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PACIFIC WEST REGIONAL OFFICE Memorandum

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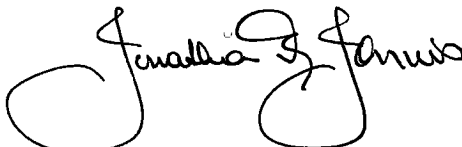
Memorandum

To: Superintendent, North Cascades National Park Service Complex

From: Regional Director, Pacific West Region

Subject: Environmental Compliance for Stehkin Valley Road Paving and Other Improvements Between MP4.0 and MP9.15

The *Finding of No Significant Impact* (and supplemental Floodplains *Statement of Finding*) for these road enhancements is approved. Subsequently, to complete this particular conservation planning and environmental impact analysis effort, when the park issues its notice of approval of the projects, copies of the attachments should be made available all individuals and organizations that received or commented on the supporting environmental assessment.



Jonathan B. Jarvis

Attachments:2

cc w\atch:

DSC-PM

PWR-FLHP

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The National Park Service cares for special places saved by the American people so that all may experience our heritage.

FINDING OF NO SIGNIFICANT IMPACT

Stehekin Valley Road Improvement Project (MP 4.0 - 9.15)

Lake Chelan National Recreation Area

Purpose and Need for Action

The Stehekin Valley Road is a one-lane road that extends 23-miles from the north end of Lake Chelan at Stehekin Landing to its terminus near the Cottonwood campsite where it becomes the trailhead leading to Cascade Pass, Horseshoe Basin, and Sahale Glacier. The first four miles of the road is paved and the remainder is gravel. The road is located entirely within the North Cascades National Park Complex (Complex), which is located in the Cascade Mountains of northern Washington State. The Complex consists of the North Cascades National Park (NOCA) itself, and the Lake Chelan and Ross Lake National Recreation Areas (NRA). Approximately 93 percent of the Complex also constitutes the Stephen Mather Wilderness.

The Stehekin Valley Road parallels the Stehekin River providing access to National Park Service (NPS) facilities, trailheads, camping areas, and recreational activities, as well as private property within the Stehekin River valley. It is the only vehicle access point into the Lake Chelan NRA and NOCA from the south, and visitors who want to traverse this road in their own vehicles must barge their vehicles in on Lake Chelan. Because it provides the only vehicle access, the Stehekin Valley Road is an important route for park staff, private property owners in the valley, and visitors.

The purpose of the proposal is to rehabilitate and pave a 5.15-mile section of the Stehekin Valley Road, make erosion control and safety improvements, and make flood related road repairs to facilitate park operations, protect resources, and improve visitor experience. The project is needed because of several problems in maintaining the operation of the Stehekin Valley Road. Sections of the road lie within the active floodplain erosion zone of the Stehekin River or are located in close proximity to the eroding riverbank. The river carries high volumes of water and frequently floods (there have been large floods in 1989, 1990, 1995, 1997, 1999, and 2003) causing erosion and washing out or flooding portions of the road. This causes periods of temporary road closure and disrupts access to the upper Stehekin Valley. A record flood in October 2003 severely damaged portions of the upper road above milepost (MP) 11 and the future of the road above this point is uncertain. Currently there are only 9.15 miles of continuous road accessible to vehicles along the original 23 miles of the Stehekin Valley Road.

Selected Action

The selected action is Alternative 2 (the preferred alternative) as described and analyzed in the Stehekin Valley Road Improvement Project environmental assessment (EA). The selected action has not been modified in any way from what was presented in the EA. Under the selected action, the National Park Service in cooperation with the Federal Highway Administration will rehabilitate and pave a 5.15 mile section of the Stehekin Valley Road.

Rehabilitation work will include construction of a series of road, drainage, and bioengineered riverbank improvements. The majority of the road improvements will occur within the existing alignment, except for smaller sections that require special attention (i.e., to repair flood damage, and to fix sight distance and drainage problems). The road will be rehabilitated as a single-lane road approximately 14 feet in width with appropriately spaced turnouts for two-way traffic. Approximately 20 pullouts will be constructed to improve visibility along the roadway corridor. The pullouts will be approximately 18 feet wide and 30-35 feet in length.

In some areas the road grade will be raised to allow road operations to continue even with minor flooding and there are several road sections that will be repaired where there has been flood damage. Drainage improvements include the addition, replacement, or repair of approximately 18 culverts and construction of approximately 3,085 linear feet of ditches along the roadway (ditching along the road would be minimized as much as practical to protect resources). There will also be two road reroutes at MP 7.0 and MP 7.5.

The majority of the clearing for the project will range from 18-25 feet in width to minimize removal and disturbance of vegetation. In areas where new drainage ditches will be constructed along the sides of the existing road the clearing will range from 18-33 feet and in the road reroute areas clearing will range from 25-40 feet. However, as much as practical, the clearing limits will be minimized. An example of minimizing the amount of area to be cleared is described as follows for the road reroute at MP 7.0: much of the 1,100 foot reroute (approximately 500 feet) would be cleared to 18-25 feet, and approximately 300 feet would be cleared to 36 feet, 100 feet to 36-39 feet, and 100 feet to 40 feet.

For the two road reroute areas, totally 3,300 linear feet, approximately 2.8 acres will be cleared. Approximately 0.29 acres of clearing will result from constructing the turnouts (18 feet x 35 feet x 20 turnouts), and approximately 0.3 acres will be cleared at the turnaround at MP 9.15 (a portion of this area is already cleared). Clearing limits along the remainder of the existing road will vary considerably depending on location, but a conservative estimate assuming an average clearing limit of 26 feet minus the existing road width and surrounding cleared area of approximately 14 feet gives a cleared area of 12 additional feet for a distance of 4.45 miles. This will result in approximately 6.5 acres of clearing (Note: This is a very conservative estimate, it is likely that clearing will be less than this amount.). Thus, the total land disturbance (adding together the cleared areas from the reroutes, turnouts, turnaround, and the area outside the existing cleared area along most of the road) would be approximately 10 acres. Approximately 1.8 acres of abandoned road will be obliterated and revegetated.

Approximately 5.15 miles of road will be paved with asphalt, which would tie into the existing pavement end at Harlequin Bridge (MP 4.0) and extend to the northern terminus turnaround (MP 9.15). Paving the road will reduce the need for gravel to maintain the road, reduce dust, minimize eroded sediment from the road being transported into the river, and facilitate snowplowing operations to keep the road open during the winter (paving was considered primarily to reduce maintenance costs after heavy rains and floods). Construction is expected to begin in fall 2005 (generally following the end of the nesting season for the northern spotted owl).

In terms of impervious surface, the existing road from Harlequin Bridge to MP 9.15 consists of approximately 8.9 acres of impervious surface (gravel roads are considered impervious surface). There will be some narrowing of portions of the existing road surface and obliteration of road sections in the reroute areas. This reduces the impervious surface by approximately 0.55 acres. However, new impervious surface includes approximately 0.76 acres for the new road reroutes and road pullouts, and approximately 0.8 acres for the parking area/turnaround. Thus, there will be an overall net increase in impervious surface of approximately 1 acre.

Most of the material to be used in the road construction including base course for the road subbase, aggregate material, and rock would be barged into Stehekin in accordance with the Lake Chelan NRA General Management Plan (GMP). There may be gravel material taken from the park pit (Company Creek Pit) to repair some of the flood-related damage area. However, any use of material from the Company Creek Pit would be in accordance with the Lake Chelan Sand, Rock, and Gravel Plan, which specifically defines when and for what uses this material may be used. Any material brought in will be from an approved site that has been evaluated for the presence of exotic plants or noxious weeds (the desired material being absent of any exotics or noxious weeds). (Note: The fill amounts estimated in this section are approximate and additional imported material [over what was estimated] may be required to complete the project.)

Construction will also require several staging areas. Potential locations for the staging areas would be at the locations of the road reroutes. The older segments of road that will be abandoned may be used as the staging areas. Thus, staging areas could be located at MP 7.0 and between MP 7.5 and MP 8.0.

Traveling from south to north, the main improvement areas are proposed at the following locations: Wilson Creek (MP 5.3), MP 6.0, McGregor Meadows (MP 6.5), MP 7.0, MP 7.5, MP 8.0, MP 8.5, and MP 9.15. These are described in more detail below. Road improvements planned at MP 6.0, MP 8.5, and MP 9.15 are not flood related. Improvements related to the October 2003 flood are planned at the remaining locations.

MP 5.3 - Wilson Creek

At Wilson Creek there are problems on both sides of the Stehekin Valley Road. On the south side, the Stehekin River has eroded the bank along the toe of the road slope and there is currently an approximate 20-foot steep drop with slopes of over 40 percent from the road to the river. During a recent site visit (February 2004), cracks were observed that had developed along the side of the road shoulder indicating the potential for future slope failure. Should this occur, portions of the road shoulder or the road itself could fail.

Wilson Creek is located on the northern side of the road, and is prone to periodic high flows. During these high flow periods, the creek deposits large quantities of sediment onto the road. It also tends to jump its bank during these events, and spreads out across the slope causing water to flow across the road in several places. This results in erosion to the road surface and additional sediment load to the Stehekin River.

Riverbank improvements at this location will include laying back the riverbank slope above the waterline for approximately 400 feet (approximately 1,100 yds³ of cut and 1,250 yds³ of fill) and stabilizing the slope by placing riprap at the toe of the slope (approximately 100-200 yds³ of small boulders) and logs (e.g., a live crib wall) into the slope, which will also allow native vegetation to be re-established.

The roadway will be adjusted to the northeast by cutting into the slope and moving the road 10-20 feet into the cut. Visual analysis indicated that no large trees or vegetation of concern will be lost through this action. The road grade will also be adjusted to smooth out the horizontal alignment. The roadwork will involve approximately 525 yds³ of cut and 575 yds³ of fill. These road adjustments will be made to move the road farther from the river and to allow the shoreline room to adjust naturally. This work is recognized as an approximately 10-15 year solution because erosion from the river is occurring at the toe of the slope and at some point in the future this issue will need to be addressed again.

Three additional culverts will also be installed across the road to reduce damage from heavy rains and flooding caused by Wilson Creek. The culverts will vary in size from 24 to 36 inches. Thus, there will be four evenly spaced culverts along the roadway (three new culverts and one existing culvert). A ditch will be constructed on the uphill side of the road to capture water from Wilson Creek and direct it to the culverts to keep the water from overrunning the road surface.

Prior to scheduling any of the above project elements that have the potential to impact adjacent private land the NPS will conduct a survey to determine the location of property lines. If private land would be affected the NPS will work with the property owner to secure an easement.

MP 6.0

Several improvements are proposed for this area and may be constructed as funding becomes available. At approximately MP 6.0, the slope above the road may be laid back and a protruding “eyebrow” of material removed to lessen the potential for material to slough off the slope onto the road. The soil is very fine on the slope and re-vegetation of the slope may require covering the slope with fallen trees, duff, and litter. A dry rock wall will be constructed at the toe of the slope to collect any material sliding off the slope. In addition the road grade may be raised to improve access to private property. Between MP 6.0 and 6.5 there will be a minor realignment of the road away from the river to improve sight distance.

MP 6.5 – McGregor Meadows

The road grade in the vicinity of McGregor Meadows (from approximately MP 6.3 to MP 6.7) will be raised 1-3 feet to its former grade to help prevent flooding of the road surface (the road grade has already been raised 1-3 feet from MP 6.7 to MP 7.0 as part of the emergency road repair work related to the October 2003 flood). This will require approximately 5,200 yds³ of gravel. Raising the road grade will also allow ditches to be re-created to help direct water away from the road surface. Where fill is proposed to raise the road, fill slopes will be kept as steep as possible to minimize the disturbance footprint. Minor reroutes will also be considered in this area to improve limited sight distances.

MP 7.0

At MP 7.0, the road will be rerouted to the north and result in a new road section approximately 1,000 feet in length (an emergency road reroute has already been constructed because the October 2003 flood destroyed this road section - the permanent reroute would generally follow this temporary road, but would be moved farther away from the river). It is estimated that this work will require 250 yds³ of cut and 2,350 yds³ of fill. This would disturb approximately 1.03 acres. The old road alignment has been abandoned and will be obliterated and revegetated. The abandoned road section may be used as a construction staging area prior to returning this road segment to a natural vegetated condition.

The road grade will be raised 1-3 feet in this area and a series of rock-core humps or high points will be added in the roadway to prevent floodwaters from running down the road (fill slopes would be kept as steep as possible to minimize the disturbance footprint). In the past, floodwaters have run down the road because it is the path of least resistance and resulted in damage to the road. These actions will help to prevent the Stehekin River from following a new course down the road prism.

MP 7.5

At approximately MP 7.5 the road will be rerouted to the north to move the road farther away from the Stehekin River. This new road section will be approximately 2,300 feet in length and disturb approximately 2.37 acres. The approximate amount of cut and fill would be 1,400 yds³ and 2,140 yds³, respectively. The former road will be obliterated and revegetated (the former road may be used as a staging area prior to returning it to a natural state).

MP 8.0

At approximately MP 8.0, the existing streambank revetment may be repaired and reinforced. Two to four new stream barbs will be constructed in the river downstream of the two existing barbs. Existing barbs held up well during the last flood, but it was determined that more were needed to adequately protect this reach of the road from the river downstream from the existing barbs (river realignment during the October 2003 flood caused damage to a 600-foot section of road). The barbs are made up of large rocks that protrude into the river. They are designed to dissipate the force of the current and create eddies, thereby reducing bank erosion. The new barbs will protrude into the river approximately 20 percent of the width of the channel (about 10 feet) and be anchored into the existing roadbed. The barbs will be spaced approximately 300 to 400 feet apart and consist of approximately 250 - 400 yds³ of material. The road grade will also be raised in this area 1-3 feet and a ditch established. No work will be performed on the cut slope above the road. Approximately 500 feet of the riverbank will be revegetated.

As part of the in-stream work at MP 8.0 and in other areas such as Wilson Creek, bioengineering techniques will be used. An example of a bioengineering technique is the use of willow layering. This technique involves augmenting the soil and planting willows in layers next to and on the riverbank. Planting willows in layers provides several benefits. First, the willow layers protect and stabilize the riverbank. Secondly, willows provide woody debris (which is an important component for aquatic habitat) and shading to help maintain cooler temperatures. And, finally, they provide habitat for upland wildlife such as small mammals and amphibians.

MP 8.5

A creek located near the Stehekin Valley Ranch hits the road at a right angle, turns and flows east parallel to the road in a man-made ditch, and then is forced by boulders to turn 90 degrees into a culvert. Because of the angle that the creek meets the road, erosion is occurring along the road edge. Under the selected alternative, the culvert will be moved and the creek slightly channelized, so the creek and culvert line up and direct water under the road without impacting the road shoulder or road base.

MP 9.15

At MP 9.15, a vehicle turnaround and parking area will be constructed. The turnaround area will be approximately 0.8 acres in size and large enough to enable buses to turn without backing up. Parking would be provided for approximately 10 vehicles (or one bus and 5 vehicles). The turnaround will also be the northern limit for snow plowing operations along the road and would provide room to pile snow up.

Other Alternatives Considered in the EA

Three other alternatives were considered in the environmental assessment. These included the No-Action (Alternative 1), a minor improvements alternative (Alternative 3), and the reroute alternative at MP 7.5 (Alternative 4).

No Action Alternative

Implementing the No Action Alternative would result in the continuation of the existing conditions and operations along the Stehekin Valley Road. Ongoing maintenance and repair of the roadway would occur as needed and include placing gravel on the roadway and minor road grading. Riverbank erosion and flood damage could result in the need to make major emergency repairs to keep the road open and operational. It is likely that under this alternative periodic flooding of the road would occur resulting in road closures, and the loss of vehicle access to properties along the road corridor, as well as loss of access to the upper Stehekin Valley and the interior of the Lake Chelan NRA and NOCA. There would also be ongoing uncontrolled erosion of the road, particularly during flood events, which could increase sediment loading into the Stehekin River depending on the location of the road erosion. Under this alternative, there would be no work in the Stehekin River such as constructing rock stream barbs to direct the river away from the road or any road/slope stabilizing structures or measures such as rock riprap/revetments. It is likely that continued flooding would impact the stability of the roadway and road operations.

Alternative 3

Alternative 3 was similar in some respects to the preferred alternative (Alternative 2), but the main difference is that it is reduced in the level of improvements that would take place. Under this alternative, the Stehekin Valley Road would be paved from MP 4.0 to MP 9.15 with asphalt and there would be turnouts similar in number and location to those described for Alternative 2. However, improvements would only occur at five of the main locations instead of the eight locations listed in Alternative 2. These include work at MP 6.5, MP 7.0, MP 7.5, MP 8.0, and MP 9.15. There would be no improvements at Wilson Creek (MP 5.3), MP 6.0, or MP 8.5 under this alternative.

In terms of the amount of area that would be cleared, the cleared area would be similar to Alternative 2, except in the area of the reroute at MP 7.5. At this location the cleared area would be approximately 2 acres (as compared to 2.8 acres for Alternative 2), because of a shorter road reroute (1,000 feet vs. 2,300 feet). Overall, the new cleared area under this alternative would be approximately 9 acres. The amount of impervious surface under this alternative would be slightly less (approximately 0.36 acres less) than Alternative 2 because of the shorter reroute at MP 7.5.

Alternative 4

Alternative 4 would have the same improvements as Alternative 2 at MP 5.3, 6.0, 6.5, 7.5, 8.0, 8.5, and 9.15. However this alternative differs from Alternative 2, because it would maintain the Stehekin Valley Road in its present alignment at the MP 7.0 location and there would be no road reroute in this location (Note: An emergency reroute was already constructed because the October 2003 flood washed away this section of roadway). This alternative would reduce the amount of terrestrial habitat loss and reduce the level of terrestrial habitat fragmentation. This alternative would result in clearing approximately 8 acres. Instead of a road reroute, improvements would be made to the riverbank at

MP 7.0 to prevent or reduce erosion of the riverbank. This would help protect the road from failure and preserve wildlife habitat.

The riverbank at MP 7.0 is eroding rapidly, and NPS relocated the road a short distance away from the river following the October 2003 flood. However, because of the rapid rate of riverbank erosion, it is likely that the relocated road section would be threatened within a few years. The length of eroding shoreline is 825 feet, with a 6-foot high bank composed of gravel that is more erodible compared to other areas such as the riverbank at MP 7.5.

To control and minimize further erosion, 4 rock stream barbs would be constructed in combination with bioengineering (engineered log jams – essentially the engineered log jams are constructed over and between the rock barbs and above the ordinary high water mark, thus the log jams only affect the river during flooding) and a short setback of the road to allow for a more stable bank slope. Some additional armoring of the toe of the slope between barbs would be required because of loose gravel bank material. This would require approximately 775 yds³ of large angular rock. Large woody debris would be incorporated into the rock structures and bioengineering (i.e., willow layering) would be used along the upper portion of the barbs.

One option that was also being considered was to leave the road unpaved through this area. Because of the rapid rate of erosion, it might be necessary to move the road again in the near future or to take additional measures to harden the bank to protect a paved road section. It is not desirable to harden more riverbank in this area, because there are already large areas of riverbank above and below this section that have been hardened, and any large-scale bank stabilization in this area could constitute a major impact. Leaving the road unpaved would make it easier to move the road in the future, as well as slightly reducing the cost of improving the road (i.e., paving).

Alternatives Considered but Dismissed From Analysis in the EA

Early planning for this project considered five alternatives: Alternative A – a major reroute at two locations (1.6 miles of reroute); Alternative B – a total reroute out of the 25-year floodplain (2.6 miles of reroute); Alternative C – minor reroutes at MP 7.0 and MP 7.5 and raising the road at McGregor Meadows; Alternative D – existing alignment with erosion site augmentation; and Alternative E – minimal improvements and paving. Several of these alternatives were analyzed in detail in the EA, and the remaining were dismissed from further consideration for one or more of the following reasons:

- The alternative's lack of technical feasibility
- Inability to meet the project's purpose and need
- Duplication with other less environmentally damaging or less expensive alternatives
- Conflict with an up-to-date park plan, statement of purpose and significance, or other policy
- Severe environmental impact
- As a secondary supporting reason, economic infeasibility.

Based on the evaluation of the factors listed above and a comparison of the relative advantages including costs, it was decided that a hybrid alternative of Alternatives C and D would best meet the purpose and need of the project. This was carried forward for analysis in the EA as Alternative 2 (the preferred alternative). Alternative C was also forwarded for analysis in the EA as Alternative 3, as it was the next best alternative for meeting the purposes of the project. Alternatives A and B were dismissed because of the potential for an unacceptable level of adverse impact on northern spotted owls. Alternative E was dismissed because it did not meet the project purpose and need (such as improving safety and the stability of the roadway).

Rationale for Selected Action

The selected action meets the project purpose and need by providing an improved roadway for people who visit the Complex, private property owners, and NPS staff. The selected action would provide a series of road, drainage, and riverbank improvements that would:

- Enhance operational road safety.
- Reduce the possibility of flood damage to the road and large-scale sediment delivery to the Stehekin River, which is eligible for designation as a Wild and Scenic River.
- Minimize disruption to threatened and endangered species.
- Re-establish habitat along the riparian zone of the Stehekin River.
- Decrease dust generation and impacts on visual quality (i.e., coating of roadside vegetation by dust).
- Improve drainage from the road surface and under the roadway.
- Decrease the likelihood and frequency of road closures due to minor flooding.
- Preserve additional area for the Stehekin River to meander naturally.
- Reduce the need for gravel.
- Increase the effectiveness of snow plow operations.

As summarized in the following sections, the selected action (preferred alternative) also best meets the criteria in Section 101 of the National Environmental Policy Act (NEPA) for the environmentally preferred alternative; and, after consideration of effects described in the environmental assessment, there are no significant impacts to the human environment as defined by criteria in the Code of Federal Regulations (CFR) (40 CFR 1508.27).

Environmentally Preferred Alternative

The environmentally preferred alternative is determined by applying criteria identified in Section 101 of NEPA to each alternative considered. The National Park Service considered the alternatives in this analysis in accordance with NEPA and the Council on Environmental Quality's (CEQ) regulations (Section 1505.2) and determined that the selected action (Alternative 2) as presented in the Stehekin Valley Road Improvement Project EA is the environmentally preferred alternative based on its furtherance of the following NEPA goals.

The CEQ defines the environmentally preferred alternative as "...the alternative that will promote the national environmental policy as expressed in NEPA §101." Section 101 states that, "...it is the continuing responsibility of the Federal Government to:

- **Goal 1:** Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;
- **Goal 2:** Assure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings;
- **Goal 3:** Attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences;
- **Goal 4:** Preserve important historic, cultural, and natural aspects of our national heritage, and maintain, wherever possible, an environment, which supports diversity and variety of individual choice;
- **Goal 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

- **Goal 6:** Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.”

Alternative 1 is not the environmentally preferred alternative for several reasons: (1) Implementing this alternative would not improve road safety, (2) Visitors and residents would continue to experience impacts from dust generation such as reduced air quality and visual impacts from dust coating the roadside vegetation, (3) The road would continue to require resource materials (i.e., gravel), and (4) There would likely be ongoing road closures from flood events making it more difficult for visitors and staff to access the park complex. Thus, it would not meet goals 2, 3, 5, or 6.

Alternative 2 is the environmentally preferred alternative. Implementing Alternative 2 would best preserve the natural aspects of the Stehekin River and its floodplain as compared to the other alternatives, because it removes more of the road away from eroding riverbanks, thus allowing the river to meander naturally and to maintain its natural erosion process (goals 1 and 4). Improving the road by raising the road grade and moving it out of the floodplain in several places would allow for more unimpeded access (i.e., less road closures due to flooding of the road surface) to the recreational opportunities in NOCA, Lake Chelan NRA, and the wilderness area (goals 2, 3, and 5). It would also reduce the use of gravel for road repair and maintenance (goal 6). However, there would be some environmental tradeoffs associated with this alternative, particularly related to endangered species. Moving the road would benefit the river and recreational access, however, the road would be moved closer to sensitive wildlife habitat, which could adversely affect wildlife (goals 1, 3, and 4).

A case could be made for Alternative 3 as the environmentally preferred alternative because there would be fewer impacts to natural resources as compared to Alternative 2, such as less earth disturbance and vegetation removal (goal 4). However, Alternative 3 would not fix several safety problem areas as compared to Alternative 2 (goals 2, 3 and 5). For example, Alternative 3 would not stabilize the river/road bank in the area of Wilson Creek. Slope failure in this area could result in complete road closure, a decrease in the safety for travelers using this portion of the road, and adverse impacts to the Stehekin River from sedimentation and increased turbidity. In addition, this alternative would not resolve the sight distance and slope instability problems at MP 6.0 or the erosion occurring along the road base from the stream at MP 8.0.

Alternative 4 involves riverbank modifications instead of a road reroute at MP 7.0. Building the riverbank improvements instead of a road reroute would reduce impacts to soils, vegetation, and terrestrial wildlife habitat (goals 1, 3, and 4). However, the riverbank improvements would result in impacts on floodplains, stream flow characteristics, and water quality. Thus, there are tradeoffs to consider between Alternatives 2 and 4 that are dependent on what factors are deemed most important in terms of meeting federal responsibilities pertaining to the six goals mentioned above. Perhaps the most important factor to consider is that Alternative 4 is less effective at meeting the goal of preserving the natural aspects of the river (its ability to meander naturally), because it constrains the movement of the river more than Alternative 2. While habitat is relatively common in the project area, the river is a key element of the environment. NPS goals outlined in the Lake Chelan NRA GMP include preserving the ability of the river to meander above all else, except where necessary to maintain the road. Since it is possible to move the road away from the river and not impact the natural functions of the river, Alternative 2 better meets goals 1, 3, 4, and 5. Therefore Alternative 4 is not the environmentally preferred alternative.

Mitigation

The NPS places a strong emphasis on avoiding, minimizing, and mitigating potentially adverse environmental impacts. To help ensure the protection of natural and cultural resources and the quality of the visitor experience, the following protective measures will be implemented as part of the preferred alternative. The NPS will implement an appropriate level of monitoring throughout the construction process to help ensure that protective measures are being properly implemented and are achieving the intended results.

Impact Topic	Mitigation Measures	Responsibility
Soils	Clearly delineate clearing limits to minimize the amount of cleared area.	Contractor
	Clear and grub only those areas necessary for construction.	Contractor
	Reuse topsoil duff from the reroute areas to rehabilitate obliterated road sections.	Contractor
Water Quality	The area to be cleared will be clearly marked on the ground to minimize the amount of cleared area.	Contractor
	Only those areas necessary for construction will be cleared.	Contractor
	Topsoil and duff from the reroute areas will be used to rehabilitate (re-create habitat) the obliterated road segments.	Contractor
	The amount of disturbed soil and the duration of soil exposure to rainfall will be minimized.	Contractor
	Erosion-containment controls such as silt fencing and sediment traps (e.g., check dams and hay bales) will be used to contain sediment on site.	Contractor
	Temporary diversion devices such as culverts and trenches, or French drains will be used to direct surface water away from exposed slopes.	Contractor
	Slopes will be scarified, if necessary, to slow erosion.	Contractor
	Storm water will be directed away from disturbed areas into temporary settling basins.	Contractor
	Disturbed soil will be covered with plastic sheeting, jute matting, erosion netting, straw, or other suitable cover material.	Contractor
	Disturbed earth will be revegetated with non-exotic plants as soon as practical.	Contractor
	Best Management Practices to control adverse impacts of potential fuel spills during construction shall be implemented, including the following: <ul style="list-style-type: none"> • Refueling activities will be done at least 100 feet from the river and its tributaries. • Areas where refueling or maintenance of equipment will be done will be identified and will have containment devices such as temporary earth berms surrounding these areas. • Absorbent pads will be available to clean up spills. • Contract specifications will include restrictions on the location of fueling sites, requirements for spill containment, and other measures to safeguard aquatic and terrestrial habitat from construction-related contaminants. 	Contractor
Streamflow Characteristics	The duration of the in-stream work would be limited as much as possible.	Contractor
	Work would be timed to occur at lower flow periods (i.e., work would not occur during heavy river flows) and avoid fish spawning periods.	Contractor
	Paving (creation of impervious surface) would also be minimized as much as possible, for example road shoulders would not be paved.	Contractor

Vegetation	Obliterate and revegetate abandoned road segments and areas disturbed by construction with native plant species.	Contractor
	Use bioengineering techniques such as willow layering to stabilize slopes.	Contractor
	Minimize the area to be cleared.	Contractor
	Only freshly exposed subsurface materials would be imported from the quarry outside the park. No stockpiled materials from the quarry would be used.	Contractor
	Material removed from the offsite quarry would be covered while being transported into the Lake Chelan NRA.	Contractor
	All vehicles having contact with soil or materials that may contain noxious weed seed would be washed prior to working in weed free areas or transporting weed free materials.	Contractor
	Any soil or rock materials that would be stored would be covered to prevent exposure to noxious weed seed.	Contractor
	Salvaged soil known to contain noxious weeds would be stored, covered, and separated from weed free soil. This material could be used for subsurface fill.	Contractor
Wildlife and Threatened and Endangered Species	No construction activities will take place within the Action Area ¹ between March 1 (the beginning of the spotted owl nesting season) and September 6, depending on the age of the fledgling spotted owls, as follows: work can begin on or after September 6 as soon as at least 4 weeks have passed since fledging of the spotted owl(s), if any. This determination will be done by the North Cascades Complex wildlife biologist.	NPS and Contractor
	Construction activities will be carried out only during daylight hours to minimize effects to spotted owls.	Contractor
	No pullouts will be constructed within line-of-sight of the area along the road that is immediately adjacent to the current spotted owl nest tree.	NPS and FHWA
	The placement of rock barbs will be done outside the wetted channel. The rock will be placed in the channel using heavy equipment that will be on the road or bank above the ordinary high water line.	FHWA and Contractor
	All garbage will be taken off-site at the end of each working day.	Contractor
	Monitor project implementation to ensure compliance with the conservation measures listed above, especially the seasonal timing restrictions and the final placement of the road near the spotted owl nest. Report the results of this monitoring to the USFWS. A North Cascades Complex biologist is to monitor the spotted owl nest to determine if the spotted owls produce young during the year(s) of project implementation (<i>Note: The biologist would also determine whether the spotted owl nest is occupied or has moved.</i>). If they do discover young, then the biologist is to estimate the age of the fledgling(s) as part of the timing restrictions described above.	NPS

¹ The Action Area is defined as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action" (50 CFR 402). The Action Area is estimated only for those species for which adverse effects are anticipated, in this case, northern spotted owls. For this project, the Action Area is 1,000 feet in all directions from the owl nest tree.

	The NPS shall report the progress of the proposed action and its impacts on Federally threatened and endangered species, particularly northern spotted owls to the USFWS as specified in the incidental take statement in the Biological Opinion in accordance with 50 CFR §13.45 and §18.27.	NPS
	Any dead or injured Federally-listed species found in the Action Area shall be reported within 24 hours to a special agent of the USFWS, Division of Law Enforcement at (360) 753-7764, or to the USFWS Western Washington Fish and Wildlife office at (360) 753-9440. In addition, the USFWS is to be notified in writing within 3 working days of the accidental death of, or injury to, a northern spotted owl or of the finding of any dead or injured spotted owls during implementation of the proposed Federal action. Notification must include the date, time, and location of the incident or discovery of a dead or injured spotted owl, as well as any pertinent information on circumstances surround the incident or discovery. The USFWS contact for this written information is the Manager for the Western Washington Fish and Wildlife office.	NPS and Contractor
Visitor Experience	A public information program to warn of construction related road closures, delays, and road hazards would be implemented. This program would help to aid in mitigating any impacts on visitor's expectations and experiences. Notice should also be provided to equestrians (e.g., Stehekin Valley Ranch) because during construction hot asphalt could make the road temporarily impassable for horses crossing the road.	NPS
	Vehicle traffic would be managed within the construction zone and contractor hauling of materials, supplies, and equipment would be controlled to minimize disruptions in visitor traffic.	Contractor
	A safety plan would be developed prior to the initiation of construction to ensure the safety of park visitors, workers, residents, and park staff.	Contractor and NPS
	During construction, dust should be controlled (generally dust is controlled by minimizing soil disturbance, spraying water over disturbed soil areas during dry periods [no chemicals would be used to control dust], and revegetating disturbed soil areas as soon as practical following construction).	Contractor
Park Operations	Contractors would provide and maintain park staff and emergency vehicle access through the project area during construction and would coordinate all work with park staff to reduce disruption in normal park activities.	Contractor
	Construction workers would be informed about the special sensitivity of park values and regulations.	NPS
	Park resource specialists would be involved in inspections and monitoring and provide recommendations during the road rehabilitation work.	NPS
	Prior to scheduling work that would have the potential to affect private property surveys will be conducted to determine the location of property lines. If necessary acquisition of an easement will be negotiated.	NPS

Why the Selected Action (Preferred Alternative) Will Not Have a Significant Effect on the Human Environment

As defined in 40 CFR §1508.27, significance is determined by examining the following criteria:

- Impacts that may have both beneficial and adverse aspects and which on balance may be beneficial, but that may still have significant adverse impacts which require analysis in an EIS.

No major adverse or beneficial impacts were identified in the environmental assessment that will require analysis in an environmental impact statement.

Most of the impacts associated with the selected action (preferred alternative) will be caused by construction and will be short-term and negligible to moderate in effect. Once construction is completed there will be few adverse impacts, which will mostly be negligible to minor and short or long-term in effect. The only exception is the moderate long-term adverse effects on stream flow characteristics that would result from the addition of rock stream barbs in the river and riverbank stabilization work at Wilson Creek. These actions will alter stream flows and could increase the rate or alter the location of downstream erosion, which may impact some private properties along the river.

- Degree of effect on public health or safety.

The selected action will improve road conditions and safety for motorized and non-motorized travel on Stehekin Valley Road. Sight distances will be improved, there will be more pullouts constructed so that opposing traffic may safely pass, the road will be paved with a smooth surface, and generally public safety will be improved. These roadway improvements will have a long-term beneficial effect on visitor experience.

- Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, floodplains, wild and scenic rivers, or ecologically critical areas.

As described in the environmental assessment, there will be no effect on wilderness, historic resources, cultural landscapes, visual resources, wetlands, threatened or endangered plants, archaeological or ethnographic resources, museum collections, or prime farmlands. Impacts to floodplains will be long-term, minor and adverse. As described in the attached Statement of Findings for Floodplains, the selected action is designed to move portions of the road out of the floodplain, where possible. At other locations, bank protection measures will be undertaken and road elevation changes will be made to minimize the impact of flooding on the road.

The only ecologically critical areas identified in the project area that could be affected by the selected action are threatened and endangered species habitat and the Stehekin River itself. Threatened and endangered habitat particularly a nest site for northern spotted owls could be affected by the selected action. However, mitigation conditions placed on the project by the U.S. Fish and Wildlife Service as part of an incidental take approval would ensure that there would be no major adverse impact on northern spotted owls.

The selected action will not have a major adverse affect on the Stehekin River (or its eligibility as a Wild and Scenic River) and will provide several benefits such as providing more room for the river to meander naturally, reduce sediment load into the river, thus protecting water quality and creating riparian habitat (for example, vegetation such as willow layering would help keep the water cooler in the summer and improve water quality).

- Whether the action is related to other actions with individually insignificant but cumulatively significant impacts.

In the environmental assessment, the National Park Service considered whether any past, present, or reasonably foreseeable future projects would contribute to the project impacts associated with the Stehekin Valley Road project and cause any significant cumulative impacts. Past projects included in the cumulative impact analysis consisted of the original construction of the Stehekin Valley Road and subsequent road repair and improvement projects at MP 7.0, MP 8.0, and McGregor Meadows. A present project included in the cumulative impact analysis is the ongoing forest fuel management

program in the Stehekin Valley. Possible future projects included in the cumulative impact analysis were the planned reroute in the Coon Run area, which adjoins the current project area at MP 9.15; and the need to address the ten-mile section of Stehekin Valley Road above High Bridge, which was severely damaged in the October 2003 flood.

The cumulative impacts evaluation determined that adverse cumulative impacts would be short and long-term and range from negligible to moderate in effect. Since there would be no major adverse effects, there would be no cumulatively significant impacts.

- Degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources.

The selected action would not adversely affect any districts, sites, highways, structures or objects listed in or eligible for listing in the National Register of Historic Places or cause any impact on significant scientific, cultural, or historic resources.

- Degree to which the action may adversely affect an endangered or threatened species or its critical habitat.

The U.S. Fish and Wildlife Service concurred with the National Park Service's determination that the project may affect but is not likely to adversely affect gray wolf, grizzly bear, Canada lynx, bald eagle or bull trout. They also concurred that the project may affect, (and is) likely to adversely affect northern spotted owls. The U.S. Fish and Wildlife Service as part of their Biological Opinion placed conditions on the project that will be implemented by NPS (see mitigation section above). With the U.S. Fish and Wildlife Service conditions and NPS developed mitigation, the U.S. Fish and Wildlife Service concluded that the project would not jeopardize the continued existence of northern spotted owls.

- Degree to which effects on the quality of the human environment are likely to be highly controversial, highly uncertain, involve unique or unknown risks, or establish a precedent for future actions with significant effects. Whether the action threatens a violation of federal, state, or local environmental protection law, or represents a decision in principle about a future consideration.

There were no highly controversial effects or highly uncertain, unique or unknown risks identified during either preparation of the environmental assessment or the public review period. The selected action (preferred alternative) does not establish a National Park Service precedent for future actions with significant effects, does not represent a decision in principle about a future consideration, and does not violate federal, state, or local environmental protection laws.

Impairment of Park Resources or Values

In addition to reviewing the list of significance criteria, the National Park Service determined that implementation of the selected action (preferred alternative) will not constitute an impairment of park resources and values. This conclusion is based on a thorough analysis of the impacts described in the environmental assessment, the agency and public comments received, and the professional judgment of the decision-maker in accordance with the NPS Management Policies 2001 (December 27, 2000). As described in the environmental assessment, implementation of the selected action (preferred alternative) 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 of the Lake Chelan NRA; (2) key to the natural or cultural integrity of the NRA; or (3) identified as a goal in the Lake Chelan National Recreation Area General Management Plan or other relevant National Park Service planning documents.

Public Involvement and Agency Consultation

Several elements of the proposed road improvement project such as paving the road have been discussed since 1995 when it was first addressed in the Lake Chelan NRA GMP/EIS. Public, agency, and tribal comments were collected on that document, as well as during other related planning efforts. More recent public and agency involvement has included NPS internal scoping and several meetings held with the public, tribes, and agencies.

Public meetings to discuss the project were held in Stehekin on December 2, 2003, February 17, 2004, and May 12, 2004. Attendees ranged from 25 at the May meeting to 40 at the December meeting. Meeting announcements were posted on bulletin boards in Stehekin and at the Stehekin post office. Issues and concerns identified during internal scoping and at public meeting were addressed in the EA (EA p. 10-11). The most frequently mentioned issues and concerns are summarized below:

- Frequent flooding impacts park operation and visitor access.
- Construction of erosion controls would impact water quality, stream flow and natural processes.
- Raising the road, reroutes, and bank stabilization would affect the characteristics of the floodplain.
- Construction would increase noise.
- Clearing and grading for reroutes would affect soils and vegetation.
- Threatened and endangered species could be impacted by reroutes.
- Gravel used to maintain the road results in dust, impacts water quality, vegetation and visitor experience.

Agencies and tribes contacted during project planning included the following:

- U.S. Army Corps of Engineers
- U.S. Fish and Wildlife Service
- Confederated Tribes of the Colville Reservation
- Washington Office of Archaeology and Historic Preservation
- Washington Department of Fish and Wildlife
- City of Chelan

A site visit and meeting with the U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, and the Washington Department of Fish and Wildlife was held on March 31, 2004.

The Washington State Historic Preservation Officer (SHPO) was consulted in accordance with Section 106 of the National Historic Preservation Act. The NPS forwarded material to the SHPO for review and received a letter from the Washington SHPO on July 20, 2004 indicating their concurrence with the determination that the project would have no effect on historic properties.

Ongoing discussions have been held with the Tribal Historic Preservation Officer (THPO) for the Colville Confederated Tribes. Park staff contacted the THPO on May 10, 2004 to set up a project meeting and sent a letter to the THPO on May 11, 2004 notifying the tribe of the park's desire to set up the consultation process. NPS staff met with Colville tribal staff and the THPO on May 17, 2004. NPS sent a letter to the THPO on July 15, 2004 that identified the Area of Potential Effect for the project and provided an assessment of no effect on historic properties. From February 1, 2005 to February 8, 2005 messages were left with the THPO to follow up on the July 15th letter. NPS sent a

letter to the THPO on February 23, 2005 as further follow up and to invite Colville tribal staff to tour the project site.

NPS submitted a Biological Assessment (BA) to the USFWS on November 10, 2004. The U.S. Fish and Wildlife Service reviewed the BA and issued a Biological Opinion on May 2, 2005. They concurred with the National Park Service's determination that the project may affect but is not likely to adversely affect gray wolf, grizzly bear, Canada lynx, bald eagle or bull trout. They also concurred that the project may affect, (and is) likely to adversely affect northern spotted owls. USFWS has issued an incidental take statement in regard to the northern spotted owl that states "the Service has determined that the level of incidental take anticipated in this Biological Opinion is not likely to jeopardize the continued existence of the northern spotted owl." Terms and conditions of the incidental take have been issued by the USFWS and NPS will comply with those conditions, as well as USFWS recommended conservation measures.

The EA was made available for public review for 30 days, from June 28 to July 29, 2005. Forty-seven copies of the EA were mailed to individuals and organizations on the Park's mailing list, including the Chelan Community Library and East Wenatchee Library. Additional copies of the EA were made available at Park Headquarters in Sedro-Woolley and at the park offices in Stehekin. An electronic copy was available for public review and comment on the NPS's Planning, Environment, and Public Comment (PEPC) website.

Two responses were received during the EA public review period. One commenter expressed support for the preferred alternative and the other commenter provided a number of specific comments, which are summarized and discussed below.

The commenter was concerned that some of the proposed work at Wilson Creek may occur on private property. The commentor also noted that a portion of the road crosses the private property and this does not appear to be reflected on the county property maps. The NPS will conduct a property boundary survey in this area before scheduling any actions that might occur on private land. The road existed in its current location and was for open unrestricted public use before establishment of the NRA in October 1968. Therefore, the presumption of an open public road has been established over the private property.

The commenter was also concerned that the proposed work along the river could result in increased erosion to downstream properties, some of which is private property. The EA acknowledges that the preferred alternative will alter stream flow which could result in streambank erosion downstream (Page 72, for example). The preferred alternative was designed to minimize impacts on stream flow, however, by minimizing the amount of streambank modification and by minimizing the number of stream control structures. The streambank stabilization measures in this alternative would help protect the road from failure during flood events and reduce the need for emergency road repairs.

This commenter was also specifically concerned that the proposed installation of three additional culverts at Wilson Creek could increase downstream erosion. Hydraulic engineers at the Federal Highway Administration were consulted and they noted that the volume of flow from Wilson Creek will not change with the culvert installation. The intent is to provide relief paths for Wilson Creek in case the main culvert becomes plugged by debris, thus reducing the potential for erosion encouraging blockages in the area of Wilson Creek. Hydraulics engineers also noted that Wilson Creek flows through an active debris fan, and as debris is deposited, the stream channel will shift. It is probable that the channel will shift enough to flow in an entirely different location on the fan, possibly onto adjoining private property. Improving drainage by adding the three additional culverts will reduce the possibility of the stream channel moving onto adjoining property.

And finally, this commenter suggested that speed bumps be constructed at specific areas along the road to reduce vehicle speed. Engineers at the Federal Highway Administration were consulted and determined that speed bumps would not be an appropriate traffic calming tool for Stehekin Valley Road. Speed bumps as a traffic calming device primarily discourage the choice of route in part by reducing comfortable speeds at and around the bump location and in part by making the route less preferable to other, more appropriate routes, such as arterials. As the Stehekin Valley Road is the primary, and largely only road route along the valley, speed bumps would not be a useful traffic calming tool. Speed bumps would also cause maintenance problems as snow plows could get hung up on the bumps, resulting in damage to the pavement and equipment.

Conclusion

The NPS has selected Alternative 2 for implementation. The impacts that would result from implementation of the selected alternative would not impair any park resources or values necessary to fulfill specific purposes identified in the national recreation area's enabling legislation.

The selected action does not constitute an action that normally requires preparation of an environmental impact statement. The selected action is not a major federal action that will have a significant effect on the quality of the human environment. Negative environmental impacts that could occur are negligible, minor, or moderate in intensity. Mitigation measures will be incorporated into the selected action to reduce or eliminate impacts. There are no significant impacts on public health, public safety, threatened or endangered species, sites or districts listed in or eligible for listing in the National Register of Historic Places, or other unique characteristics of the region. No highly uncertain or controversial impacts, unique or unknown risks, significant cumulative effects, or elements of precedence were identified. Implementation of the selected action will not violate any federal, state, or local environmental protection laws.

Based on the foregoing, including the public and agency comments, and the ability to avoid or minimize impacts through mitigation, it has been determined that an environmental impact statement is not required for this project and thus will not be prepared.

Recommended:

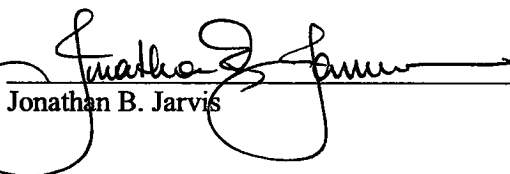


9.26-05

William F. Paleck
Superintendent, North Cascades National Park Service Complex

Date

Approved:



10/11/05

Jonathan B. Jarvis

Date

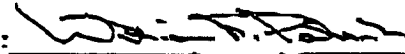
Statement of Findings for Flooplains

Stehekin Valley Road Improvement Project (MP 4.0 - 9.15)

North Cascades NPS Complex

Sedro Woolley, Washington

Recommended:

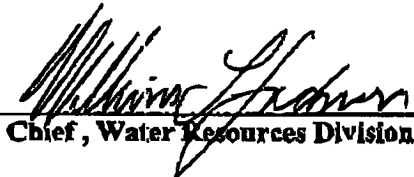


8-29-05

Superintendent, North Cascades NPS Complex

Date

Concurred:


Acting Chief, Water Resources Division

9-06-05

Date

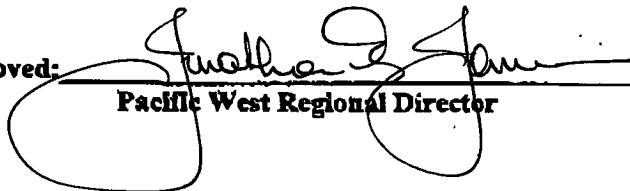
Concurred:


Regional Safety Officer

9-30-05

Date

Approved:


Pacific West Regional Director

10-11-05

Date

Introduction

This statement of findings pertains to the NPS preferred alternative for maintaining and paving the Stehekin Valley Road in Lake Chelan National Recreation Area. This road is the primary visitor access route and the only road to access private property upvalley.

Under the preferred alternative, the road would be maintained within the floodplain at two locations and involve bank stabilization at two others between Harlequin Bridge and Stehekin Valley Ranch. At McGregor Meadows the road crosses into the 100 year floodplain for approximately ½ mile, in an area where the river is changing channel locations and flooding of the road has become more frequent and severe in the last decade. Actions include raising the road at selected areas back to its original, near – grade elevation and installation of rock-cored humps beneath the road to prevent flood water from flowing down the road prism. At road mile 7, the road will be relocated to higher ground to avoid a direct conflict with the river, but will remain in the 100 year floodplain. At mile 8 and at Wilson Creek, the road will require some streambank protection to keep it in its present location.

This Statement of Finding focuses on the two sites where the road will remain in the floodplain of the Stehekin River. It describes impacts associated with maintaining the road in these two locations, risks associated with the locations, and mitigation measures designed to minimize impacts to floodplain values.

Site Description

The Stehekin Valley Road is located along the lower Stehekin River in the Lake Chelan National Recreation Area. The valley floor is relatively flat in comparison to near-vertical valley walls, and options for road relocation out of the floodplain or active geomorphic zones are very limited. The valley floor between Harlequin Bridge and the Stehekin Valley Ranch includes high terraces, low terraces, glacial moraines, flood channels, and the floodplain of the Stehekin River. The Stehekin Valley Road traverses several of these landforms, but is within the 100-year floodplain of the river at the McGregor Meadows and 7 mile locations.

Soils in McGregor Meadows and 7 mile areas are Stapaloop and Goddard series, which are poorly developed entisols in recent Stehekin River alluvium. They have sandy skeletal textures and few fine soil particles, and very little organic matter. In most locations, A, O and B soil horizons have not developed due to the recent age of the deposits.

Vegetation varies significantly between the floodplain sites. At 7 mile, big leaf maple and shrubs are the dominant species, while in the McGregor Meadows area, Douglas fir is dominant with few shrubs or understory plants. McGregor Meadows was disturbed by historic farming activity in the early-to-mid 20th Century. At this time, native vegetation species and patterns have not recovered due to poor soils and recent activity of the river.

Most of the property in McGregor Meadows is owned by the NPS. However, there are several small private land holdings in the area, most of which have seasonal cabins. There are a few year-round residences. The NPS holds lifetime easements on several properties. At 7 mile, the proposed relocation within the floodplain is on federal land.

Justification for Use of the Floodplain

The NPS examined other alternatives to maintaining the road in the floodplain at 7 mile and McGregor Meadows in a Value Analysis in Spring 2003, and rejected the alternative of relocating the road to higher ground at this time. Factors in these decisions included a lack of suitable routes on higher ground, high costs, impacts on wildlife (spotted owl), impacts to vegetation, and impacts to private landowners and recreational use of the valley. Given this decision, we are left with two locations where the Stehekin Valley Road will remain in the 100-year floodplain of the Stehekin River. Actions in the preferred alternative will not have significant adverse impacts to floodplain values.

Description of Site-Specific Flood Risk

Flood depths for the 100-year event in the 7 mile and McGregor Meadows areas are on the order of 2-3 feet (NPS, 1993). While main channel velocities are in the range of 8-9 ft./second, velocities on the left overbank along the road are on the order of 3-4 ft/second, which is more than enough to erode the loose sandy soils and the loose road fill. With these depths and velocities the road will be temporarily impassable during large flood events with a greater than 10 year return interval. Due to its location much closer to the active main channel of the Stehekin River, flood hazards at the 7 mile area are considered to be greater than at McGregor Meadows.

In the past 15 years, the Stehekin River has had six large floods. The November 1995 event was believed to have a 100-year recurrence interval, while the October 2003 event's recurrence interval is estimated by the USGS at 500 years. In addition to these exceptionally large floods, larger than normal spring floods occurred in 1997 and 1999, and 10-25 year recurrence events occurred in 1989 and 1990. At McGregor Meadows these floods have initiated a major realignment of the Stehekin River. Recurrence interval of flooding at the site has also changed with the passage of these large floods. In the 1980s, flooding of the site was infrequent, and limited to events of 10-year recurrence interval or greater. Due to floodplain and channel processes, the area now floods more frequently at lower discharges, and will likely be inundated at 10-year intervals during large fall and spring floods.

The amount of time required for warning of possible road flooding is on the order of a few hours to half a day. Flood waters will rise rather slowly at this site due to its current location some 500 ft or more from the active channel. Further, the National Weather Service is preparing a flood warning system for the valley.

There is high ground available immediately adjacent to both sites and a trail located ½ mile away for evacuation of the site if vehicles must be abandoned. Further, the shallow nature of flooding at this site allows the NPS to get heavy equipment through this area in emergencies.

Minimizing Impacts To Floodplain Values and the Public

The proposed actions will have minimal, but mixed positive and negative impacts to floodplain natural resources. The road relocation at 7 mile will put the road on higher ground farther from the river. While this action will minimize flood risk to the road and people, it will have a detrimental impact on floodplain vegetation due to the road relocation. However, plants from the reroute will be salvaged and used to restore parts of the abandoned road alignment, which will minimize impacts to floodplain vegetation.

At McGregor Meadows, the preferred alternative will result in slight changes in road elevation and appearance. However, since no major road relocation or realignment is planned, impacts to floodplain soils and vegetation will be minimal. Bringing the road up to previous grade at some sites and installing humps will not result in higher flood water elevations or greater water velocities. These actions will be designed not to impound or significantly impeded the movement of water through the area during flood

stage – with the exception that the humps will prevent water from flowing down and following the road prism. Raising the road grade will provide a benefit to the public by allowing access to and from their homes during minor flood events.

The proposed action is not in a high flood hazard area, and work would be conducted at low flow periods on the river when there is no flood water at the site.

Paving of the road could have a negative impact to water quality –particularly during installation. However, pavement will be laid during seasonal drought and runoff from the project should be minimal. Paving of the road will improve floodplain values by eliminating some amount of crushed road gravel that is currently washed into flood channels.

Summary

This statement of findings accompanies an Environmental Assessment on impacts to the Stehekin River floodplain for actions designed to maintain the Stehekin Valley Road. Passage of a record 500-year event in October 2003 precipitated some of the proposed floodplain actions, including road erosion and surface scour at Wilson Creek, McGregor Meadows, 7 mile and 8 mile locations. Actions in the preferred alternative are designed to minimize floodplain impacts by road relocations out of the 100 year floodplain where possible. At other sites, bank protection and road elevation changes will be required. These actions, including elevating the road surface and installation of rock barbs and bioengineering are designed to minimize impacts to the floodplain values and people because the actions will not alter native contours or increase flood depth or velocity