summer residents and seasonal employees come to the valley. July, August, and September are the busiest months for visitation; over 50% of visitation occurred during these months from 1991 through 1996. Visitors hiking into Lake Chelan National Recreation Area account for approximately 1.5% to 3.0% of total visitation. Road use is as described in the Access and Transportation section. In addition, at least 466 people rafted down the Stehekin River from Bullion Campground (approximately 1 mile below High Bridge) in 1996.

**Economics:** As described in the Access and Transportation section, the Stehekin Valley Road serves as the access route for many activities in the valley. Several visitor service businesses operate in Stehekin and may be affected by access to recreational opportunities up valley and by access down valley for those arriving on the trails. Prior to this flood event, the National Park Service operated the only regular shuttle service above High Bridge.

## **ALTERNATIVES AND ENVIRONMENTAL CONSEQUENCES**

Any alternatives that propose construction below the mean high water line of any water course, including the Stehekin River or tributary streams, will require consultation with the U.S. Army Corps of Engineers regarding compliance with Section 404 of the Clean Water Act. A Hydraulic Permit from the Washington Department of Fish and Wildlife is also required.

None of the alternatives considered would impact Stehekin River's potential suitability as a Wild and Scenic River.

None of the alternatives considered would impact Native American religious practices.

None of the alternatives considered would impact minority or low income populations.

### **Alternative A: No Action (Existing Condition)**

This alternative would not restore the road. The interim repairs completed in Spring 1996 would remain and the upper 3 miles of the road would continue to be maintained as a trail; closed to motorized vehicles and open to hikers and horses. By halting vehicle traffic at Flat Creek, an additional three miles each way would be added to hikes from the Stehekin Valley Road to Cascade Pass, Horseshoe Basin, and Trapper Lake. Erosion control work on the trail would be minimal. Trail maintenance occurring below the mean high water level would require a Hydraulic Permit from the Washington Department of Fish and Wildlife. Cottonwood Campground would continue to be maintained as a primitive campground, with visitors required to store food properly and to pack out

their food and garbage. The current management plan for the Stehekin Valley Road is stated in the LACH GMP/EIS:

*The section of road from High Bridge to Cottonwood would be maintained for heavy-duty, high-clearance shuttle vehicles (p. 34).*

Consequently, failure to reopen the upper Stehekin Valley Road to vehicular access would require amending the LACH GMP/EIS.

### **Alternative B: Rebuild the Road**

Under this alternative the damaged section of road above Flat Creek would be reconstructed in its former location. This alternative considers using a minimum amount of material to create a roadbed suitable for high-clearance shuttle bus traffic. Rebuilding the road to its previous grade and rerouting the road within the 100-foot non-wilderness corridor were considered and rejected due to impacts on wetlands and the expense of hauling even greater quantities of material (see Alternatives Considered, But Rejected section at the end of document).

The existing road alignment is now a river channel for approximately 2000 feet and considerably lower than the other river channels (see Figure 3). Reopening the road would require dredging adjacent river channels and installing a diversion dam above the washout to keep the water off the road. The diversion dam would be sufficient to keep water off the road only during periods of normal flow, such as the summer months, when this section of road is snowfree and under its highest human use. Culverts would be installed in places where smaller channels still cross the road.

Confinement of the river by a diversion dam would cause an increase in water velocity and water depth at times of high water. This action would prevent the river's utilization of the floodplain for absorption of flood water and dissipation of energy. Resulting increased volume and velocity of water downstream could cause accelerated erosion of river banks downstream. Confinement of the river would also reduce the potential for creation of additional wetlands and overflow channels, as well as maintenance of existing wetlands. Confined flood waters would be more likely to scour the river, removing woody debris, important to fish for cover and feeding, and gravel beds, important for spawning habitat.

Although this alternative would reopen this section of road, it would likely be insufficient to protect the road from damage by annual floods. Floods would continue to erode this section of the road, resulting in the need to repair, resurface, and possible reroute the road frequently.

Due to snow on the road, construction would not begin before mid-June 1997. A 2-inch screened gravel surface would be added in Summer 1998. Five-yard dump trucks would be used to transport material for reconstruction. An excavator and front end loader would also be used on the project site. Work in the stream would require consultation with the Washington Department of Fish and Wildlife and the US Army Corps of Engineers.

For the safety of pedestrians, access to the area may be restricted intermittently during construction, however, crews would accommodate the needs of hikers as much as possible. After completion of the road reconstruction, the temporary parking area at Flat Creek helispot would be rehabilitated.



### **Alternative C: Temporary Closure of the Road at Flat Creek (Preferred Alternative)**

Under this alternative the road would be rebuilt to its previous condition as defined in the General Management Plan for Lake Chelan National Recreation Area, 1995 when conditions return that make road reconstruction possible without damage to the existing wetlands and river channels. The river channels in this area of the valley are prone to frequent movement and change. Presently the river occupies several channels on the north side of the valley bottom. The topography currently does not favor the movement of the channels back to the south, however, future floods and changes in debris jams will cause new channel development to the south, drawing water from the channel now in the road. When sufficient changes in channel use have occurred, such that there is no flow in the road alignment, even during high spring runoff, then the road would be rebuilt in its previous alignment.

Under this alternative the damaged site would be reevaluated every year by the NPS and USGS for possible reconstruction of the road. Evaluation criteria would include: 1) channel use; 2) topographic changes; and 3) woody debris shifts. Surveys for listed plants and animals would be conducted prior to initiation of reconstruction and activities with the potential to disturb listed species would be scheduled in consultation with the US Fish and Wildlife Service and the Washington Department of Fish and Wildlife.

In the interim, the trail alongside the damaged section of road would be improved to accommodate horse and pedestrian traffic. Bicycles would be permitted, but not recommended and existing foot log crossings would be maintained. The road from above the washout to Cottonwood Camp would be maintained as a road, as much as possible, in preparation for reconstruction. The roadway would be brushed out and the culverts cleaned regularly. A turnaround and parking area would be developed on the Flat Creek helispot and portable or pit toilets would be installed and maintained there.

Until the road is rebuilt, an additional three miles each way would be added to hikes from the Stehekin Valley Road to Cascade Pass, Horseshoe Basin, and Trapper Lake. Erosion control work on the trail would be minimal. Trail maintenance occurring below the mean high water level would require a Hydraulic Permit from the Washington Department of Fish and Wildlife. Cottonwood Campground would continue to be maintained as a primitive campground, with visitors required to store food properly and to pack out their food and garbage.

### **Alternative D: Remove the Road from Flat Creek to Cottonwood**

Under this alternative the road would be permanently closed above Flat Creek and rehabilitated with native vegetation. The NPS would obliterate the temporary trail, constructed in Spring 1996 and reroute this section of trail away from wetlands, making it more appropriate for long-term use by hikers and horses. Pedestrian bridges and horse fords would be constructed to reduce impacts where necessary. The new alignment would be surveyed for listed plant and animal species and cultural resources prior to construction. The Flat Creek helispot parking area would be developed to accommodate as many as six vehicles and a shuttle bus turnaround.

By halting vehicle traffic at Flat Creek, an additional three miles each way would be added to hikes from the Stehekin Valley Road to Cascade Pass, Horseshoe Basin, and Trapper Lake. Cottonwood Campground would be maintained as a backcountry campground, with visitors required to store food properly and to pack out their food and garbage.



Environments	EFFECTS AND MITIGATIONS		
	Alt. A (No Action)	Alt. B (Rebuild)	Alt. C (preferred) Alt. D (Close the Road)
Geology	No effect on the geology and soils of the area. Minimal erosion control and trail maintenance would use local materials. Natural processes would continue.	Material to reconstruct the road would be brought from Company Creek pit or from outside the valley. Road would remain in an area prone to snow avalanches, rockfalls and flooding.	Material to reconstruct the road would be brought from Company Creek pit or outside the valley. Road would remain in an area prone to snow avalanches, rockfalls and flooding.
Hydrology	No increase in discharge, water surface elevation or velocity. Integrity of the floodplain and ability to absorb floodwaters maintained, moderating impacts of floods downstream. Natural hydrology of the upper Stehekin Valley preserved.	Increased water velocity and water depth at times of high water. River unable to utilize the floodplain for absorption of flood waters and dissipation of energy. Increased volume and velocity of water could accelerate erosion of the river banks downstream.	Integrity of the floodplain and ability to absorb floodwaters maintained, moderating impacts of floods downstream. Reconstruction could alter some use and function of the floodplain, similar to the original road.
Water Quality	Effect on water quality minimal. Trail maintenance occurring below the mean high water level would require a Hydraulic Permit from the Washington Department of Fish and Wildlife.	Water quality affected by increased sedimentation and disruption of riverbed by dredging. Water quality also affected by annual flooding of the road and subsequent repairs.	Trail maintenance and road reconstruction occurring below the mean high water level would require a Hydraulic Permit from the Washington Department of Fish and Wildlife.
Air Quality	No effect on the lower valley. Decreased emissions in the upper valley as a result of less traffic and fewer road repairs.	Short-term increase in machinery emissions and dust along the road corridor during construction.	No effect on the lower valley. Decreased emissions in the upper valley as a result of less traffic and fewer road repairs.

Environments	EFFECTS AND MITIGATIONS			
	Alt. A (No Action)	Alt. B (Rebuild)	Alt. C (preferred)	Alt. D (Close the Road)
Vegetation	No species of concern or habitat likely to support listed species were found in surveys. Introduction of exotic plants unlikely as repairs to the trail would use local materials.	No sensitive or listed plant species or potential habitat were identified in surveys of the area. Introduction of exotic plants possible from Company Creek pit and material from outside the valley.	Surveys for listed plant species would be repeated before road reconstruction begins. Introduction of exotic plants possible from Company Creek pit and material from outside the valley.	Invasion by exotic plants unlikely as repairs to the trail would use local materials. Survey of trail reroute would be conducted prior to construction.
Wetlands	Maintaining trail in the present alignment would continue to impact wetlands and incur costs associated with very wet conditions.	Confining the river and preventing further meanders from forming in the floodplain would reduce the potential for creation of additional wetlands and may result in degradation of existing wetlands.	Maintaining trail in the present alignment would continue to impact wetlands; however, access to the floodplain would enable the wetlands to continue to alleviate flooding downstream. Eventual reconstruction of the road would impede wetland development in minor floods. Major floods would likely overtop the road, allowing the river to utilize the floodplain.	Moving the trail out of the wetlands would decrease its impact and allow the natural river processes in the area to continue, enabling wetlands to alleviate flooding downstream.
Wildlife	No loss of nesting, spawning, roosting, or foraging habitat for any species of concern. The river channel on the road would continue to provide habitat for fish and amphibians.	Reconstruction activities may adversely affect species breeding in the area, such as spotted owls, northern goshawks, and flycatchers. Diversion of water would reduce fish and amphibian habitat, adversely affecting bull trout and frogs.	The river channel on the road would continue to provide habitat for fish and amphibians. Surveys for listed species would be conducted prior to reconstruction. These would be used in consultation with USFWS to evaluate impacts of reconstruction activities. Reconstruction could interfere with wetland maintenance, reducing amphibian habitat.	The river channel on the road would continue to provide habitat for fish and amphibians. Removal of the road above the washout would increase potential habitat for bears, wolves, lynx, wolverine, and fisher. Trail reroute would be surveyed for listed species in consultation with USFWS.

Environments	EFFECTS AND MITIGATIONS			
	Alt. A (No Action)	Alt. B (Rebuild)	Alt. C (preferred)	Alt. D (Close the Road)
Wilderness	Wilderness boundaries and values would not be affected.	Wilderness boundaries and values would not be affected.	Wilderness boundaries would remain 50 feet from the centerline of the roadbed, allowing the park to restore the roadway when conditions are acceptable.	Potential for expansion of the current wilderness to include the 100-foot wide area from Flat Creek to Cottonwood Camp.
Historic and Archeological Resources	No effect on known cultural or archeological resources.	No effect on known cultural or archeological resources.	No effect on known cultural or archeological resources.	Surveys would be conducted along trail reroute prior to construction.
Access and Transportation	The road above Flat Creek would remain accessible to hikers and horses and inaccessible to visitors with limited mobility.	Delays possible on the valley road during construction. For safety, visitor access above the construction site would be intermittent during periods of active construction. The facilities and trailheads above Flat Creek would again be accessible by vehicle.	The road above Flat Creek would remain accessible to hikers and horses and inaccessible to visitors with limited mobility until such time as conditions return which enable the park to rebuild the road.	Cottonwood Campground would be accessible to hikers and horses and inaccessible to visitors with limited mobility.
Visitation and Recreation	Hikes originating or ending above Flat Creek would be increased by 3 miles each way.	Temporary increased traffic and noise during construction may conflict with visitors and residents. The facilities and trailheads above Flat Creek would again be accessible by vehicle.	Hikes originating or ending above Flat Creek would be increased by 3 miles each way. The facilities and trailheads above Flat Creek would again be accessible by vehicle when the road is reconstructed.	Hikes originating or ending above Flat Creek would be increased by 3 miles each way.
Economics	Some visitors may choose not to hike over Cascade Pass because of increased distance, having a minor impact on visitor service businesses in the Stehekin Valley and Marblemount.	Local economic benefit if repair work is performed by local contractors. Reopening the road may increase visitation to the area and benefit local businesses.	Some visitors may choose not to hike over Cascade Pass because of increased distance, having a minor impact on visitor service businesses in Marblemount. Impact would be eliminated when the road is reconstructed.	Some visitors may choose not to hike over Cascade Pass because of increased distance, having a minor impact on visitor service businesses in Stehekin Valley and Marblemount.

## **ALTERNATIVES CONSIDERED, BUT REJECTED**

1. Diverting the water off the road and reconstructing the road to its previous grade. This alternative was rejected because it would require a tremendous amount of fill material (approximately 8,000 cubic yards) and would greatly alter the river processes in the area. Rebuilding the road to its previous grade would essentially form a berm through wetlands and across river channels. This alternative was rejected because of high monetary and environmental costs.
2. Rerouting the road within the 100-foot non-wilderness corridor. In the area of the washout the entire 100-foot non-wilderness corridor is in wetland and river channels. All reroute locations within the corridor would require dredging channels and diverting water. Because this alternative would result in loss of previously undisturbed wetland, this alternative was rejected and Alternative B was developed to consider reconstructing the road in the old alignment.
3. Rerouting the road out of the floodplain was considered, but rejected. This alternative would require congressional legislation to alter the boundaries of the Stephen Mather Wilderness. Although this alternative would remove the road from the sensitive riparian area, it would require the loss of important wildlife habitat in undisturbed forest. Consideration was given to the relatively short segment of road temporarily lost to the river and the extreme costs, both monetary and environmental, for rerouting the road out of the floodplain and this alternative was rejected.

## **AGENCIES AND INDIVIDUALS CONSULTED**

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Linda Saunders-Ogg	U.S. Fish and Wildlife Service
Robert Steele	Washington Department of Fish and Wildlife
Richard Engle	NPS Columbia-Cascades System Support Office

## **LIST OF CONTRIBUTORS**

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**FINDING OF NO SIGNIFICANT IMPACT  
and  
DECISION NOTICE**

**Stehekin Valley Road, Flat Creek to Cottonwood Camp  
North Cascades National Park**

**PROPOSED ACTION**

The environmental assessment was prepared to evaluate alternative treatments for a damaged section of the Stehekin Valley road, North Cascades National Park. In November 1995, a major flood event on the Stehekin River damaged the road in numerous locations. Near Flat Creek, approximately 20 miles above Lake Chelan flooding washed out a 3000-foot section of road. During the flood, the river flowed out of its banks and down the road, deeply eroding the roadbed and establishing a new river channel. This channel enters the road from the southwest, flows down the roadbed for approximately 2000 feet, then leaves the road to the northeast and flows parallel to the road for another 1000 feet before again crossing the road back towards the rest of the river. Approximately 60% of the total river volume flows down the entire 3000 feet of road during high spring and fall runoff.

In early 1996 the NPS created a temporary trail alongside the washed-out section of road, making the last three miles of road accessible to horses and hikers. Bicycles also may use the trail; however, it is not recommended as the trail is quite narrow and requires crossing the river channel on foot logs.

The alternatives considered were:

**A. No Action:** The roadbed would not be restored. The upper 3 miles of the road would continue to be maintained as a trail; open to hikers and horses.

**B. Rebuild the Road:** The road would be reconstructed in its former location. Rebuilding the road would require dredging the old channel and constructing a diversion dam.

**C. Temporarily Close the Road (preferred alternative):** The road would remain closed above Flat Creek until the river channels move away from the roadbed. When conditions return that make road reconstruction possible, the road would be rebuilt to its previous condition as defined in the General Management Plan for Lake Chelan National Recreation Area, 1995. In the interim, the trail alongside the damaged section of road would be improved for long-term use by horses and hikers. A turnaround and parking area would be developed on a helispot near Flat Creek.

**D. Remove the Road:** The upper three miles of road would be rehabilitated and a trail would be constructed linking a parking area at Flat Creek to Cottonwood Campground. The trail would be maintained as part of the Stehekin Valley trail system and bicycles would not be permitted. Foot bridges and horse fords would be constructed where necessary and existing road improvements (e.g. culverts) above Flat Creek would be removed.

**REASONS WHY THE PROPOSED ACTION WILL NOT HAVE A SIGNIFICANT EFFECT ON THE HUMAN ENVIRONMENT**

Implementation of the preferred alternative will enable the National Park Service to avoid the adverse impacts on the environment of rebuilding the road in an active riverbed. This alternative will, however, enable the NPS to rebuild the road when the impacts on the river would not be so severe. In the interim, visitors and residents will be required to use nonmotorized transportation for an additional three miles to access the areas above Cottonwood Camp.

There would be no impact on: Native American religious activities; Federal or state listed threatened, endangered, or sensitive plant or animal species; designated wilderness; floodplains or wetlands; minority or low income populations; or cultural resources.

## **PUBLIC AVAILABILITY**

A notice of availability and abstract was mailed to Stehekin property owners and residents. An article regarding availability of the assessment appeared in the Lake Chelan Mirror. In addition, the environmental assessment was mailed to individuals, agencies and organizations with known interest in the project. The assessment was available for review from March 11, 1997 to April 11, 1997.

Twenty-two responses were received, most of which simply expressed their preference of alternatives. Two respondent favored Alternative A (No Action); 5 favored Alternative B (Rebuild the Road); 4 favored Alternative C (preferred alternative of temporarily closing the road); and 11 recommended implementation of Alternative D (Closing the Road and Rehabilitating the Area).

### **Specific comments:**

- Several people agreed that it is inappropriate to rebuild the road at this time, but expressed a concern that the park would stall on rebuilding the road when conditions were appropriate.
- The park should take advantage of this rare opportunity to reverse damage done by development and adopt Alt. D.
- Rebuilding in the former location would not be as large an undertaking as portrayed in the EA.
- The preferred alternative would still result in environmental impacts that justify an EIS. Vehicle use of the area may change by the time the river channels move away from the road. Need to reevaluate at that time.
- The park is using this situation to delay making the environmentally sound decision to close this section of road.
- Several favored Alternative D as the most cost effective alternative.
- Several people pointed out that although the NPS insists on maintaining the road as per the GMP, it is not implementing other aspects of the GMP such as halting private vehicle traffic above Bridge Creek.

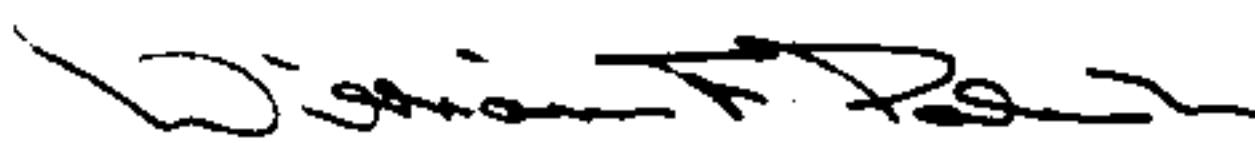
## **DETERMINATION: FINDING OF NO SIGNIFICANT IMPACT**

Based on the information contained in the Environmental Assessment, as summarized above, and a review of public comments, it is the determination of the National Park Service that the proposal is not a major Federal action significantly affecting the quality of the human environment. Nor is the proposal without precedent or similar to one which normally requires an environmental impact statement. Therefore, in compliance with the National Environmental Policy Act, an Environmental Impact Statement will not be prepared.

## **DECISION**

It is my decision to implement the project as described in Alternative C, Temporarily Close the Road Above Flat Creek (Preferred Alternative).

Recommended:



William F. Paleck  
Superintendent  
North Cascades National Park Service Complex

5-5-97

Date

Approved:

William C. Walters

Date