National Park Service
U.S. Department of the Interior
Yellowstone National Park
Wyoming, Montana, Idaho

Fishing Bridge to Indian Pond Road Reconstruction

Environmental Assessment

April, 2017

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Summary

The National Park Service (NPS) in cooperation with the Federal Highway Administration (FHWA) is proposing to reconstruct a segment of the East Entrance Road from Fishing Bridge to Indian Pond (3.2 miles) within Yellowstone National Park. The proposed road reconstruction project would include the road, associated parking areas and turnouts, Fishing Bridge, and Pelican Creek Bridge. The purpose for taking action is to make the road compliant with engineering safety standards, widen the road to the parkwide standard of 30-feet, repair or replace the deteriorated bridges, restore wetland functions, promote a steady flow of traffic, provide adequate parking for the general store, improve roadway and parking efficiency, and limit the risk of accidents.

This Environmental Assessment (EA) evaluates four alternatives: a no action alternative and three action alternatives. Alternative A is the no action alternative under which the road, bridges, and parking areas would remain unchanged. The three action alternatives B, C, and D, all reconstruct the road to 30-feet in width, reconstruct the parking lots adjacent to the Fishing Bridge Museum and the Fishing Bridge General Store, add turn lanes through the developed area of Fishing Bridge, and replace the Pelican Creek Bridge with a longer viaduct. The three alternatives differ in their treatment of the Fishing Bridge structure, either rehabilitating or reconstructing it on the same or parallel alignment. Alternative B would rehabilitate the Fishing Bridge in its current location. Alternative C would replace the Fishing Bridge with a new bridge in its current location. And Alternative D would replace the Fishing Bridge on a new alignment directly south of its existing location.

This EA analyzes the following resource topics in detail: Soils and Vegetation, Wetlands, Cultural Resources, and Threatened and Endangered species. All other resource topics were dismissed because the project would result in little to no effect to those resources.

Public Comment

If you wish to comment on the EA, you may post comments online at http://parkplanning.nps.gov/FBIP. If you are unable to submit your comments online, you may mail comments to: Fishing Bridge to Indian Pond Reconstruction, P.O. Box 168, Yellowstone National Park, Wyoming 82190. You many also hand deliver written comments to the Albright Visitor Center in Mammoth Hot Springs. This EA will be on public review for 30 days. Before including your address, phone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment – including your personal identifying information – may be made publicly available at any time. Although you can ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so. Comments will not be accepted by fax, email, or in any other way than those specified above. Bulk comments in any format (hard copy or electronic) submitted on behalf of others will not be accepted.

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PURPOSE AND NEED

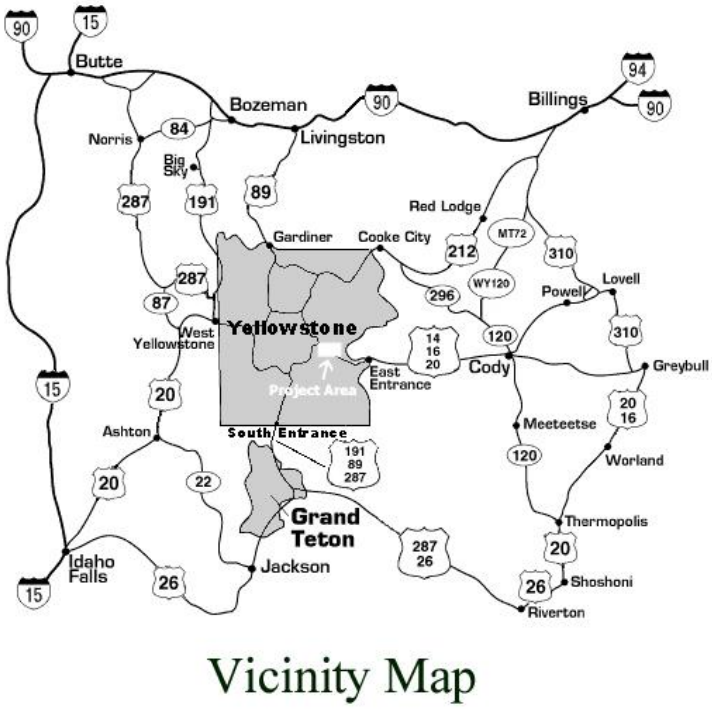
Introduction

The National Park Service (NPS) in cooperation with the Federal Highway Administration (FHWA) is proposing to reconstruct a segment of the East Entrance Road from Fishing Bridge to Indian Pond (3.2 miles) within Yellowstone National Park, see figure 1& 2 for project location. The East Entrance Road connects the central portion of Yellowstone and the Grand Loop Road system to U.S. Highway 14/20 and provides a connection to communities of Cody, Powell, Thermopolis, and others in Central Wyoming.

This section of road is the last segment of the East Entrance Road that has yet to be reconstructed to a 30-feet wide paved width. This segment of road is in an advanced state of deterioration, has an inconsistent width, has two bridges considered in poor condition, and has seen an increase in vehicle use.

Background

The purpose for taking action is to make the road compliant with engineering safety standards, widen the road to the parkwide standard of 30-feet from an inconsistent existing pavement width of 22 to 24 feet, repair or replace the deteriorated bridges, restore wetland functions, promote a steady flow of traffic, provide adequate parking for the general store, improve roadway and parking efficiency, and limit the risk of accidents.



Vicinity Map

Figure 1 - Project Location

The most recent Fishing Bridge inspection from FHWA in 2014 states that this historic timber multi-beam bridge is in fair condition overall, but is in need of major rehabilitation. The most significant issue is severe cracking and rotation of the west abutment breastwall. Active leakage through the cracking is evident. If corrective action is not taken, the deterioration will likely continue to progress and may eventually lead to loss of load capacity.

Other problems include deterioration of the timber curbs and exterior logs, missing timber braces from between the piles, and decay of the timber logs on the east abutment fascia. Asphalt tile surfacing of the sidewalks is protruding upwards in numerous areas and there is severe deterioration of the northeast staircase. Both of these issues create a tripping hazard to pedestrians. Widespread deterioration of the asphalt wearing surface has occurred.

Utility conduits at both abutments have separated which has exposed high voltage wires, and the junction box has been displaced at the west abutment.

The 2014 FHWA Inspection report for Pelican Creek Bridge (figure 16) determined the bridge to be in very poor condition. The report states the concrete slab bridge is in poor condition overall, and should be programmed for replacement. The main problems are: ongoing cracking with efflorescence and severe spalling, exposed rebar on the exterior faces, wingwalls, and on the piers and abutments; moderate to severe longitudinal cracking and delamination of the slab underside; and moderate scour along all of the substructure units. The deterioration is expected progress, and the structure may become unsafe for traffic at some point if not replaced.

Both bridges are listed as a Priority of Improvement Category B (major) from Federal Highways bridge condition assessments. Category B is taken to mean "Structure is seriously deficient or presents a safety hazard, but can remain in service at reduced loads or with frequent inspection."

Figure 2 - Proposed Project Area Map

Figure 3 – Existing Condition, Fishing Bridge, Yellowstone National Park

Summary of Project Objectives

- Maintain vehicle access across the Yellowstone River and Pelican Creek by addressing safety concerns associated with the deteriorated bridges.
- Reconnect the wetland at Pelican Creek Bridge and allow the creek to naturally migrate within the floodplain.
- Maintain the historic character of road, Fishing Bridge (figure 3) and Pelican Creek Bridge.
- Identify sustainable designs that minimize impacts to park resources in accordance with NPS regulations and policies.
- Provide access to facilities for modern vehicular sizes.
- Provide better viewing opportunities along the road.

Impact Topics Retained For Further Analysis

The following impact topics are carried forward for further analysis in this EA:

- Soils, and Vegetation
- Wetlands
- Cultural Resources
- Threatened and Endangered Species

Impact Topics Dismissed From Further Analysis

Table 1 indicates which impact topics were dismissed from further analysis with a brief explanation why. The table also includes the law, regulation, and/or policy that govern the compliance for that particular impact topic and a brief description of the affected environment, or baseline conditions, in the project area.

Table 1 – Impact Topics Dismissed From Further Analysis

Topic	Law, Regulation, Policy	Affected Environment / Reason Dismissed
Air Quality	Clean Air Act; NPS Director's Order 77: Natural Resource Protection	Yellowstone National Park is designated as a Class I air quality area under the Clean Air Act. Construction related activities could result in increases of visible vehicle exhaust and emissions from construction equipment within the immediate work areas during the construction season of May-October for two-three years. Fugitive dust due to construction activities when the pavement is removed may be present. Work would be planned to keep traffic on paved surfaces as much as possible. There would be no long term impacts to air quality.
Geology	NPS Management Policies	Reconstruction of a portion of the East Entrance Road would not cause any measurable impacts to the geology of the area. Geologic structure, mineralization patterns, and rock chemistry would not be affected by implementation of any of the alternatives.
Floodplains	NPS Director's Order-77-2, Floodplain Management	Temporary piers needed for work bridges would not impact the Yellowstone River floodplain or inhibit its function. The Pelican Creek floodplain is currently impacted from the existing causeway bisecting it, and acting as a dam that back up water with the only outlet being through the main channel under the existing bridge. All action alternatives propose removal of the causeway and would replace it with a 1,500-viaduct. Piers of the new viaduct would not affect floodplain values or functions. While beneficial to the floodplain function by allowing water flow in heavy flood events to occur unimpeded, these impacts would entirely beneficial; no adverse impacts would occur therefore this topic is not discussed further in this document. A statement of findings specific to floodplains will not be prepared.
Water Resources	NPS Management Policies	Water for dust control and compaction of road base materials would be drawn from the Yellowstone River, or Lake Yellowstone. Water used would not be allowed to migrate back to the lake and all equipment used for pumping and hauling would be decontaminated prior to use. Fueling of equipment would occur at least 150 feet from surface waters. No contamination of park waters or sedimentation of these waters would occur from proposed activities. Some sedimentation could be stirred up for a day or two could occur during the removal of an abutment at Pelican Creek. Construction vehicles have the potential to introduce pollutants and increase sedimentation into the stream and decreased water quality; however, mitigation measures and best management

Topic	Law, Regulation, Policy	Affected Environment / Reason Dismissed
		practices, such as checking equipment for leaks prior to use, working in seasonally wet areas during the dry periods, and containing pile driving activities would be used to all but eliminate the risk of these adverse effects. If needed, coffer dams would be used during the removal of the abutment and/or piers of the Pelican Creek Bridge. These coffer dams would contain any sediment generated from this activity and prevent increased turbidity due to siltation from entering the water of Pelican Creek. If dewatering of the coffer dams is required, it would be removed via a vacuum truck, or pumped via a pipe or hose to the upland area of the old Pelican Creek Campground (disposal site) The installation of piles can disturb bottom sediments and may cause a temporary increase in suspended sediment in the action area. The use of turbidity curtains have been successfully used in the park on past projects and would be used if needed in order to contain turbidity to the immediate area of the pile driving activities. Potential impacts to water quality would last only as long as any in-water activities during the construction project. In water work would only occur for pile driving and pier construction in the Yellowstone River, and for removal of the abutment and/or piers at Pelican Creek. Mitigation measures described above are expected to reduce any impacts to water quality to a level that they would not impact fish or visitor experience. As there would be no lasting effects on water quality, and any impacts would be at a level that would not cause concern for other park resources, this topic has been dismissed from further discussion in this document.
Fish and Wildlife	NPS Management Policies	Yellowstone is home to a wide variety of wildlife and about 2.2 million acres of habitat. The project area would permanently affect at most 16.39 acres of habitat directly adjacent to park road. Wildlife are often present along this stretch of road, and are accustomed to the presence of vehicles and visitors. Wildlife and birds are expected to continue to use these areas in spite of construction activities, though they may be displaced from the immediate area of operating construction equipment. No blasting would be required for this project. Equipment would operate from April through October until expected project completion in 2-3 years. Any dewatering activities needed to remove the abutment or piers of the Pelican Creek Bridge would use coffer dams and would not adversely impact fish in the creek. In order to avoid impacting the cutthroat trout spawn, no in

Topic	Law, Regulation, Policy	Affected Environment / Reason Dismissed
		water work will be allowed at Fishing bridge until after July 15, thus mitigating any potential adverse impacts to this species. Night lighting is not expected to be an issue for wildlife in the area. Any construction lighting needed would be temporary and occur only during night construction activities. Wildlife have become accustomed to night lighting presently occurring within the Fishing Bridge Village, the Fishing Bridge RV park, and the Lake Hotel and administrative areas. Though 16.39 acres of wildlife habitat loss would occur, along the road edge, this same habitat type can be found all along the northern and western shore of the lake, and would not have lasting effects of wildlife, fish, or birds in the area. Therefore, this topic is not discussed further in this document.
Soundscapes	NPS Director's Order 47: Soundscape Preservation and Noise Management	Sounds in the project area are a mix of natural and man-made including those generated from wildlife, humans, vehicular traffic, moving water, and wind. Human-caused sounds would increase during construction as a result of equipment, vehicular traffic, and construction crews. Pile-driving would occur to support bridge construction. Pile driving is the noisiest construction activity anticipated. Therefore this activity would be scheduled to occur, as much as possible, before campgrounds and facilities in the area open (April and May), or later in the fall (Sept.-Oct.) after they close. If pile driving needs to occur during high use visitor periods, it would be limited to daytime hours. All work would be planned to reduce construction noise to visitors as much as possible by timing activities, and potential use of sound curtains. Noise from pile-driving could impact nesting birds and wildlife on a temporary basis. Bird vocalizations when trying to find mates could be muffled and potential nesting sites near this activity may not be used. Birds with active nests would be unlikely to abandon nests, and wildlife may choose sites further away to bear young. Noise would in essence, cause a temporary habitat loss for these activities. Nesting and birthing sites close to the road are usually not considered prime, but could be used if other more desirable sites are not available. Habitat along the East Entrance Road is abundant for both birds and wildlife farther from this construction activity. Construction activities would occur over 2 to 3 years with most activity occurring during the months of May – November. Soundscapes will not be discussed further in this document.
Lightscapes	NPS Management Policies	Temporary night lighting would be used in sections of a few hundred yards in length. Lighting would

Topic	Law, Regulation, Policy	Affected Environment / Reason Dismissed
		illuminate these short road segments to allow work activities at night. Existing vegetation would screen light from areas where visitors and staff reside overnight. There would be night lighting visible from areas along the park roads during construction. During construction, temporary light stations used for night work would be moved to different locations within the work zone as needed. Once construction is complete there would be no change to illumination of the road from current conditions. The impacts of night lighting on wildlife is discussed above in this table under wildlife. Lightscapes will not be discussed further in this document.
Paleontological Resources	NPS Director's Order 77: Natural Resource Protection	There are no known paleontological resources in the project area, and subsurface conditions are not conducive to the likelihood of discovery of these resources in this area.
Ethnographic Resources	National Historic Preservation Act; NPS Director's Order 28: Cultural Resources Management; NPS Director's Order 71B: Indian Sacred Sites	Based on previous consultation meetings with tribes, and a consultation letter describing the proposed action that was mailed to 73 tribal members of Yellowstone's 26 associated tribes in October 2014 regarding this proposed project. The park has not received any information on ethnographic resources in the project area. Based on this information, the park has determined there are no ethnographic resources in the project area that would be affected by the project.
Indian Trust Resources and Sacred Sites	ECM 97-2 Executive Order 13007	The federal Indian trust responsibility is a legally enforceable fiduciary obligation on the part of the United States to protect tribal lands, assets, resources, and treaty rights, and it represents a duty to carry out the mandates of federal law with respect to American Indian and Alaska Native tribes. No trust resources would be affected by this project, the park will continue to provide access to the extent practicable, and permitted by applicable law, and not clearly inconsistent with essential agency functions. Based on previous consultations with tribes, no sacred sites have been identified within the park. Therefore the issue of Indian Trust Resources and Sacred Sites was dismissed from further analysis.
Socioeconomics	NPS Management Policies	While construction workers would be spending time within the park and surrounding communities, money spent for food/lodging would have negligible impact to local economies.
Visitor Use and Experience	*NPS Management Policies 2006*	The widened road, expanded parking and pullouts, and improved pedestrian walkways, would improve access, aesthetics and effectiveness of road, parking, and walkway facilities. Changes to visitor

Topic	Law, Regulation, Policy	Affected Environment / Reason Dismissed
		experience would be through new roadway facilities, smoother driving and walking surfaces, increased parking, and better marked walkways and crosswalks. The road and visitor services would remain open with only short delays (up to 30 minutes). No changes are proposed for the store, museum, gas station, or how restrooms from this project. Pile driving activities would be scheduled as much as possible during shoulder seasons (spring and fall) and times the village and campground are not open to public use. As facilities and access would be used as they are currently, changes to visitor use and experience would occur only during the construction phase, for this reason this topic has been dismissed.
Environmental Justice	Executive Order 12898 General Actions to Address Environmental Justice in Minority Populations and Low-Income Populations	There would be no disproportionate health or environmental effects on minorities or low income populations, because implementation of the alternatives would not result in any identifiable adverse human health effects. Because the road, parking areas, turnouts, and bridges would be available for use by all people regardless of race or income, and the construction workforces would not be hired based on race or income, the proposed action would not have disproportionate health or environmental effects on minorities or low-income populations.
Climate Change	*NPS Management Policies 2006*	Total CO_2 for typical highway constructions projects emissions are 787.19 and 1,383.28 MT per lane mile; the production of the materials, equipment, and fuel used in construction of a road project account for 90% to 94% of the total CO_2 emissions throughout the construction (Cass and Mukherjee, 2011). This is a relatively small highway project at 3.5 miles in length. Any new emissions produced would be very small relative to emissions produced from visitor traffic within the park, and would not have a meaningful contribution to the park's overall emissions profile. The increase in emissions from the construction phase would cease at the end of this project. Therefore, the effects of future climate changes are not discussed further.

ALTERNATIVES

There are four alternatives carried forward in this EA:

- Alternative A: No Action/Continuation of Current Practices
- Alternative B: Reconstruct and Rehabilitate a Portion of the East Entrance Road and Rehabilitate Fishing Bridge
- Alternative C: Reconstruct and Rehabilitate a Portion of the East Entrance Road and Replace Fishing Bridge in its Current Location
- Alternative D: Reconstruct and Rehabilitate a Portion of the East Entrance Road and Replace Fishing Bridge in a New Location

The three action alternatives (Alternatives B, C, and D) all include reconstructing and rehabilitating a portion of the East Entrance Road. A description of the work proposed on East Entrance Road is included in the section below, *Project Elements Common to all Action Alternatives – Reconstruct and Rehabilitate a Portion of the East Entrance Road.* The action alternatives vary in the treatment of Fishing Bridge (Grand Loop Road eastward to Fishing Bridge Village).

These alternatives are based on preliminary designs and best information available at the time of this writing. Specific distances, areas, and layouts used to describe the alternative are only estimates and could change during final site design. The estimates used are at the upper limits of the expected impact for given resources. If changes during final site design are inconsistent with the intent and effects of the selected alternative, then additional compliance would be completed, as appropriate.

Alternative A – No Action/Continuation of Current Practices

Under this alternative the current alignment would remain unchanged. Periodic maintenance would be performed by the park to maintain the road as much as possible. The road width would remain at its existing 22-24 feet in width. The travel speed would remain at 45 mph throughout the corridor with 25 mph through Fishing Bridge Village. This road would likely need increasing amounts of maintenance to the road surface in the future as the road condition declines. These road maintenance projects would require traffic delays and closures to complete the work. Safety issues such as steep drops at pavement edge, vehicles stopping in road to view wildlife, and narrow road surface would not be addressed.

Fishing Bridge and Pelican Creek Bridge would not be reconstructed or rehabilitated. Issues related to the aging of the existing bridges would not be addressed. The NPS would continue to complete short-term and periodic minor repairs and/or improvement activities for continued operation of the bridge, such as patching, rail maintenance, and repair of the deck. Deferring reconstruction would substantially increase the amount of maintenance to maintain the existing Pelican Creek Bridge and Fishing Bridge. Deterioration of the structural elements would continue until safety concerns would eventually cause the restriction or closure of the bridge.

Project Elements Common to all Action Alternatives – Reconstruct and Rehabilitate a Portion of the East Entrance Road

The action alternatives consist of reconstructing a segment (figure 4) of the East Entrance Road from an inconsistent pavement width of 22 to 24 feet, to the park standard, a 30-foot paved width. The new width is based upon the NPS "Park Road Standards. The 30-foot width would

consist of two 11-foot travel lanes and two 4-foot paved shoulders. Slight shifts in the centerline of the road may be necessary to accommodate the wider width of the road and to avoid sensitive areas. The design speed would be 45 mph, with exceptions in both width and design speed in certain areas.

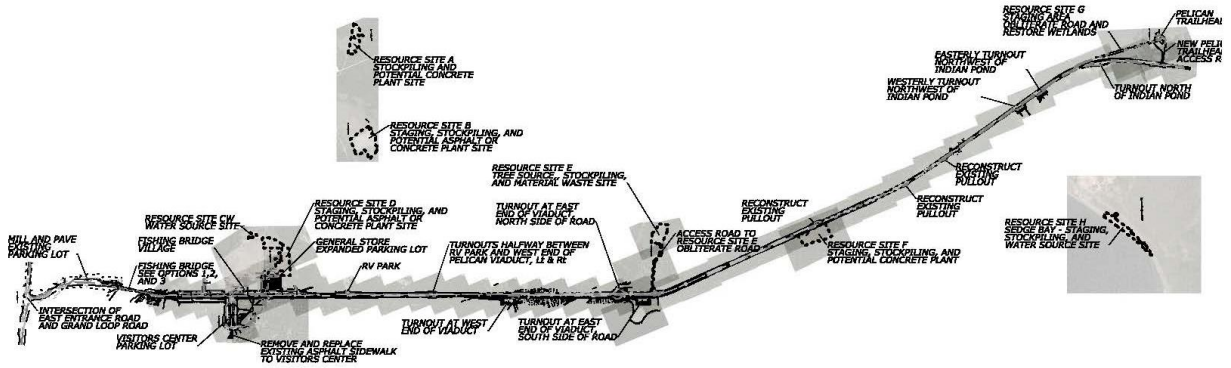


Figure 4 - Design Elements Common to All Action Alternatives (North is up)

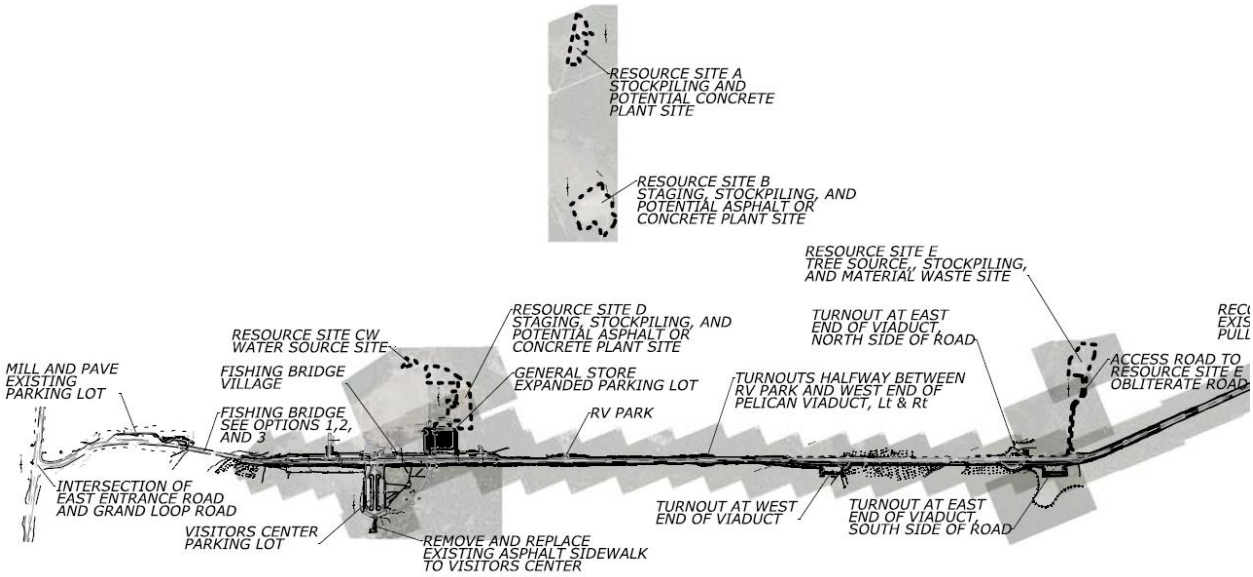


Figure 5 - Expanded View (West Portion of Proposed Project)

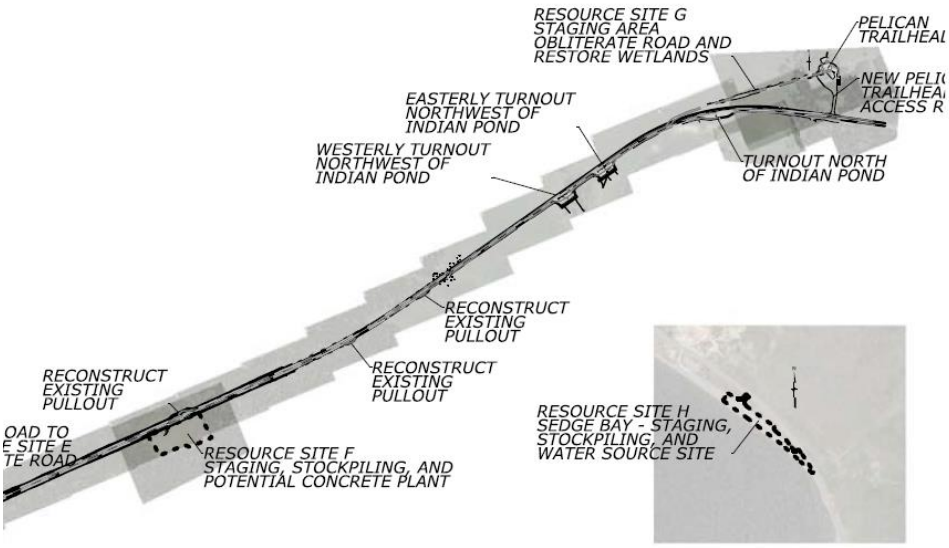


Figure 6 - Expanded View (East Portion of Proposed Project)

Driving Surface – The reconstructed road would be approximately 3.6-miles in length. The typical cross section of the road includes a 30-feet paved width consisting of two 11-foot lanes, and two 4-foot shoulders (see Figure 7). The distance of the disturbed slopes (for the cut and fill sides) would vary depending upon existing terrain. Within the vicinity of Fishing Bridge Village, an eleven foot left turn lane would be constructed, between the two driving lanes, to accommodate accesses to the Village. The existing frontage road would be retained though the width of the existing vegetated island, separating this road from the East Entrance Road, would be increased by 4-6 feet to allow better turning space. The frontage road and parking areas associated with it would be repaved. Drainage structures, curbing, and pavement markings would be rehabilitated or added at problem areas.

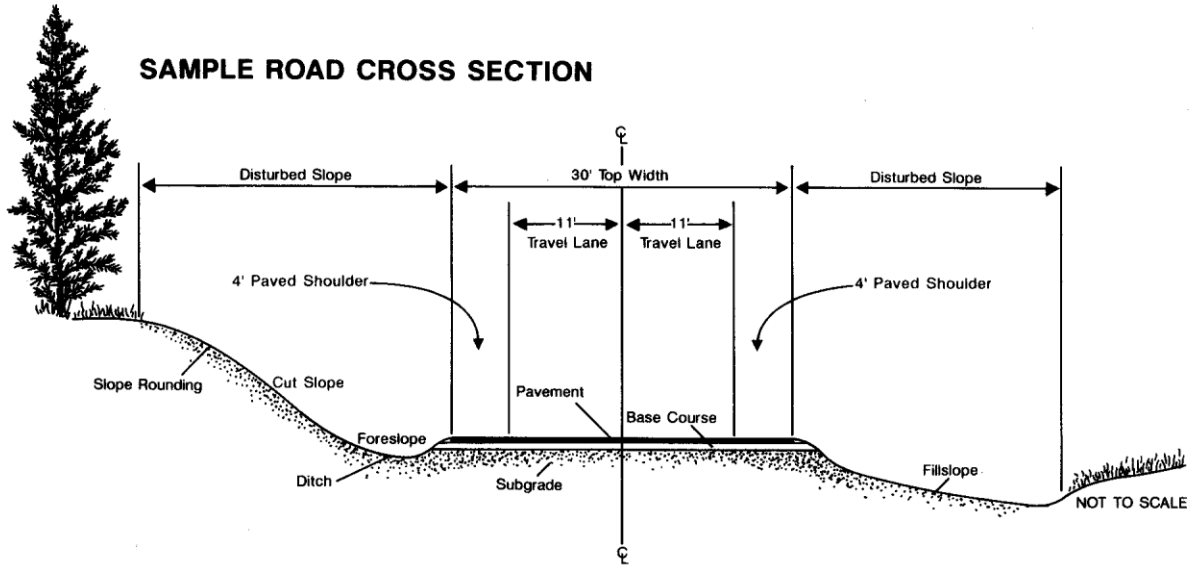


Figure 7 - Typical Road Proposed Section

The following are areas or features located along the road starting from the Grand Loop Road and progressing east, with a brief description of project work for each area:

East Entrance Road/Grand Loop Road Intersection – Reconstruction of the entire intersection would occur to increase the length of the northbound turn lane to the east, and the westbound turn lane to the north to accommodate 5 or 6 additional cars each. These would be reconstructed to provide safe ingress and egress from the East Entrance Road. Turn lane radii would be increased to meet current design standards and signing would be upgraded as needed. The entire intersection would be repaved and striped.

Visitor Center/Museum (located within Fishing Bridge Village) – The parking lot footprint would remain the same, but the parking lot would be rehabilitated by milling the existing pavement and application of an overlay. Subsurface investigation and drainage needs would dictate which aspects of the parking lot would be rehabilitated or replaced. The historic curb stones in the parking area would be removed and reset as needed. Some replacement stones would be used to replace stone that has severely eroded and deteriorated. Existing pedestrian walkways to the museum would be reconstructed for compliance with accessibility guidelines and standards. A small amount of grading may be necessary to attain the needed grade for the entrance walkway. Approximately 100 feet of this walk may need to be cut or filled to achieve this grade.

Fishing Bridge Village – The parking area between the East Entrance Road and the businesses would be reconstructed to address drainage, improve circulation, and repave the parking surface. Curbs and sidewalks would be improved with some short sections constructed along the business frontage. Drainage would be directed away from the businesses. A new paved parking lot (figure 8) would be constructed east of the General Store. Approximately one acre of trees would be removed for this parking lot, which would allow for approximately 70 additional spaces to be added.

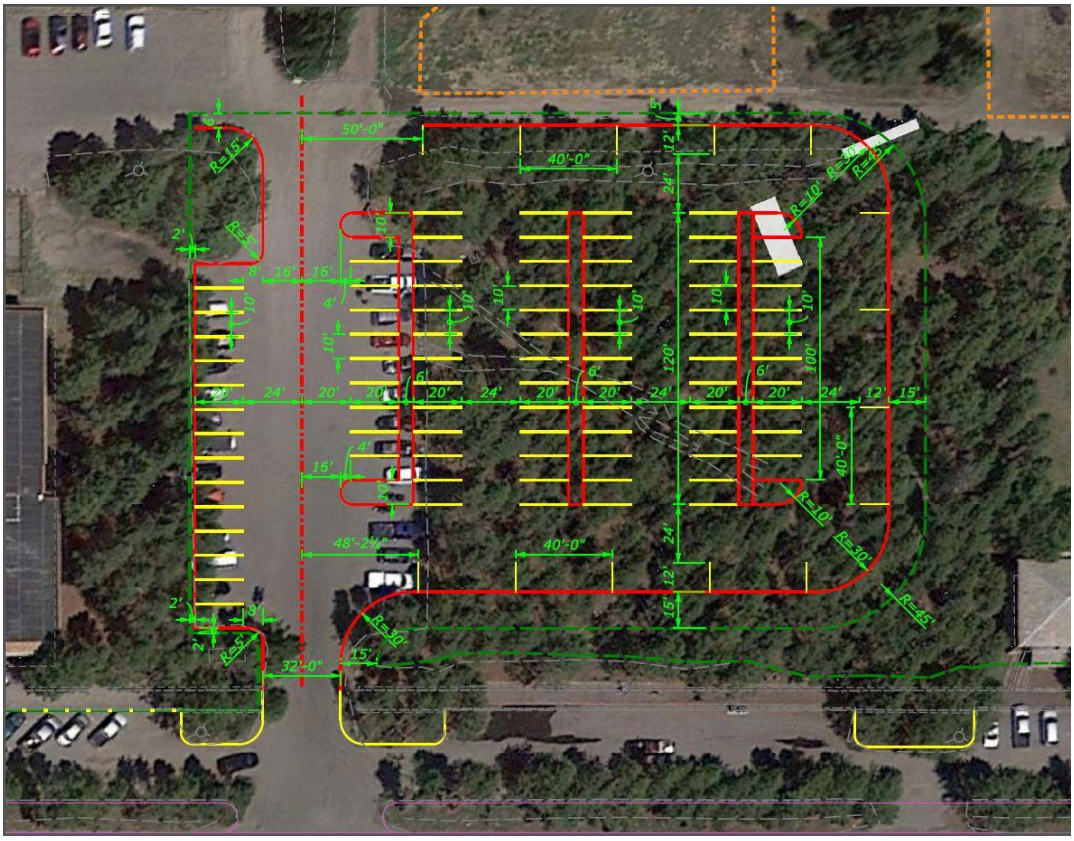


Figure 8 - Fishing Bridge General Store Parking Expansion

Center Turn Lane between Fishing Bridge and the RV Park –To ease congestion and accommodate pedestrians, the East Entrance Road would be widened to 41-feet to add an 11-foot wide center turn lane. This area experiences high traffic volumes during the summer causing congestion and unsafe conditions for pedestrians trying to cross the road, crosswalks would be delineated as part of this project.

Parking and Turnouts - Currently nine turnouts (not including pullout parking at Pelican Creek) exist along this East Entrance Road segment. As part of this project, all nine turnouts would be reconstructed along the road for wildlife viewing, passing opportunities, and resting areas. The average current size of each of these turnouts is approximately 2,000 square feet. One large turnout exists at the east portion of the project that is nearly 8,000 square feet in size. In some situations, the turnouts could be enlarged or decreased in order to allow for a safe and consistent design of these turnouts. Some informal turnouts would be obliterated, others would be formalized and paved, and some turnouts may be relocated. When these parking and turnout locations are associated with a trail, the trailhead would be formalized and set further back from the mainline road to allow backing out of spaces without backing onto the highway. The parking area adjacent to the east side of the Fishing Bridge General Store would be expanded and reconfigured to the east of its existing location.

Figure 9 - Turnouts Located Halfway Between RV Park and West End of Proposed Viaduct

Pelican Creek Bridge Parking Areas and Viewpoints – Parking areas located at the east (figure 13) and west (figure 14) ends of the Pelican Creek Bridge would be reconstructed, paved, and formalized. Each parking area would accommodate approximately 20 parking stalls and the eastern one would have a vault toilet installed. The west parking area would connect into the trailhead leading south to the lakeshore. A third parking area (figure 12) would be constructed to the east of the bridge on the south side of the East Entrance Road. This parking area would provide a view point of the confluence of Pelican Creek and Yellowstone Lake. Each of these parking areas would be about 170'x80' is size.

Storm Point Trailhead and Parking Areas – These parking two areas (figures 10 & 11) would be expanded to provide a formalized parking area to maximize capacity. Currently the parking areas are not striped and users must back out into traffic on East Entrance road. The expanded parking areas would accommodate about 20 vehicles and would have room for vehicles to back out of the parking spaces without entering traffic on East Entrance Road. Vault toilets would be installed at the east parking area. Each of these parking areas would be about 170'x80' in size.

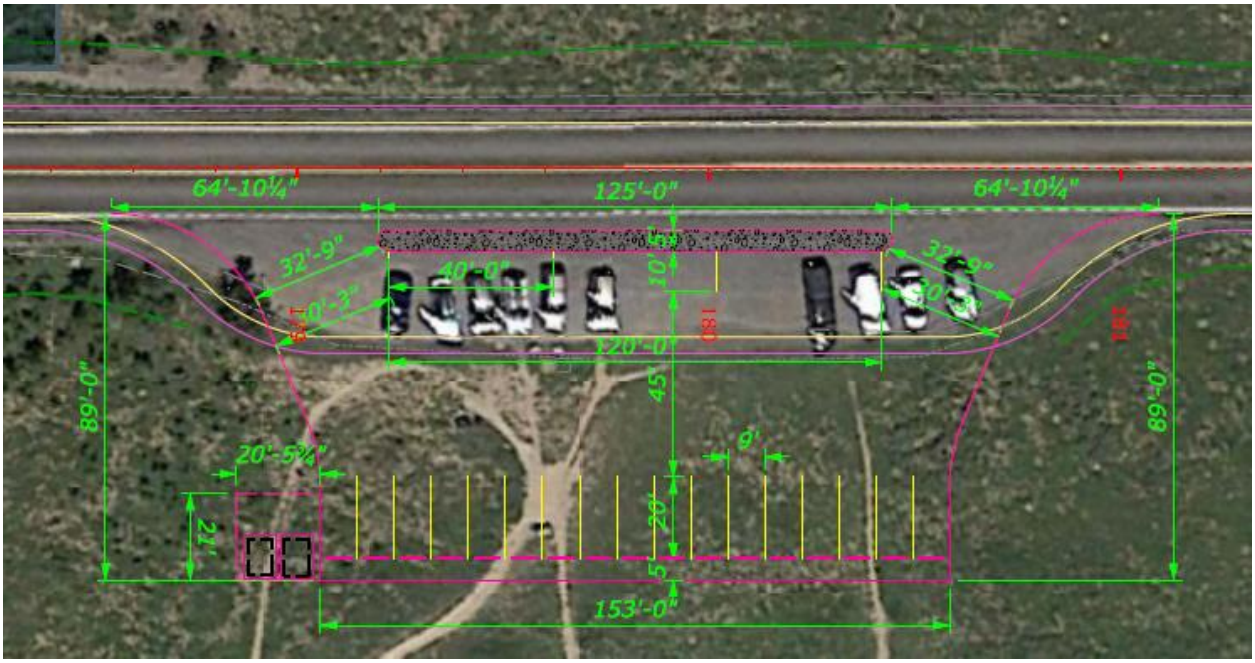


Figure 10 – Eastern Storm Point Turnout Located Northwest of Indian Pond (showing proposed vault toilet location)

Figure 11 - Western Storm Point Turnout Located Northwest of Indian Pond

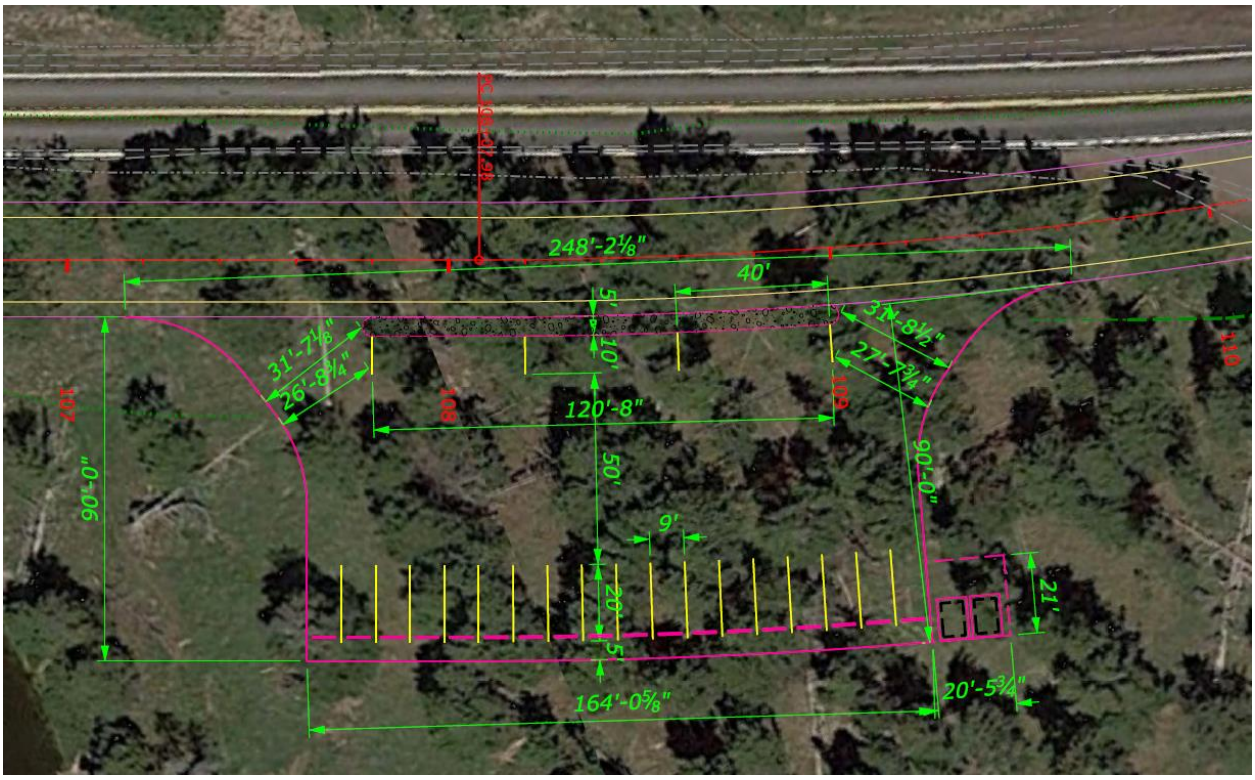


Figure 12 - Proposed Turnout Located at East End of Proposed Viaduct on South Side of Road

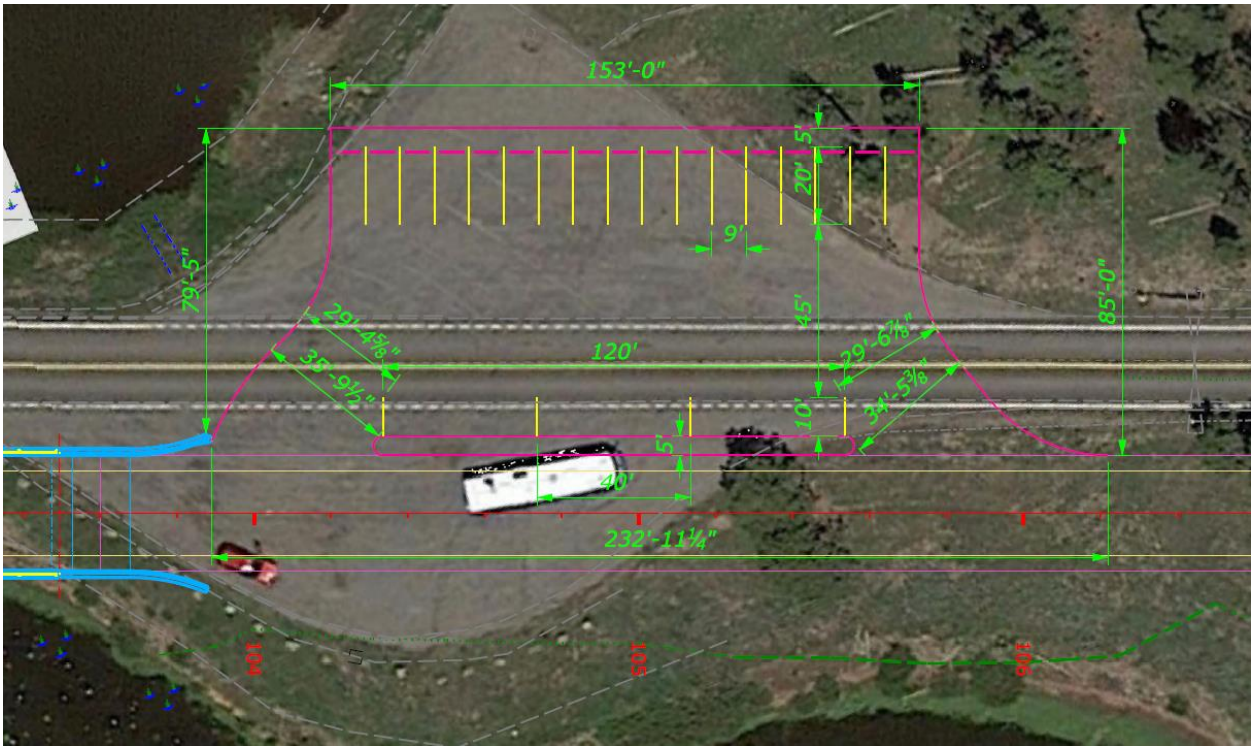


Figure 13 - Turnout at East End of Proposed Viaduct on North Side of Road

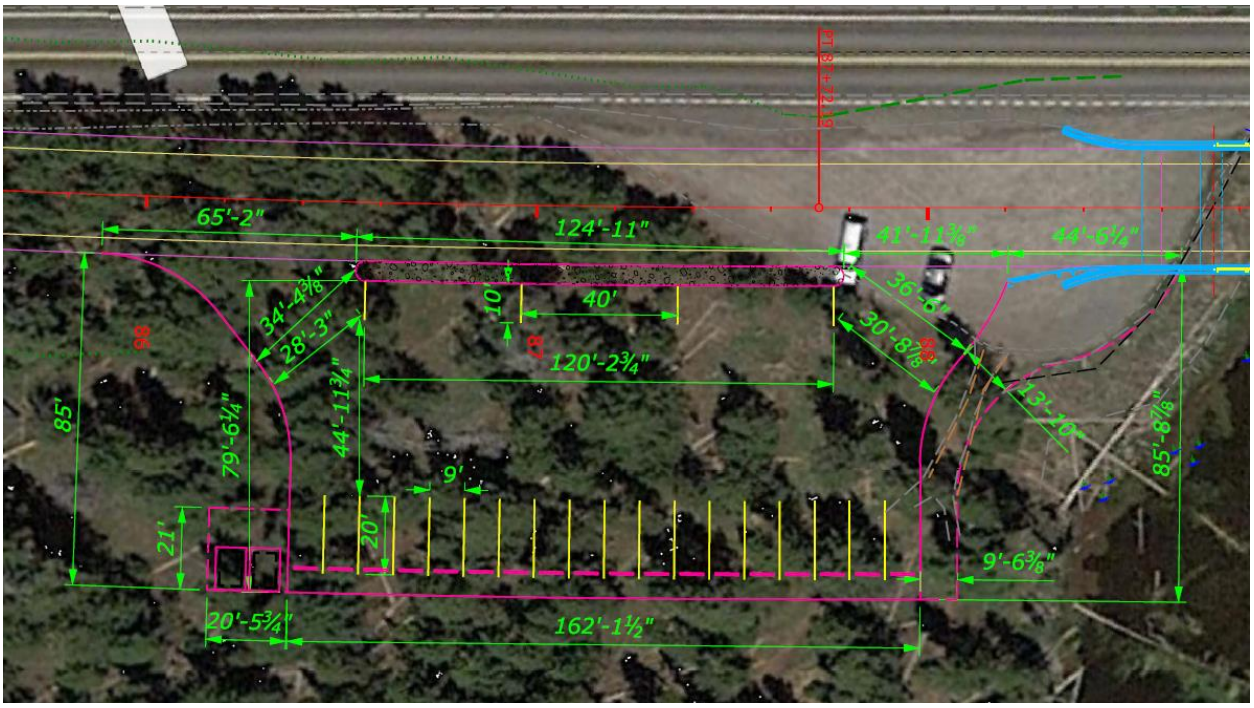


Figure 14 - Turnout at West End of Proposed Viaduct on South Side of Road

Pelican Valley Trailhead Parking and Entrance- The current access road to the Pelican Valley Trailhead would be relocated to the east to improve the vehicle accessibility. The current access

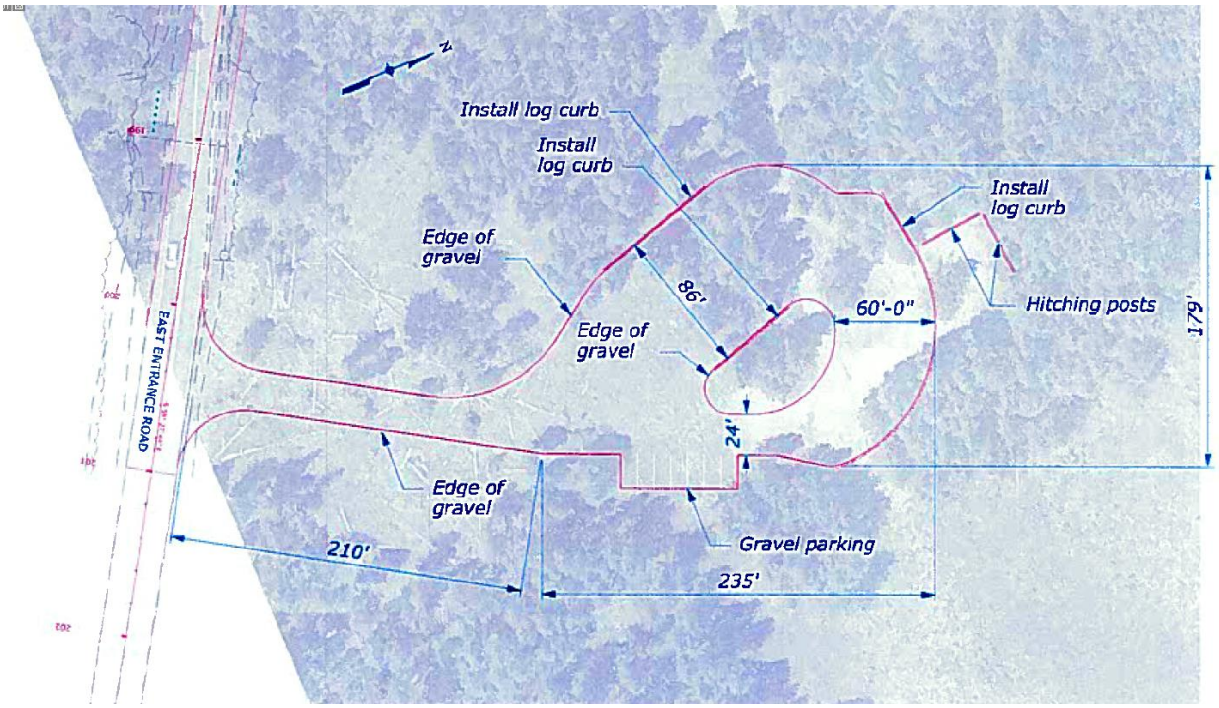


Figure 15 - Reconfigured Pelican Trailhead Parking with Relocated Entrance Road

is on a curve and makes a sharp turn to the east making it difficult for vehicles to enter. The existing access road would be removed and the area would be restored. The parking area (figure 15) would be enlarged by about 20-30 percent and paved to accommodate an increase in users and larger vehicles.

Pelican Creek Bridge – This Bridge (figure 16) typifies the early design philosophy of the NPS, which was to use indigenous materials to harmonize manmade features with their natural surroundings. This philosophy is embodied in many of the park's Rustic Style buildings and structures. Pelican Creek Bridge was built in 1934 as part of a major reconstruction and relocation of East Entrance Road. The bridge replaced a 192-foot wooden pile bridge that had been constructed by the U.S. Army Corps of Engineers in 1902.

Figure 16 - Existing Pelican Creek Bridge Condition

The replacement of the Pelican Creek Bridge was analyzed in the *1992 EA – Reconstruct East Entrance Road*. At that time a decision was made to replace the Pelican Creek Bridge with a longer viaduct over the wetland. Since the decision was made there has been preliminary design work completed and a current proposal on how a replacement viaduct might be constructed has been identified along with an updated location. For this reason, this portion of the project has been re-analyzed in this document. Current design concepts of this proposed structure are described below.

Pelican Creek is located on East Entrance Road, 1.6 miles east of Lake Junction. The existing 140-foot long Pelican Creek Bridge would be replaced by construction of an approximately 1,500 foot long and 30-foot wide viaduct on an adjacent alignment approximately 40 feet to the south of the existing Pelican Creek Bridge and causeway. The viaduct would span the existing wetland and floodplain and Pelican Creek. Using heavy construction equipment such as excavators, loaders, and dumptrucks, the existing bridge, piers and abutments would be removed. No in-stream work is anticipated. Additionally, the approximately 1,300 linear feet of existing causeway would be removed restoring the wetland floodplain. Equipment would not need to work within the wetland to pull the existing road, as it would remove existing embankment material by working from the existing road surface and working to the east. Material would be hauled to the waste site of the, now closed Pelican Creek Campground. By removing the existing Pelican Creek Bridge and replacing it with a viaduct, 1.88 acres of floodplain and wetland functions would be permanently restored. The new viaduct would have nine spans, placed on approximately 16-24 3'-diameter steel pipe piles driven to a depth of 150-200 feet and the superstructure would consist of weathered steel. The bridge railing would be steel tube with picket railings to look similar to the existing railing. The bridge would have a slight arch to it but still remain relatively low in profile so as to blend into the landscape when viewed from the lake.

Temporary structures could consist of a work bridge (south of the proposed viaduct) or work platforms south of the existing causeway, north of the proposed viaduct). The work bridge would be up to 50' wide and placed south of the new bridge. The work bridge would consist of a steel or wood deck supported by temporary steel or wooden piles driven into the wetland floodplain. The platforms would be 8 structures (Approximately 50'x50') placed adjacent to the existing causeway. The platforms would consist of either: a geotextile blanket placed on the existing ground with sand and rip-rap on top, or a wooden platform constructed atop temporary steel or wooden piles driven

into the wetland. All temporary platforms would be removed at the completion of the project (scheduled for 2- 3 years) and the area restored as described above under "Reclamation/Revegetation. Driving on the wetland surface is not anticipated. If driving on this surface is required, it would be done when the area is the driest, or in months with ground frozen and when the area covered in snow.

Road Realignment – Approximately 3,600 linear feet of permanent road realignment (Figure 17) is necessary to construct the Pelican Creek Bridge. The last 2,500 feet (easterly) of the project would be slightly realigned to transition into the existing road. The new bridge would be located south of the existing causeway and the road realignment would transition from the ends of the new bridge back to the alignment of the existing road on both ends. Outside these areas, there are no proposals to permanently realign the road. Slight shifts (10-20 feet) in the road alignment may be used to avoid or minimize impacts to resources such as wetlands or sensitive flora or fauna

Figure 17 - Proposed Pelican Creek Viaduct and Road Realignment

Culverts and Headwalls – The culverts and headwalls would be rehabilitated and reconstructed according to the provisions of the 1992 road programmatic agreement with the Wyoming State Historic Preservation Office, the Advisory Council on Historic Preservation, and the NPS, which allows the masonry headwalls to be moved to a more functional location when necessary but they must retain their original historic look. The historic stone masonry headwalls within the Fishing Bridge Village parking area would be reconstructed as part of this project.

Retaining Walls –A goal of this project would be to eliminate or reduce where possible, impacts to wetlands and archeological resources. Retaining walls can help to facilitate this by reducing the amount of cut or fill required to widen a road. Retaining walls, if used on this job, would be rehabilitated and reconstructed according to the provisions of the 1992 road programmatic agreement with the Wyoming State Historic Preservation Office, the Advisory Council on Historic Preservation, and the NPS. New retaining walls could be constructed in areas to help minimize impacts to wetlands, rare plant or archeological sites, and areas of steep slopes adjacent to the

road. No rare plant populations have been found within the project limits, and no retaining walls are currently proposed. If a situation is encountered where a wall could lessen or eliminate resource impacts, one would be considered. If retaining walls are added to the scope in the future, additional site-specific environmental review would be undertaken.

Water Source(s) and Disposal- Water that would be used for dust control, compaction of base material, asphalt production, and incidental needs related to the construction would be drawn from nearby Yellowstone River (figure 18) and the Yellowstone Lake at Sedge or Mary Bay. Any water pulled from these water sources within the project area would not be used where it could potentially run into tributaries outside this watershed. Approximately 3 million cubic feet (69 acre feet) would be needed over the duration of the project. Daily water requirements are not expected to exceed about 75,000 gallons per day (assuming a 150 day construction season). Any water transport equipment used would be decontaminated prior to use. The existing stream bank would be maintained with no alterations or changes to existing hydrology of the river or lake. Dewatering operations would likely be required to remove the abutments of the existing Pelican Creek Bridge. If dewatering is done, a Vac-truck or water line would be employed to transport water to disposal sites from the dewatering operation. This water would be disposed of at an upland site within the vicinity of the previous Pelican Creek Campground. This is the same area that is proposed to be used for wasting fill material from the Pelican Creek Causeway. If dewatering is needed near the Fishing Bridge it would be disposed of in the forested area south and east of the bridge. Areas would be chosen to ensure that water would infiltrate into the soil and no surface runoff would reach existing water bodies.

Figure 18 - North of Fishing Bridge Development, South of Yellowstone River

Temporary Offices and Contractor Housing – A temporary (duration of a construction contract, approximately 2-3 years) office facility (trailer) would be placed at an already disturbed site in Fishing Bridge Village to provide office space for employees during reconstruction of the East Entrance road segment. This trailer would be removed following completion of road reconstruction. Contractors would be allowed to use existing contractor/employee trailer/RV spaces within the Park (Canyon, Lake, or Grant), if available.

Construction Staging, Stockpiling, and Disposal Sites – To implement this alternative, various areas near the East Entrance road segment would be used for construction staging, material stockpiling, equipment storage, and asphalt production. These areas would be sited in previously disturbed areas, away from visitor use areas. The areas where road realignment would occur, along portions of the existing road, existing and new turnouts, and existing and new parking lots may be used for construction purposes such as staging and stockpile of equipment and materials.

Sites and their proposed use include:

- Abandoned Sewage Treatment Facility (Site A 1.25 acres) and (Site B 2.93 acres) located north of Fishing Bridge Village and along the road to the wastewater treatment plant. Both sites are existing disturbed areas already used for staging and stockpile sites. For this project

these area would be used to stockpile and sort materials, and as possible locations for a concrete batch plant and or an asphalt plant. Concrete and asphalt plants would require the equipment and space needed to mix store, mix, and heat, ingredients, and load them for transport to the project area. No washing of materials would occur at these sites. These areas are already disturbed and used for equipment and materials storage.

- These areas would be used as staging and stockpile sites during construction of this project. Disturbed area NE of the Fishing Bridge General Store (Site D, 2.62 acres): Equipment and material storage, site is already disturbed and used for this purpose.
- Near Pelican Creek (Site E, 1.32 acres - figure 22), an area located just to the northeast of Pelican Creek Bridge that was a campground that closed in the 1970s and has not been used since. This area would be used as a staging and stockpile area. The area contains an old borrow pit that would be used as a permanent waste disposal area for the Pelican Creek causeway material being removed. The pit would be filled and reclaimed using the causeway material, and as described above under "Reclamation/Revegetation."_The topography surrounding this waste site (pit) is such that a hill is located to the west. This hill would ensure that no sediment from erosion or heavy rains is washed into Pelican Creek or its associated wetlands.
- Clearing midway between Indian Pond and Pelican Creek (Site F, 2.26 acres): clearing on the south side of the East Entrance Road about 0.6 miles east of Pelican Creek. This area would be used to stage and stockpile bridge and road material. The area (figure 23) would be reclaimed to its natural condition at the completion of the project.
- Access road to the Pelican Valley trailhead (Site G, 0.56 acre): Equipment and material storage.
- Sedge Bay: Stockpiling, storage and potential holding area for girders (Site H, 1.50 acres of existing disturbance, 0.25 acre new temporary disturbance for temporary 250-feet long gravel access road). A potential new temporary entrance road to this existing parking area from the east to this area could be constructed, no new permanent disturbance would occur. These temporary roads and use of this site would be used for the duration of the contract (approximately 2-3 years).

Figure 19 - S of Wastewater Plant

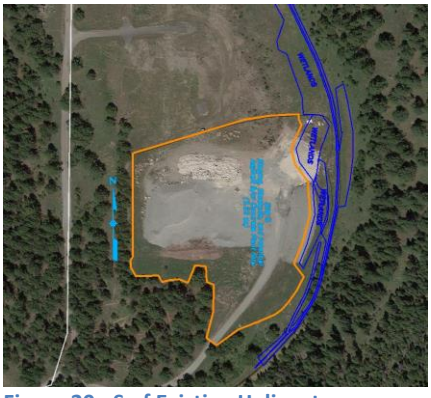


Figure 20 - S of Existing Helispot

Figure 21 - NE of General Store

Figure 22 - Location of Past Pelican Creek Campground (soil disposal site)

Figure 23 - Existing Clearing S of East Entrance Road

Materials from the construction not deemed beneficial to Yellowstone National Park would be removed and disposed of properly outside of the park boundaries. Any beneficial excess materials generated would be stored within existing designated storage (maintenance) areas within Yellowstone National Park for later use.
These three construction areas for staging, stockpiling, and disposal would total 9.76 acres in size, and used for the duration of the construction contract (2- 3 years).

Blasting – No blasting is anticipated.

Material Sources – Materials used for stone masonry, road base aggregate, asphalt mix, and riprap would be from commercial sources, likely located east of the park. This approved fill material would come from a park approved weed free source. The fill material would likely be hauled in on the East Entrance Road to the project site. Much of the existing road base material would be conserved from the existing roadway and reused on the job. Table 2 lists estimates of imported materials required for the job. All loads would be covered and no engine brakes would be used in or near developed areas and campgrounds.

Table 2 – Assumed Material Needs

	Alternative A No Action	Alternative B Rehab Fishing Br.	Alternative C Replace Fishing Br. in Current Location	Alternative D Replace Fishing Br. in a New Location
Tons of Imported Material*	0	250,000	250,000	265,000
Number of Truckloads of Material**	0	10,000	10,000	10,600

* Asphalt concrete pavement, cold recycle asphalt base, roadway aggregate, select borrow, asphalt, prime coat, and riprap (rounded to 1,000 tons)
**Estimated at 25 tons of material for each truckload

Geology/Thermal Features –No thermal features are within the project, but are adjacent to the Sedge Bay parking area proposed for staging of materials and equipment.

Wetlands –The road alignment would be designed so that impacts only occur on one side of the road. The centerline of the road would be routinely shifted to help minimize these impacts. Wetland mitigation would be accomplished by the restoration of previously impacted wetlands by removing the road embankment used for the existing Pelican Creek causeway within the park located on the East Entrance road segment. Removal of the causeway (roadway fill) from the wetland at Pelican Creek would restore 1.88 acres of wetland. Equipment used to remove this fill material would likely be large excavators and dump trucks working from the existing roadway, once a new viaduct has been constructed. The amount of road fill to be removed has not yet been determined, though the distance of this two-lane causeway is about 1,300 feet long. This material would be used to fill existing borrow pits located in the area of the old Pelican Creek Campground. Plugs of wetland material (sod) from wetland directly adjacent to the removed causeway would be planted in the area of the removed causeway to increase the speed of wetland restoration.

In-Water Work – Any in-water work involving equipment driving through water bodies, or working within a wetland would occur during low flow times of the year, or when ground is frozen. Working within a water body or wetland from a work bridge while performing pile driving or drilling could occur when water levels allow such work. Equipment work in the water would

likely only occur in the area of Pelican Creek to pull an abutment. The lowest water flow periods within the project limits are typically from August to November.

Visitor Information – Information on this road project would be distributed to the visitors in the form of press releases, within the visitor newspaper available at entrance stations to the park, through uniformed employees, and on road signs and postings.

Scheduling of Work Activities – The project is currently scheduled for construction in 2018 and 2019, though this is dependent upon funding being approved and becoming available. Rehabilitation of the Fishing Bridge would be one of the first orders of work. Construction of the Pelican Creek Viaduct would require the most time to construct and would dictate the duration of construction. The Pelican Creek Bridge substructure would be constructed in the first year with the superstructure constructed in the second year. The remainder of road improvements, parking areas and trailheads would be scheduled accordingly to be complete within the 2-year (possibly 3-year) construction period. All required permits would be obtained prior to construction.

Closures and/or Delays for Public Access - The flow of vehicle traffic on the road would be maintained as much as possible during the construction period. During peak visitor season, construction delays would normally be limited to 30 minutes. There may be some periods when the nature of the construction work may require temporary road closures(1 to 3 days). These closures could consist of regular nighttime closures, and/or full day closures lasting up to a few days in duration. A complete road closure late in the season (after Labor Day) could be required. All efforts would be made to reduce these closures as much as possible and to alert the public and park staff as soon as possible if delays longer than normal are expected. Visitors would be informed of construction activities and associated delays. If the need for closures occurs, the gate just east of Pelican Creek would be used to prohibit traffic flow, as would a gate placed west of Fishing Bridge. Intermediate gates would be placed to allow visitor use of areas along the road where it would not conflict with construction. Accommodations would be available for emergency vehicles. Any closures of nearby roads or trails would be advertised in advance.

In the event of closure of the East Entrance Road, traffic entering the Park from the east would use the NE Entrance Road via Cooke City, Montana.

Utilities – No water, sewer, or electrical lines would be relocated as part of this project. Utility locates would be required prior to any construction within the project area.

Reclamation/Revegetation – Revegetation plantings would use native species from genetic stock originating in the park. Revegetation efforts would be implemented to reconstruct the natural spacing, abundance, and diversity of native plant species. All disturbed areas would be restored as nearly as possible to pre-construction conditions shortly after construction activities are completed. The principal goal is to avoid interfering with natural processes and to reduce the possibility of infestation of weeds.

Alternative B – Reconstruct and Rehabilitate a Portion of the East Entrance Road and Rehabilitate Fishing Bridge (NPS Proposed and Preferred Action)

This alternative consists of everything under *Project Elements Common to all Action Alternatives* with the addition of rehabilitating Fishing Bridge (figure 24). Rehabilitation would include three main elements: 1) rehabilitation of the timber deck and driving surface, 2) construction of a new abutment, and 3) installation of new Fiber Reinforced Polymer (FRP) jackets on all timber piles.

These elements could be constructed under traffic or during night closures. Some bridge construction, such as pile driving and foundation installation could be done during shoulder seasons when traffic is lighter.

If during construction, the existing timber curbs, posts, or railing are deemed in need of repair, a suitable repair or replacement would be performed. This would typically be "replacement in kind" using the same type of materials.

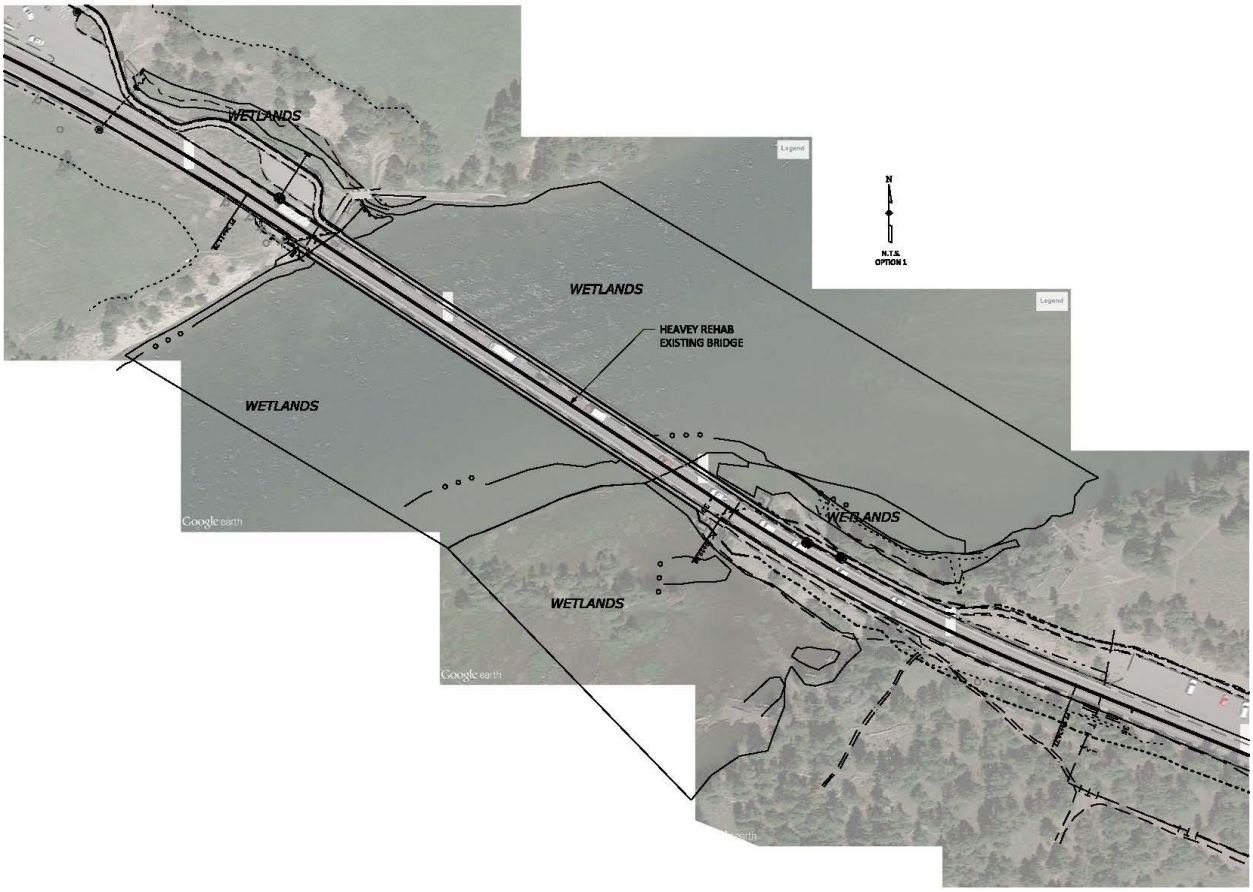


Figure 24 - Alternative B "Rehabilitate Fishing Bridge"

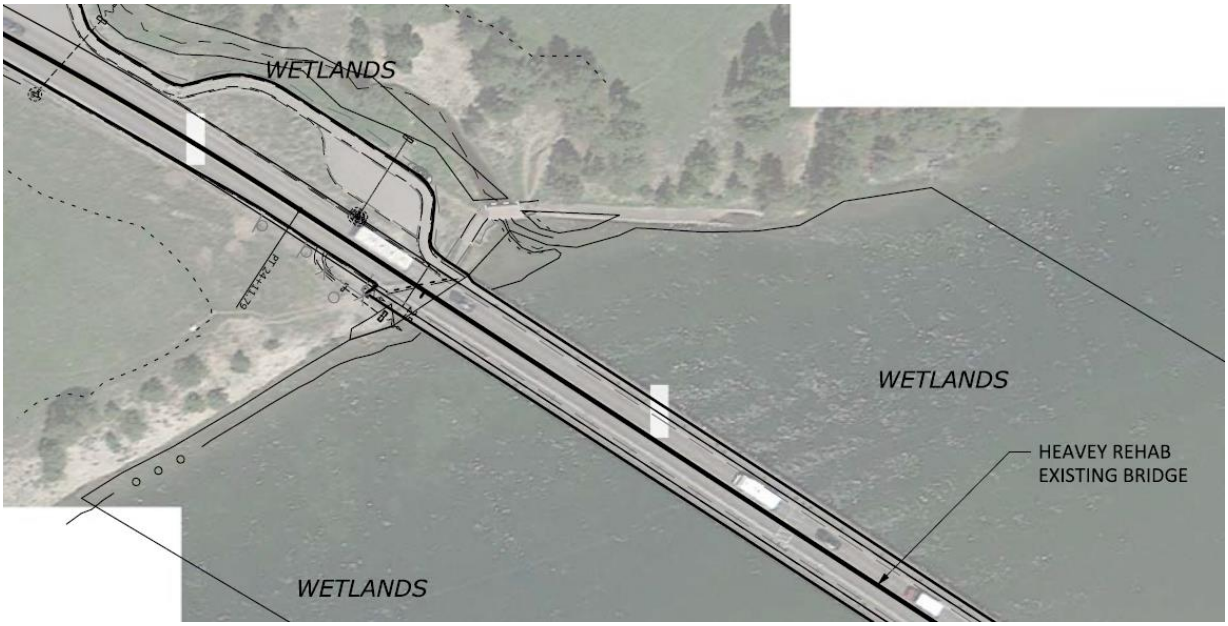


Figure 25 - Alternative B (Expanded View, Fishing Bridge, West Side)

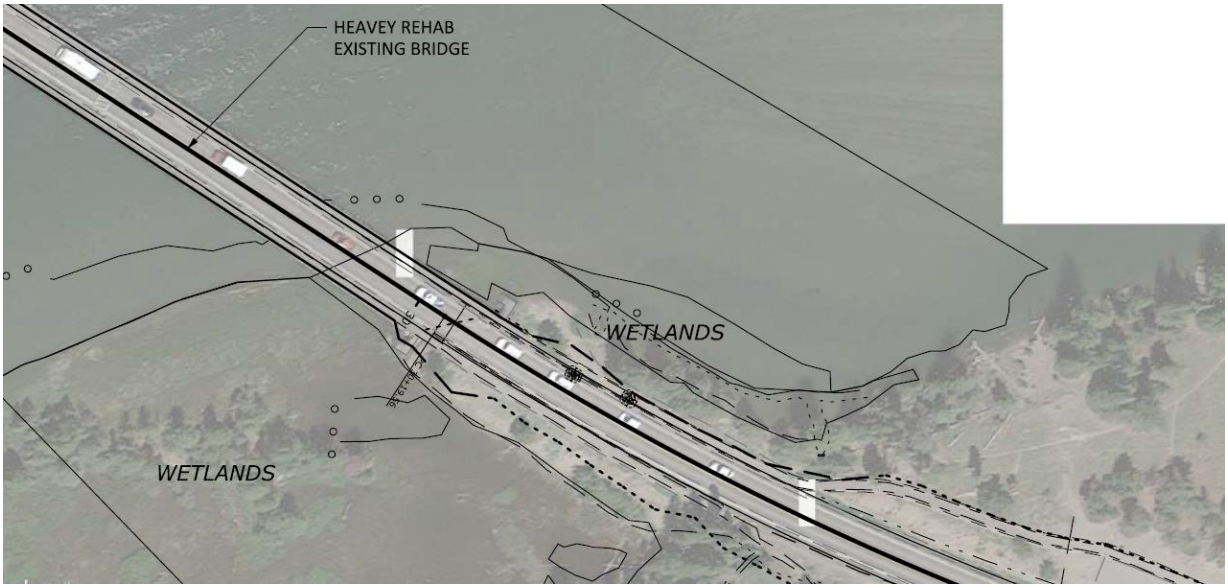
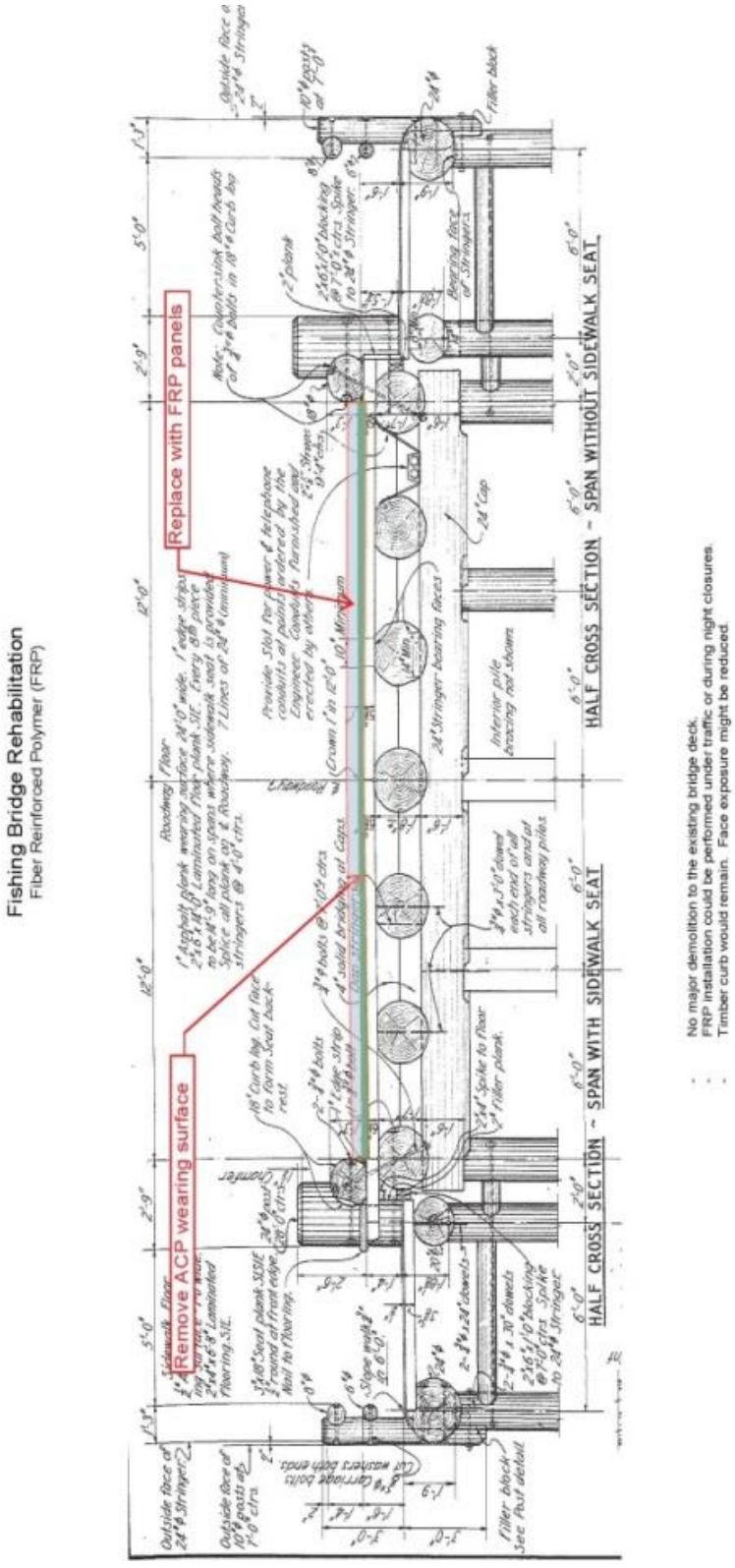


Figure 26 - Alternative B (Expanded View, Fishing Bridge, East Side)

Bridge Deck - Rehabilitation of the timber deck would consist of the removal of the asphalt tile surface, replacement of deteriorated timber planks where needed, and placement of a lightweight material, such as fiber reinforced polymer (FRP), panels, that would be placed over the existing timber and asphalt deck (figure 27). An epoxy and aggregate riding surface would be placed over the panels. The existing sidewalk surface would also be replaced with FRP.

Figure 27 - Existing Fishing Bridge - Bridge Deck

Figure 28 - Fishing Bridge Rehabilitation Drawing



Construct new west abutment – A new cast- in-place concrete abutment cap founded on steel micropiles would be constructed in front of the existing abutment, adjacent to the Yellowstone River. Support micropiles would be drilled through the existing bridge deck. The fill behind the abutment would be removed and weep hole drainage will be drilled through the abutment to aid in relieving water pressure on the back of the abutment. The fill will be replaced and the approach repaved. The large cracks in the existing concrete abutment (Figure 29) would be filled with epoxy resin. Access for small equipment such as skid steer loaders would be along the pedestrian trail along the northwest side of the bridge. If larger equipment unable to negotiate the pedestrian trail, or height restrictions below the bridge is necessary, it would be barged in from the Bridge Bay Marina. The abutment is located on the river shore above mean water level. Best management practices would be used to ensure that construction materials, and concrete are not allowed to enter the Yellowstone River.

Figure 29 - Existing West Abutment with location for Proposed Supports

Jacket existing piles – Existing steel pile jackets would be removed and new Fiber Reinforced Polymer (FRP) jackets installed on all existing piles (see Figure 30). Jackets would match closely the color of the existing piles and extend a minimum of 18" to 24" above high water level and 18" to 24" below the damaged region of the timber pile. Installation of the jackets would be performed likely with the uses of a barge on the Yellowstone River. Divers would install jackets around each pile as in figure 31, and then each jacket would be filled with an epoxy resin. The jackets would contain the resin to within the jacket.

Condition of Existing Piles

Figure 30 - Fishing Bridge Pile (Existing)

Sample of typical FRP jackets

Figure 31 – Sample of Example FRP Jackets (Proposed)

Repairs as needed – Minor repairs, (e.g. fascia repairs or new sidewalk surfacing), would be conducted as needed.

Alternative C – Reconstruct and Rehabilitate a Portion of the East Entrance Road and Replace Fishing Bridge in its Current Location

This alternative consists of everything under *Project Elements Common to all Action Alternatives* with the addition of replacing the existing Fishing Bridge wood structure in its current location (figure 32). The reconstructed bridge would include abutments, piles, pier caps, deck, and rails. The reconstructed bridge would be designed to retain the historic character of the existing bridge in accordance with the Secretary of Interior's Standards on Historic Preservation and the materials would be of a compatible substitute so as to maintain the visual character of the bridge. The bridge design would include: timber rail with simulated timber concrete posts, asphalt wearing surface, grade separation between pedestrian walkway and vehicle travel way, exposed steel pipe piles, and twenty-four inch diameter half-timber fascia logs. The bridge would have two eleven-foot wide travel lanes, three-foot wide shoulders, and six to seven-foot wide sidewalks on each side of the bridge (see Figure 35).

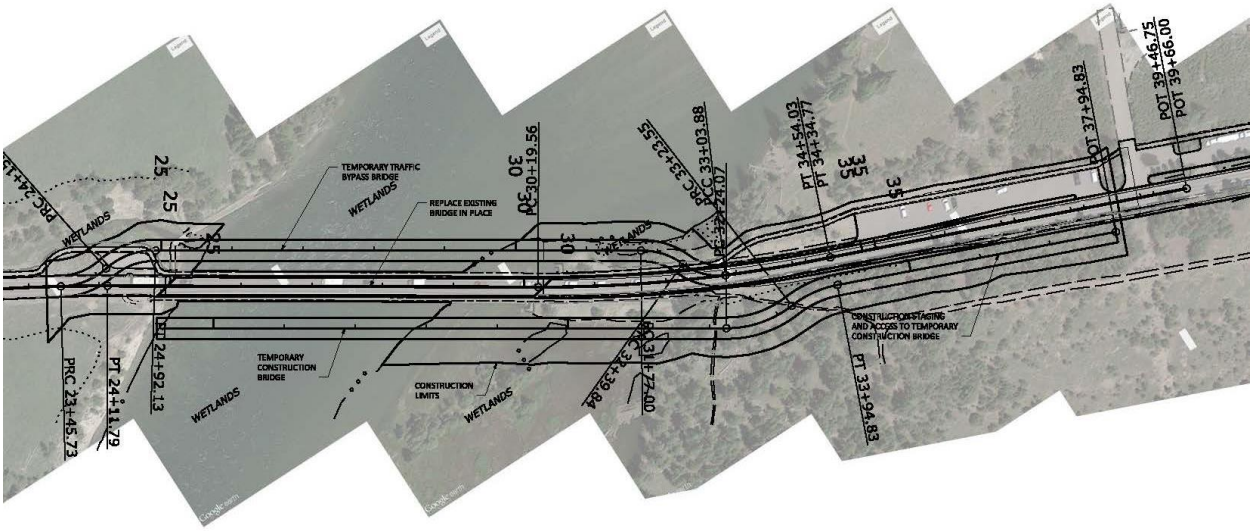


Figure 32 - Alternative C "Reconstruct Fishing Bridge in Same Location"

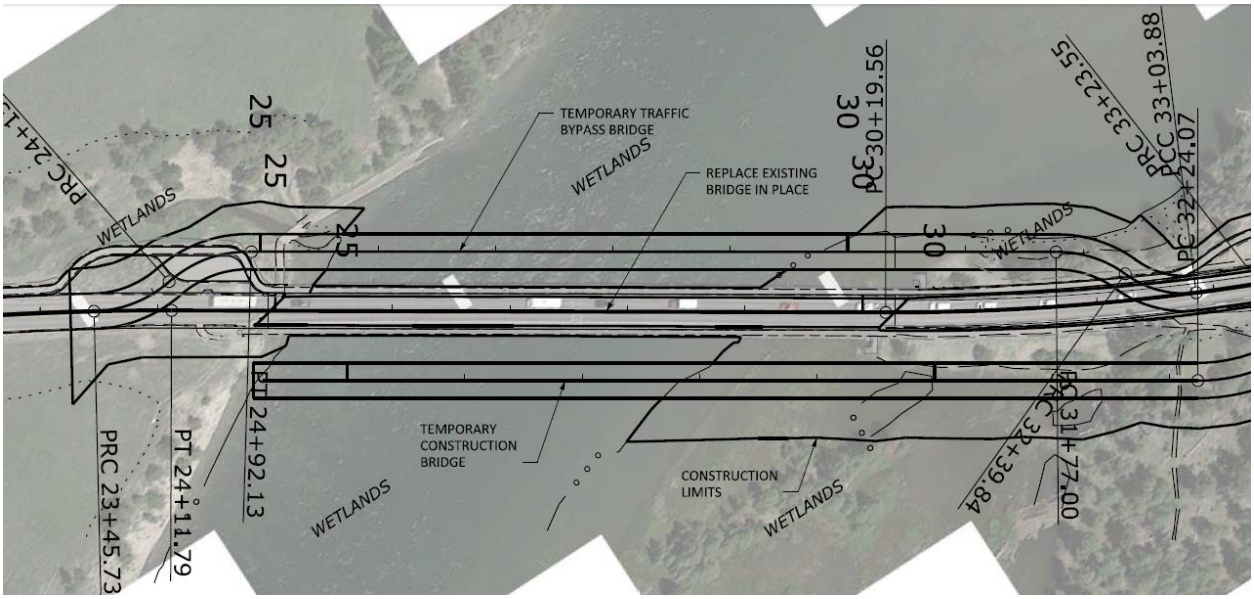


Figure33 - Alternative C (Expanded View, Fishing Bridge, West Side)

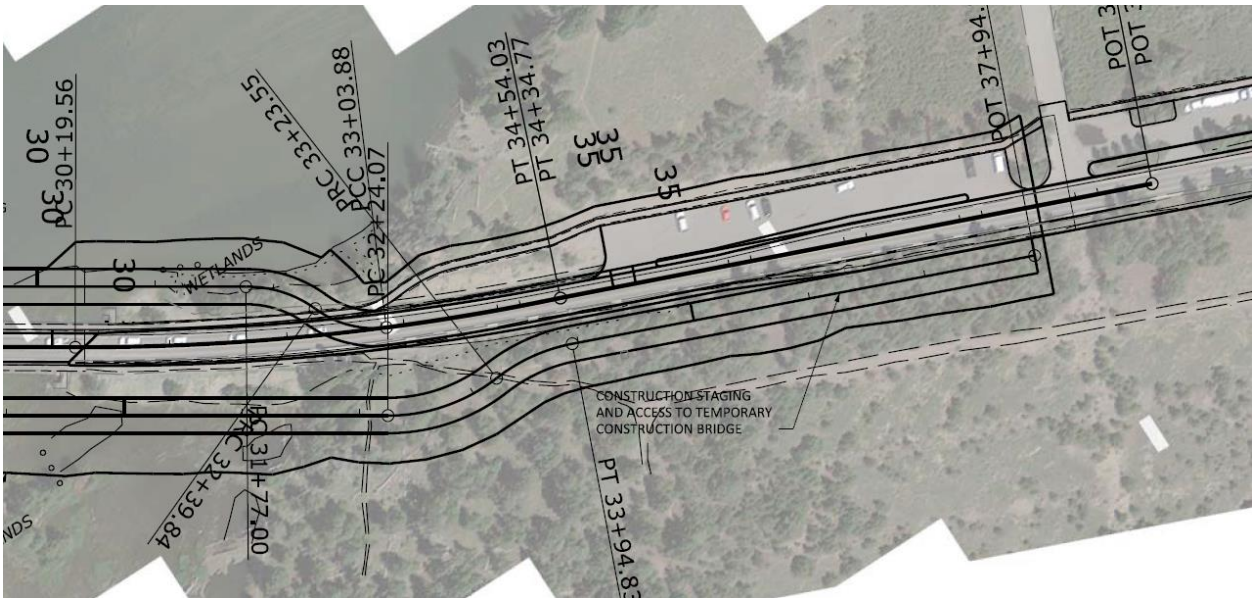


Figure 34 - Alternative C, (Expanded View, Fishing Bridge, East Side)

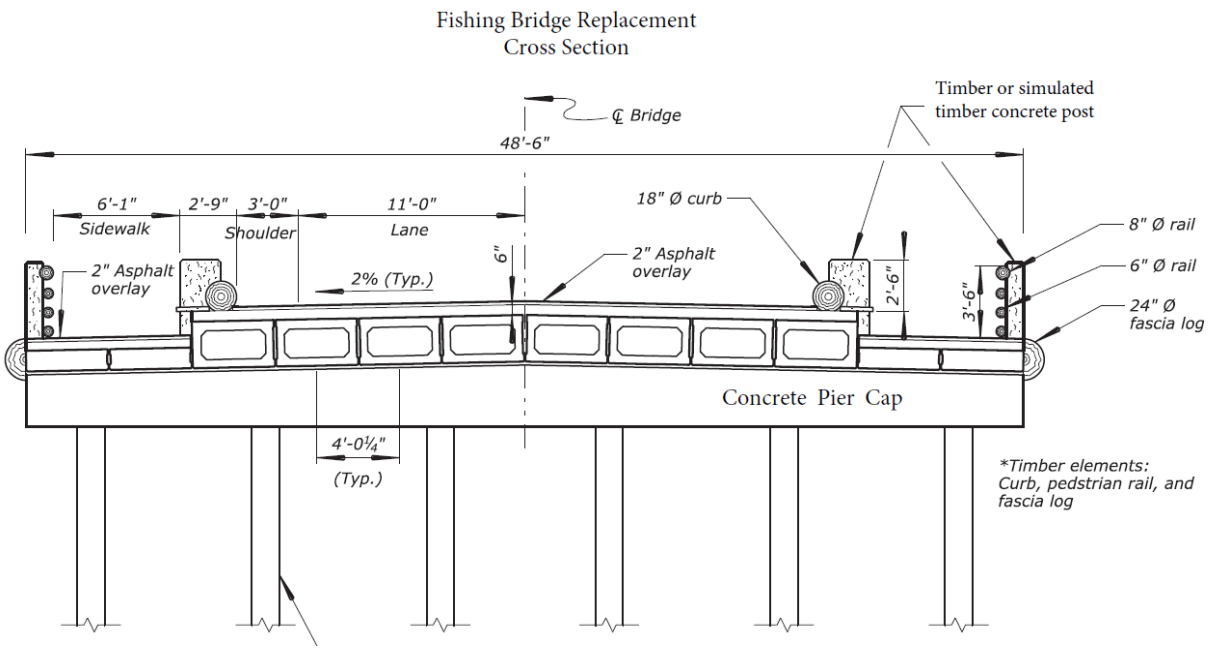


Figure 35 - Proposed Replacement Bridge Structure

The bridge length on the current alignment would be approximately 560 feet. The current bridge is 532 feet long. The new bridge would have approximately 10 spans and nine bents. Each bent would have approximately six piles for a total of 60 piles. The piles would be approximately 24-inch diameter steel pile filled with concrete. Piles would be driven into the river bottom. Depth of piles would be determined on soil type encountered and surface area of the piles used. Efforts to contain sediment during installation would be incorporated using turbidity curtains and silt fence as appropriate during the construction phase.

A temporary traffic bypass bridge and a temporary construction bridge (figures 33 & 34) would be placed on both sides of the existing Fishing Bridge. Paved 10-20') one- or two-lane road approaches to the temporary bridges would require approximately 640 linear feet of ground excavation. Piles would be driven into the streambed of the Yellowstone River and the adjacent wetlands to support the temporary bridges. The depth and number of these piles would be dependent upon the type of pile used, and the type of soils encountered. These temporary piles would be removed when the bridges are no longer needed for construction. Pile driving would take place from the temporary bridge structures as they advance out across the river. No in-water work is envisioned to be necessary. All temporary structures would be in place for the duration of construction, anticipated to be from 2-3 years in duration.

The temporary roadways to divert traffic to the temporary bypass bridge and the temporary construction bridge would need to be constructed. These temporary roads would be approximately 30 feet wide at each end of these temporary bridges. Proceeding west to east the total length of the bypass road, including temporary bridge, access and diversion roads would be about 1,200-feet long. This bypass road would diverge from the East Entrance Road at the pedestrian plaza, turn toward the north with a tight S curve, proceed on the temporary bypass bridge approximately 65 feet north of the existing bridge, then tie back into the East Entrance Road (with a tight S curve) just east of the existing bridge. Closures of one travel lane would be necessary for up to a few weeks at a time to complete construction. A long term closure, if needed, would occur after Labor Day potentially through the end of the season (early November). Some bridge construction

activities, such as pile driving and foundation installation, would be scheduled as much as possible to occur during the shoulder seasons when traffic is lighter.

A temporary construction bridge would be used during construction and be 30 feet wide and 730 feet long, located along the south side of the existing bridge. Access to the work platform would be from the east side of the bridge. Equipment carrying long beams would divert from the East Entrance Road and back down the temporary road to and onto the construction bridge.

Alternative D – Reconstruct and Rehabilitate a Portion of the East Entrance Road and Replace Fishing Bridge in a New Location

This alternative consists of everything under *Project Elements Common to all Action Alternatives* with the addition of replacing the existing Fishing Bridge wood structure on a parallel alignment (figure 36) adjacent to the existing bridge. The reconstructed bridge would include abutments, piles, pier caps, deck, and rails. The reconstructed bridge would be designed to retain the historic character of the existing bridge in accordance with the Secretary of Interior's Standards on Historic Preservation and the materials would be of a compatible substitute so as to maintain the visual character of the bridge. This would include: timber rail with simulated timber concrete posts, asphalt wearing surface, grade separation between pedestrian walkway and vehicle travel way, exposed steel pipe piles, and twenty-four inch diameter half-timber fascia logs. The bridge would have two eleven-foot wide travel lanes, three-foot wide shoulders, and six to seven-foot wide sidewalks on each side of the bridge (see Figure 39).

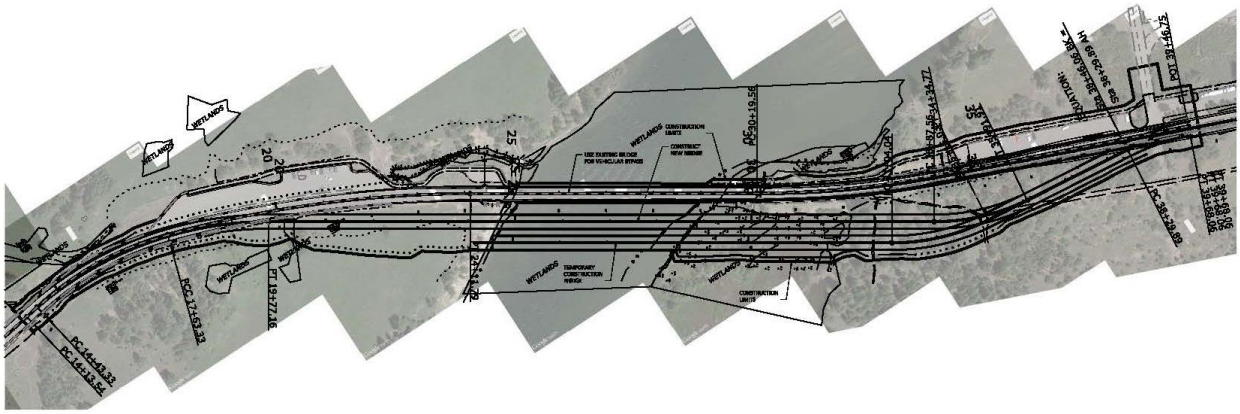


Figure 36 - Alternative D "Reconstruct Fishing Bridge in New Location"

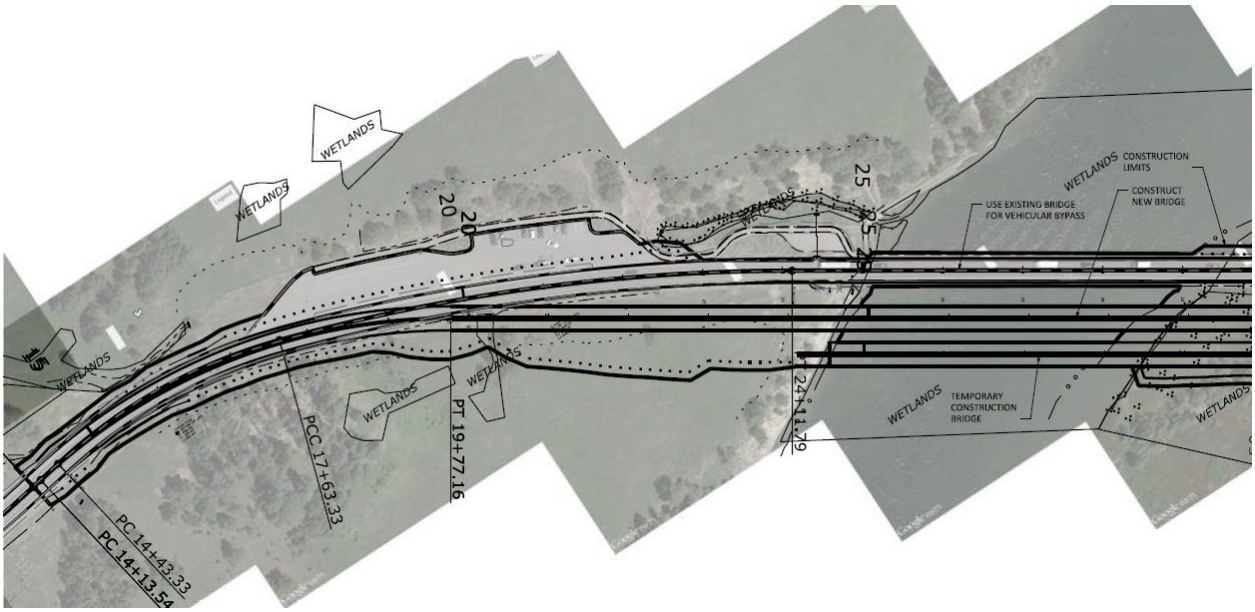


Figure 37 - Alternative D (Expanded View, Fishing Bridge, West Side)

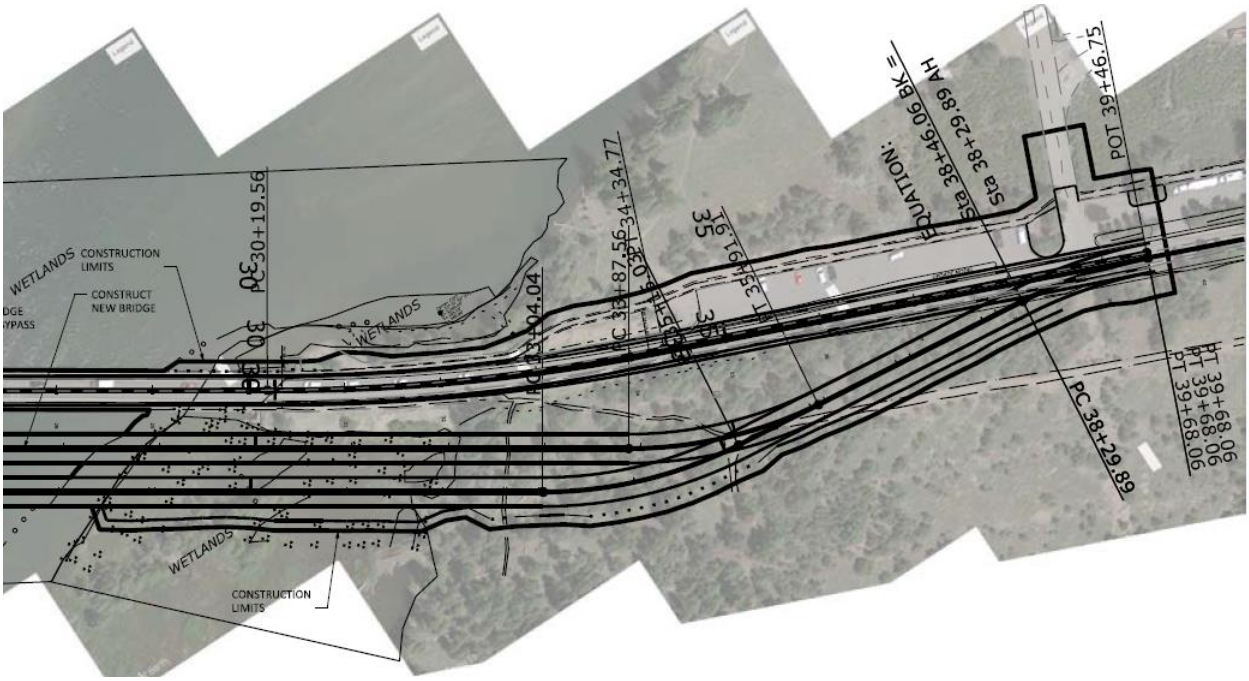


Figure 38 - Alternative D (Expanded View, Fishing Bridge, East Side)

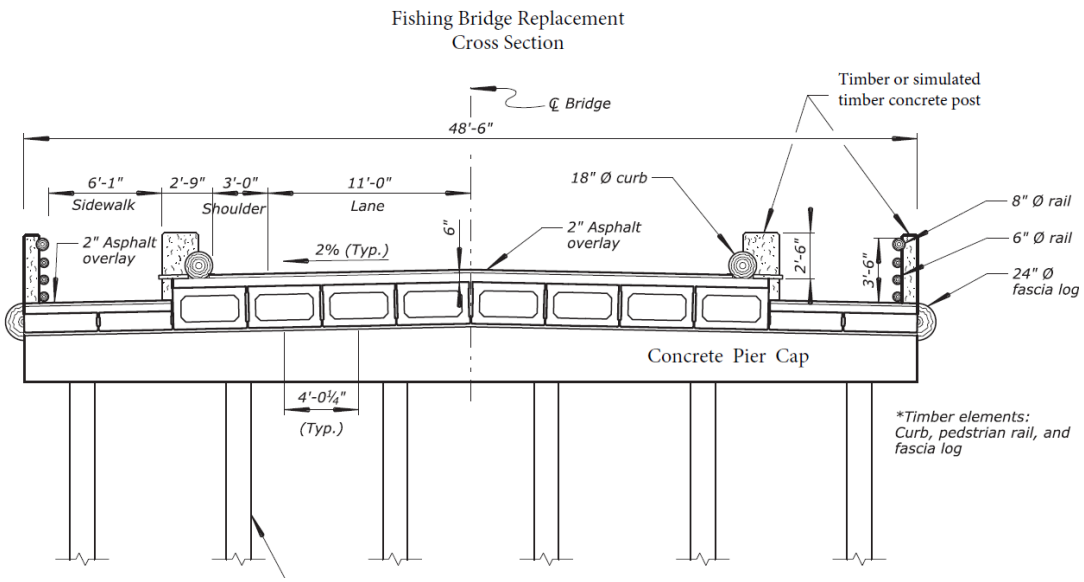


Figure 39- Proposed Replacement Structure (Same as Alternative C (Length Differs)

The bridge length would be approximately 840 feet. The current bridge is 532 feet long. The new bridge would have approximately 15 spans and 14 bents. Each bent would have approximately six piles for a total of 84 piles. The piles would be approximately 24 inch diameter steel pile filled with concrete. Piles would be driven into the river bottom using a pile driver and crane. Efforts to contain sediment during installation would be incorporated during the construction phase. These efforts would include where appropriate, turbidity curtains, sediment fence, settling ponds, and berms or small dikes.

The new bridge would be parallel with and south of the existing bridge. The road re-alignment would be two-lane and paved, beginning approximately 700 feet east of the Grand Loop Road/East Entrance Road intersection, curve toward the right - cutting through a hillside, then running parallel with the existing bridge, curving toward the left and transitioning into East Entrance Road approximately 250 feet west of the gas station. Total road realignment would be approximately 2,000 linear feet.

During construction, traffic would use the existing bridge. Some bridge construction, such as pile driving and foundation installation would be scheduled to the extent possible to occur during the shoulder seasons (spring and fall) to when traffic is lighter.

A temporary construction bridge would be 30 feet wide and 750 feet long and be located 45 feet south of the new bridge. Access to the work bridge would be from the east side of the bridge, approximately 400 feet west of the gas station. Equipment carrying long beams would divert from the East Entrance Road and back down a temporary road located at the river slope onto the work bridge. Road approaches to the temporary bridge would require fill or temporary H-piles to be driven into the adjacent wetlands and excavation of the adjacent landscape to make connection to the temporary bridge. The number of piles needed would be dependent upon the pile type used and the type of soils encountered. Driving in the wetland would not be required to place the piles. The temporary bridge structure (Figures 37 & 38) would have piles driven into the streambed of the Yellowstone River. All temporary work structures would be removed after road and bridge construction is complete.

Mitigation Measures

The following mitigation measures were developed to minimize the degree and/or severity of adverse effects and would be implemented during construction of the action alternative, as needed:

Soil

- In an effort to avoid introduction of exotic plant species, no hay bales would be used. Hay often contains seed of undesirable or harmful alien plant species. Therefore, on a case-by-case basis the following materials could be used for any necessary erosion control dams: wood bark mulch, straw, sand bags, coir logs, and silt fences. Wood bark mulch would be used to reduce surface erosion, help retain soil moisture and promote seed generation of native plants. Standard erosion control measures such as silt fences and/or sand bags would be used to minimize any potential soil erosion.
- Although soil side-cast during construction would be susceptible to some erosion, such erosion would be minimized by placing silt fencing around the excavated soil. Excavated soil may be used in the construction project; excess soil would be stored in approved areas.
- Construction would take advantage of previously disturbed areas wherever possible. Soils would be susceptible to erosion until revegetation takes place. Vegetation impacts and potential compaction and erosion of bare soils would be minimized by conserving topsoil in windrows and reapplying after construction and not allowing equipment to drive on once placed. The use of conserved topsoil would help preserve micro-organisms and seeds of native plants. The topsoil would be re-spread in as near as original location as possible. To reduce construction scars and erosion, mulching, seeding, and/or planting with species native to the immediate area. Scarification of compacted soils would occur as necessary to improve revegetation.
- To minimize the amount of ground disturbance, staging and stockpiling areas would be in previously disturbed sites, away from visitor use areas to the extent possible. When construction is complete, all staging and stockpiling areas would be returned closely to re-construction conditions by using actions outlined in the "Reclamation/Revegetation" section earlier in this Alternatives Chapter.

Wetland

- Mitigation for wetlands destroyed would be done through restoration of disturbed wetlands located within the vicinity of the road reconstruction project at a minimum 1:1 ratio. Wetland restoration would occur through the removal of road embankment and construction of a viaduct over the Pelican Creek drainage. Wetland mitigation would entail the removal of existing road fill (embankment) used for the present Pelican Creek causeway. Removal of this soil, which acts as an earthen dike across the Pelican Creek wetland, would restore many wetland function such as water flow, infiltration, and increased wetland habitat.

Operations

- Contractors would coordinate with park staff to reduce disruption in normal park activities (i.e. facilitate emergency traffic, hauling material to avoid quiet hours, allow for visitor use in areas where no conflicts or safety concerns exist).
- Construction workers and supervisors would be informed about the special sensitivity of park values, regulations, and appropriate housekeeping.

- Sensitive resource areas would be identified and fenced with construction tape, snow fencing, or some similar material prior to any construction activity. Fencing would be used to protect sensitive resource areas. All protection measures would be clearly stated in the construction specifications and workers would be instructed to avoid conducting activities beyond these areas as defined by the fencing or markers. Work limits would be defined with markers.

Air Quality

- Fugitive dust generated by construction would be controlled by spraying water on the construction site, if necessary.
- To reduce noise and emissions, construction equipment would not be permitted to idle for more than 10 minutes while not in use according to the Superintendent's Compendium, based on CFR 36 § - 5.13 Nuisances.

Noise

- All work would be planned to reduce construction noise to visitors as much as possible by timing activities to avoid noisy activities at night when sound could carry to occupied campgrounds or housing areas. The use of sound curtains may be employed to help reduce noise from pile driving activities.

Water Quality

- To minimize possible petrochemical leaks from construction equipment, the contractor would monitor and check construction equipment daily, or prior to each use to identify and repair any leaks. Hazardous material spill kits would be required on site.
- Equipment would not be serviced or refueled near streams; storage and refueling or construction parking and staging areas, would be at least 46 meters (150 feet) from streams or riparian areas. Fuel would be stored in fuel trucks or aboveground storage tanks, and all fuel storage would be in staging areas. Refueling would take place in staging areas and might occur at material source sites. Some stationary equipment (cranes, track-hoes, pumps), such as needed at bridge reconstruction sites, may require fueling within 150 feet of streams. In these cases, special precautions such as requiring spill containment kits at these locations would be put in place to alleviate the risk of fuel spills.
- Stormwater runoff control measures, including silt capture techniques such as silt fences would be employed to improve quality of runoff and prevent degradation of the stream/river.
- Design and construction measures would include development of surface water control features such as berms and settling ponds to minimize post-construction run-off.
- Equipment would not be allowed to operate within the stream/river during critical periods such as during fish spawning. If any pumping of water is required, it would be discharged to an upland site.
- Silt fencing fabric would be inspected weekly or after every major storm. Accumulated sediments would be removed when the fabric is estimated to be approximately 50% full. Silt removal would be accomplished in such a way as to avoid introduction of fine particle materials into any wetlands or flowing water bodies.
- Filter barriers and other best management practices would be used to protect existing water sources and maintain turbidity and sedimentation at the lowest practical level during

construction activities. A storm water pollution prevention plan and a water quality monitoring plan would be required before implementation of the project. Turbidity curtains would be set up within and around any in-water work areas such as pier or abutment placement as needed.

- A Section 404 Permit of the Clean Water Act would be obtained prior to construction.

Vegetation

- Non-native invasive plant infestations near the disturbed areas would continue to be treated on a yearly basis, with emphasis on these areas for a minimum of three years following project completion as per the 2013 Yellowstone Invasive Vegetation Management Plan EA.
- Construction equipment would be cleaned before entering the park to minimize the transportation of exotic seeds to the site. All equipment entering the park would be inspected and may be required to be pressure washed to remove foreign soil, vegetation, and other materials that may contain non-native seeds or vegetation.
- Because disturbed soils are susceptible to erosion until revegetation takes place, standard erosion control measures such as the use of silt fences would be used to minimize any potential soil erosion.
- Weed control methods (previously approved in the park's 2013 *Invasive Vegetation Management Plan* and Environmental Assessment) such as spraying herbicides and mechanical removal would be implemented to minimize the introduction of noxious weeds.

Revegetation

- Revegetation and recontouring of disturbed areas would take place following construction and would be designed to minimize the visual intrusion of any proposed structures. Revegetation efforts would strive to reconstruct the natural spacing, abundance, and diversity of native plant species using native species. All disturbed areas would be restored as nearly as possible to pre-construction conditions shortly after construction activities are completed.

Wildlife

- Construction workers and supervisors would be informed about special status species. Contract provisions would require the cessation of construction activities if a species were discovered in the project area, until park wildlife specialist re-evaluates the project. This would allow modification of the contract for any protection measures determined necessary to protect the discovery.
- All project-related employees, such as contract and government construction employees would be given orientation on how to avoid disturbing or encountering bears and how to minimize unavoidable effects or encounters. Orientation would include information about park regulations regarding food storage, disposal of garbage and other bear attractants, and approaching or harassing wildlife.
- Within the proposed construction areas the typical period for nesting birds is between May 1 and July 31. Per the Migratory Bird Treaty Act, no cutting of trees, vegetation clearing, grubbing, or other site preparation and construction activities which could affect nesting birds would occur between those dates unless qualified biologists from Yellowstone National Park survey them prior to any of these listed activities and find no birds present or using the area.

Cultural Resource Protection

- The NPS would ensure that all contractors and subcontractors are informed of the penalties for illegally collecting artifacts or intentionally damaging paleontological materials, archeological sites, or historic properties. Contractors and subcontractors would also be instructed on procedures to follow in case previously unknown paleontological or archeological resources are uncovered during construction. Equipment and materials staging areas would also avoid known archeological resources.
- Should construction activity unearth previously unknown historic or prehistoric cultural remains or artifacts, work would be stopped in the area of the discovery and the park archeologist would be notified. In accordance with the Inadvertent Discovery Procedures of the 1993 Road Programmatic Agreement, the cultural remains would be assessed and the Wyoming SHPO notified. If the cultural remains are assessed as significant and retain integrity for the archeological information they may provide, the site would be avoided and protected. If avoidance is not possible, data recovery excavations would be conducted prior to any construction activity resuming in the area. If Yellowstone National Park, with the concurrence of the Wyoming SHPO, determines the artifacts or remains are not sufficient to meet the definition of a National Register eligible site, or the archeological information with the site is not significant, all cultural remains would be collected and construction activity may commence with the archeological monitoring. The Road Programmatic Agreement also details procedures in the unlikely event that human remains are recovered.
- The park would continue to work with tribes to document and evaluate the ethnographic resources within the park ascribe native significance and protective measures for these resources.

Visitor Experience

- Signs would be posted and press releases done to inform visitors about construction and traffic delays.
- Speed limits through construction areas would be reduced and posted.
- To minimize the potential for impacts to park visitors, variations on construction timing may be considered. One option includes conducting the majority hauling during off-peak times of the day or during shoulder seasons. Another option includes implementing daily construction activity curfews such as not operating construction equipment near campgrounds during quiet hours (May – September). The NPS would determine this in consultation with the contractor.

Alternatives Considered and Dismissed

The following two alternatives were considered for project implementation, but were ultimately dismissed from further analysis. Reasons for their dismissal are provided in the following alternative descriptions.

- **Reconstruct the Pelican Creek Bridge at its Present Location and Length** – As the decision to replace the Pelican Creek Bridge was made in the East Entrance Road EA in 1992, the Interdisciplinary Team discussed the alternative to replace the bridge and leave the existing causeway in place. This alternative was considered to maintain the existing condition and reduce overall cost. Replacement of the bridge at its existing length would remove remedy the existing severely deteriorated bridge, but would not remove the existing road fill from the Pelican Creek Wetland. As the 1992 decision to construct a viaduct would restore wetland functions, and the team determined that this should still be a goal of the

project, this alternative was dismissed. The alternative would only partially meet the purpose and need for the project and the project objectives.

AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This chapter describes the affected environment (existing setting or baseline conditions) and analyzes the potential environmental consequences (impacts or effects) that would occur as a result of implementing the proposed project. Cumulative effects are analyzed for each resource topic carried forward.

Cumulative Impact Scenario

Cumulative impacts are defined as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions" (40 CFR 1508.7). Cumulative impacts are considered for both the no action and action alternatives.

Cumulative impacts are determined by combining the impacts of each alternative with other past, present, and reasonably foreseeable future actions. Therefore, it is necessary to identify other past, ongoing or reasonably foreseeable future projects at the Fishing Bridge Area of Yellowstone National Park and, if applicable, the surrounding region. Because the scope of this project is relatively small, the geographic and temporal scope of the cumulative analysis is similarly small. The geographic scope for this analysis includes the natural boundaries for the resources analyzed, when those resource boundaries intersect with the proposed action area (3.6 miles along the East Entrance Road). The temporal scope includes projects within a range of approximately ten years, as this is the amount of time estimated to allow for vegetation impacts (one of the longest to heal) to become unrecognizable. Given this, the following projects were identified for the purpose of conducting the cumulative effects analysis, listed from future to past:

- Buried Electric Transmission Cable Replacement (2016)
- Rehabilitate Three Traffic Count Stations (2015)
- Reconstruct Portions of the East Entrance Road (1993-2008)
- Electric Transmission Line Right-of-Way Maintenance – Tree trimming and removal (2015)
- Fishing Bridge RV Park Electric Line and Lighting Repairs and Replacement (2013)
- Fishing Bridge Auto Repair Shop Repairs (2013)
- Fishing Bridge Sewer Line Replacement (2013)
- Fishing Bridge Waterline Replacement (2015)
- Lake Cell Tower Installation (2013)
- East Entrance Road Repair – Nine Mile Slide (2011)
- Fishing Bridge Museum Updates (2009)
- Underground Storage Tank Remediation (2009)
- Fishing Bridge Museum Updates (2009)
- Fishing Bridge Vault Toilet Installation (2008)
- Fishing Bridge Museum Updates (2009)

- Road Rehabilitation – Fishing Bridge to Canyon Junction (2001)

Soils

Affected Environment

Soils located along the East Entrance Road and along Yellowstone Lake are poorly developed and generally consist of silty sand intermixed with glacial till. The soils east of the lake are generally thin and loamy, and derived from glacial till.

Impacts of Alternative A – No Action/Continuation of Current Practices

No new disturbance to soils would occur because Alternative A does not include any construction related activities, excavation, or ground disturbance. Some continuing soil compaction is likely to occur near or adjacent to roadside pullouts, visitor parking areas, and trailheads from visitors using these areas. Similarly, there may be soil compaction along the edges of the East Entrance Road as visitors pull vehicles off the road to enjoy views of the lake or wildlife. Impacts from these would typically only account for one or two hundred square feet of vegetation disturbance at each pullout during the summer visitor season.

Cumulative Effects:

Past ground disturbing activities such as realigning and repaving the East Entrance and Hayden Valley roads, installation of new water and sewer lines, and soil scarification during vegetation removal activities within the power line right-of-ways have impacted soil resources. This displacement of soil has caused adverse impacts associated with some loss due to both wind and water erosion, though likely not measurable, and losses in soil productivity. Previous excavation for installation of new utility lines has mixed soil layers with upper horizons causing soils to be less productive. Because Alternative A does not propose an action, there would be no new cumulative effects from this alternative to soil resources.

Impacts of Alternative B: Reconstruct and Rehabilitate a Portion of the East Entrance Road and Rehabilitate Fishing Bridge (NPS Proposed and Preferred Action)

Construction activities under Alternative B would adversely affect soils in the project area as a result of work to widen roads, improve and upgrade parking and roadside pullouts, and construct temporary road approaches to carry traffic over temporary bridges while work is completed to repair and replace existing bridges. Work would include grading soils, compacting soils, paving over soils, and removing soils. This alternative would result in the physical disturbance of soils through compaction and from grading operations. Effects to soil chemistry and composition are not expected. Soil compaction can increase the potential for erosion and the possibility for increased sedimentation of nearby drainages. Pilings placed for construction of bridge abutments or temporary bridges would occur in order to construct bridges and abutments. Placement of pilings typically compresses soil outward from the pilings for the depth of the piles. Excavated waste material (soils) would be hauled to, and disposed of at, the location of the now closed Pelican Creek Campground. Boreholes for bridge piers for the Pelican Creek viaduct would be cased with steel pipe and filled with concrete. No transfer of moisture or mixing of subsurface soils is anticipated from pier construction. Best management practices would include using water trucks to wet the construction area with water to minimize dust. Erosion control efforts would keep potential effects of soil erosion in check with the use of silt fence, berms, and temporary settlement depressions as needed. A maximum of 250,000 tons of material would be moved as part of this project, all within the road corridor, or at the associated disposal area (Old Pelican Creek Campground). In addition, topsoil would be conserved for reuse on impacted subsoils disturbed during construction. Conserving and reuse of topsoil would mean that microorganisms within the

soil, along with its bank of native seeds would be allowed to help in regeneration of disturbed areas. The recontouring of soils in order to widen this section of roadway would be noticeable as being impacted for use as a road corridor. Soils directly adjacent to this corridor, should not have any lasting impact.

While thousands of tons of materials would be moved as part of this project, it is not atypical for road reconstruction. Native soils typically swell when they get wet, as is the case of many roads in the park that were never constructed to a modern standard for today's vehicles. Native soils are removed, and engineered well-draining soils or gravels replace them. These engineered soils are compacted, and eventually paved o ver. The road prism would allow for a 6-8 foot wider paved area, but the function of surrounding soils would stay the same.

The newly constructed road, bridges, walks, and parking would result in a total permanent soil disturbance of approximately 14.72 acres. The impact to soils would be kept to the construction limit boundaries. Staging/stockpiling/disposal areas would impact 9.76 acres of ground for a period of 2-3 years from new compaction and scarification of soils from construction equipment. Much of this ground is already used the NPS for maintenance related functions such as equipment storage, material storage, and staging for small projects. Most of the park's 2.2 million acres does not see this type of heavy manipulation and would remain unaffected. Mitigations measures are included to clearly identify the work limits, which would keep soil disturbance impacts within these identified work zones.

Removal of the road embankment for the current Pelican Creek causeway would have a beneficial effect on vegetation and wetland function by allowing natural water flow and infiltration to 1.88 acres of area currently under road fill.

Included the 14.72 acres of permanent disturbance previously discussed would be the construction of parking improvements east of the Fishing Bridge General Store, resulting in the permanent physical loss of approximately 0.92 acre of usable soil as it would be paved over. The parking area is based on the conceptual design for the parking areas maximum size, which is approximately 200 by 200 feet. 14.72 acres of permanent impacted soil would occur, though when compared with the nearly 2.2 million acres of undisturbed area soil in the park, it would not change soil diversity or affect soils on a parkwide scale.

Use of a temporary staging area, located about 0.6 mile East of Pelican Creek on the south side of the East Entrance Road, would result in the scarification and compaction of approximately 2.25 acres of silty and sandy soils. This area would be used for 2-3 years for staging and stockpile of materials and equipment. Topsoil would be removed, windrowed along the perimeter of the site, and reapplied after construction. The defunct Pelican Creek Campground is the site of an old borrow pit used likely to build the present Pelican Creek causeway. This 1.32 acre site would be filled and reclaimed using soil from the causeway when removed. This proposed soil disposal site is situated such that a ridge separates the site from Pelican Creek and its associated wetland. Sedimentation and erosion from this location into adjacent waterbodies would not occur. After relocating the access road to the Pelican Creek Trailhead the existing access road (approximately 0.56 acre) would be removed and the area restored by removing road base, recontouring, and adding topsoil.

Permanent soils impacts within the project area would result from grading, compacting, and paving operations over existing soils. This would result in some mixing of soil horizons, and removal of vegetation. Temporary soils impact would occur to native soils adjacent to road edges and on new slopes from the road edge. Topsoil would be conserved prior to grading subsoils, and reapplied at road edges after grading is completed. These soils would continue to function as before and impacts to soils would be temporary, lasting only as long as construction (2-3 years). While 14.72

acres would be disturbed, the park is 2.2 million acres in size, with approximately 98 percent of that area completely undisturbed.

Cumulative Effects:

Alternative B results in 14.72 acres soil disturbance, thereby incrementally adding to the overall adverse cumulative effect to soils. While past projects such as the waterline replacement in 2015 disturbed soils in the Fishing Bridge area, the cumulative impacts of those projects with the impacts of this proposed action remain small. Although the contribution of effect from Alternative B does increase the overall adverse cumulative effect to soils, the incremental addition of soils impacts under Alternative B is nominal and does not contribute substantially to the overall effect. Considering the impacts to soils from tracked equipment used in vegetation clearing of powerline corridors, which scarified the top couple of inches of soil, Alternative B in the context of the other past, present, and reasonably foreseeable future projects, would add to the cumulative adverse effect to soils by 14.72 acres.

Impacts of Alternative C: Reconstruct and Rehabilitate a Portion of the East Entrance Road and Replace Fishing Bridge in its Current Location

Construction activities under Alternative C would have the same affects to soils and vegetation as Alternative B, except that the permanent impacts would total 15.52 acres. Temporary impacts from staging/stockpile/disposal sites would be the same as for Alternative B at 9.76 acres and would last during the construction period of 2-3 years. The additional impacts of Alternative C would be from 0.8 acres of permanent impacts to soils from a new wider bridge being constructed on the same alignment as the existing Fishing Bridge. A wider bridge and wider road approaches would account for the increased acreage. Permanent soils impacts within the project area would result from grading, compacting, and paving operations over existing soils. This would result in some mixing of soil horizons, and removal of vegetation. The impacts would be the same as those described for Alternative B, except that the newly constructed road, bridges, walks, and parking would result in a total soil and vegetation loss of approximately 15.52 acres. 15.52 acres of permanent impacted soil would occur, though when compared with the nearly 2.2 million acres of undisturbed area soil in the park, it would not change soil diversity or affect soils on a parkwide scale.

Cumulative Effects:

The cumulative effects to soils are the same as under Alternative B except that Alternative C does result in an additional 0.8 acre of soil disturbance, thereby incrementally adding to the overall adverse cumulative effect to soils. Although the contribution of effect from Alternative C does increase the overall adverse cumulative effect to soils, the incremental addition of soils impacts under Alternative C is nominal and does not contribute substantially to the overall effect. Considering the impacts to soils from tracked equipment used in vegetation clearing of powerline corridors, which scarified the top couple of inches of soil, Alternative C in the context of the other past, present, and reasonably foreseeable future projects, would add to the cumulative adverse effect to soils by 15.52 acres.

Impacts of Alternative D: Reconstruct and Rehabilitate a Portion of the East Entrance Road and Replace Fishing Bridge in a New Location

Construction activities under Alternative D would adversely affect soils and vegetation in the project area as a result of grading, compacting, paving over soils, removing soils, and removing vegetation. The impacts would be the same as those described for Alternative B, except that the newly constructed road, bridges, walks, and parking would result in a total soil disturbance and vegetation loss of approximately 16.39 acres. The additional impacted acreage increase from

Alternative D is from the Fishing Bridge being located one a new alignment south of the existing bridge. The new alignment would require new approaches on both the east and west sides of the bridge. This would increase soil disturbance and permanent vegetation loss by 0.87 acres. 16.39 acres of permanent impacted soil would occur, though when compared with the nearly 2.2 million acres of undisturbed area soil in the park, it would not change soil diversity or affect soils on a parkwide scale.

Cumulative Effects:

The cumulative effects to soils are the same as under Alternative B except that Alternative D does result in some additional (0.87 acre) soil disturbance from new road approaches to the new Fishing Bridge, thereby incrementally adding to the overall adverse cumulative effect to soils. Although the contribution of effect from Alternative D does increase the overall adverse cumulative effect to soils by 16.39 acres, the incremental addition of soils impact under Alternative D is nominal and does not contribute substantially to the overall effect. Therefore, considering the impacts to vegetation from Alternative D in the context of the other past, present, and reasonably foreseeable future projects, the overall cumulative effect to vegetation is adverse.

Vegetation

Affected Environment

Three main vegetation zones are found along the East Entrance Road and include spruce/fir, lodgepole pine, and Douglas-fir zones. The spruce/fir is dominated by forest composed of Engelmann spruce and subalpine fir, with stand age varying from young to mature. Young stands are typically dominated by lodgepole pine. Older stands can have a mixture with lodgepole and, at higher elevations, whitebark pine. These forests grow predominantly on soils derived from andesitic rock formation. The lodgepole pine zone is dominated by lodgepole pine with sparse spruce, fir, and whitebark pine. These forests grow predominately on soils derived from rhyolite. The Douglas-fir zone is dominated by Douglas-fir, with snowberry understory common in younger stands. Douglas-fir stands are frequently intermixed with stands of sagebrush and grasses. The forest is punctuated with sagebrush steppe, meadows, and wetlands. Open meadows and sagebrush steppe can have showy wildflower displays in July and August with many species such as asters, yampah, camass, buttercups, lupines, penstemons, arnicas, and geraniums present. This area has some representation of most of the subalpine plant communities that occur within the Yellowstone Caldera. No plants considered rare for Yellowstone were found during a survey of the project area by park staff (wetlands specialists) during the summer of 2016 (Anderson, 2016). In many high visitation areas, soils and vegetation are already impacted to a degree by various human and natural activities.

Impacts of Alternative A – No Action/Continuation of Current Practices

No new disturbance to soils or vegetation would occur because Alternative A does not include any construction related activities, excavation, or ground disturbance. Vegetation would likely continue to be trampled near or adjacent to roadside pullouts, visitor parking areas, and trailheads from visitors inadvertently causing social trails by taking short-cuts from parking areas. Social trail development would continue to occur from visitors accessing features and facilities in the Fishing Bridge developed area because this area receives the most use by visitors within the project area. Similarly, there may be vegetation damage from vehicles driving over vegetation at the edges of the East Entrance Road as visitors pull vehicles off the road to enjoy views of the lake or wildlife. Impacts from these would typically only account for one or two hundred square feet of vegetation disturbance at each pullout during the summer visitor season. Vegetation found along the road edge, and within the Fishing Bridge developed area is not unique to this area of the park, and the

development of social trails, or the trampling of approximately 200 square feet of vegetation at each pullout would not cause vegetation concerns that are not consistent with impacts of visitors in other areas of the park.

Cumulative Effects:

Past ground disturbing activities such as realigning and repaving the East Entrance and Hayden Valley roads, the installation of new water and sewer lines in the Fishing Bridge developed area, and vegetation removal within the powerline right-of-way have all adversely impacted vegetation within near the project area. Installation of replacement water and sewer lines in 2015 and 2016 in the Fishing Bridge development area caused the removal of approximately 2 acres of lodgepole pine trees. Because Alternative A does not propose an action, there would be no additional cumulative effects from this alternative to vegetation.

Impacts of Alternative B: Reconstruct and Rehabilitate a Portion of the East Entrance Road and Rehabilitate Fishing Bridge (NPS Proposed and Preferred Action)

Construction activities under Alternative B would adversely affect vegetation in the project area as a result of work to widen roads, improve and upgrade parking and roadside pullouts, and construct temporary road approaches to carry traffic over temporary bridges while work is completed to repair and replace existing bridges. Work would include grading activities that would remove vegetation and additional pavement would replace existing vegetation. Vegetation impacts would result from trampling of construction workers within the construction limits, and permanent vegetation loss would occur from a wider road. Increased potential for non-native weed species would be a concern that would need to be monitored and treated if necessary due to the resulting likelihood of exotic plants trying to establish is disturbed soils after construction. Best management practices would include planting vegetation in disturbed areas after construction. Following construction, topsoil would be placed on ground disturbed by construction. The topsoil contains microorganisms and seeds that would help in rehabilitation of these areas by use of native seed and nutrients found in the native soils. The area would be revegetated and monitored for invasion by non-native plant species.

The newly constructed road, bridges, walks, and parking would result in a total permanent vegetation loss of approximately 14.72 acres. The loss of native vegetation (lodgepole pine, understory grasses and forbs) would not affect the viability of local plant populations, and with the application of best management practices and revegetation efforts following construction, impacts to vegetation would be kept to the construction limit boundaries. Staging/stockpiling/disposal areas would cause the potential for vegetation to be adversely affected for the period of proposed construction of 2-3 years on 9.76 acres of ground used for these purposes. Much of this ground is already used the NPS for maintenance related functions such as equipment storage, material storage, and staging for small projects. Despite the use of best management practices, a potential still exists for the spread of non-native weed species which could adversely affect native vegetation by out competing them for habitat. The use of staging and stockpiling areas in the project area would similarly result in some new trampling, vegetation loss, and the increased potential for non-native weed species. The construction area would be monitored for any weed species being introduced. Weed control efforts (consistent with the park's *2013 Invasive Vegetation Management Plan and Environmental Assessment* would be implemented if needed. Construction activities would also introduce workers and equipment into the project area which could result in trampling of vegetation adjacent to work areas. While trampling of vegetation does occur parkwide, it is usually located adjacent to pullouts, within developed areas, or near campsites. Where trampling does occur it stresses native vegetation, making it easier for non-native weed species to begin to out-compete native species. Mitigations measures are included to clearly identify the work limits, which would keep trampling impacts within these identified work zones.

Most of the park's 2.2 million acres does not see this type of heavy use, and while 14.72 acres of vegetation would be removed, vegetation found within the project area is not unique to this area of the park. Vegetation loss along road edges due to construction activities over a 2-3 year period during construction would be revegetated with the use of native plantings, and application of native topsoil conserved for this purpose.

Removal of the road embankment for the current Pelican Creek causeway would have a beneficial effect on vegetation and wetland function by allowing natural water flow and infiltration to 1.88 acres of area currently under road fill.

Included in the 14.72 acres of permanent disturbance previously discussed would be the Parking expansion east of the Fishing Bridge General Store would result in the permanent physical loss of approximately 0.92 acre of vegetation, which is based on the maximum size of the parking area of approximately 200 by 200 feet. This disturbance is included in the 14.72 acres of permanent disturbance previously discussed. Vegetation lost due to parking expansion at this location would be from the removal of mature lodgepole pine forest and mixed grasses and forbs. Vegetation types, as described above, that are found within the project area are not unique. This type of vegetation can be found along much of the East Entrance Road and areas surrounding the Fishing Bridge development. The loss of 14.72 acres would not change plant diversity in this portion of the park.

Use of a temporary staging area, located about 0.6 mile East of Pelican Creek on the south side of the East Entrance Road, would result in the temporary loss and/or trampling of approximately 2.25 acres of mixed grass and forb vegetation from use of a previously tree-cleared area. Tree and vegetation removal from the defunct Pelican Creek Campground, to be used as a disposal site for unsuitable soils from the existing Pelican Creek causeway, would have a temporary adverse effect to 1.32 acre until revegetation of this area occurs. Beneficial effects would occur from restoring native mixed grass and forb vegetation on approximately 0.56 acre located on the existing Pelican Creek Trailhead access. Construction vehicles driving over the project area and workers walking over these areas would also trample vegetation within identified work zones.

Following construction, approximately 9.76 acres of staging/stockpiling/disposal areas, and new road cuts and fills would be revegetated (see table 3 below). None of the vegetation that would be lost is considered rare. In the context of the Fishing Bridge area, and the park as a whole, the vegetation loss would not affect ecosystem-scale vegetation processes. Areas of temporarily disturbed vegetation would be restored with native vegetation following construction. Infestation and spread of invasive noxious weeds, including cheat grass is possible, though monitoring and treatment would likely keep this threat under control. Weeds frequently invade disturbed ground where they easily establish and out-compete native species if left unchecked. Annual monitoring for weeds and mechanical or chemical control efforts approved in the park's *2013 Invasive Vegetation Management Plan and Environmental Assessment* would be implemented. Monitoring and control efforts are usually done for a period of 3-5 years following project completion. Revegetation of disturbed areas is expected to occur within one to three years.

Cumulative Effects:

Alternative B results in 14.72 acres of vegetation loss, and 9.76 acres of temporary vegetation lost (mostly grasses and forbs) from staging areas. These impacts add incrementally to the overall adverse cumulative adverse effects on vegetation resources that have occurred from powerline maintenance activities and water and sewer line installation as described for Alternative A. Although the contribution of effect from Alternative B does increase the overall adverse cumulative effect to vegetation, the incremental addition of vegetation impact under Alternative B is nominal and does not contribute substantially to the overall effect. Native vegetation and soils would

continue to function as before and would not be substantially affected by the project. Therefore, considering the impacts to vegetation from Alternative B in the context of the other past, present, and reasonably foreseeable future projects, the overall cumulative effect to vegetation is adverse.

Table 3 - Acres of Trees and Understory Vegetation to be Removed

Clearing Limits	Fishing Bridge (Permanent Impacted Acreage)	East of Fishing Bridge (Permanent Impacted Acreage)	Total of Staging and Stockpile Sites (Temporary Impacts)	TOTAL (Permanent Impacted Acreage)	Brief Alternative Description
Alternative B	**0.58**	**14.14**	**9.76**	**14.72**	Replace Deck, Reconstruct West Abutment - **NO** temporary bridge for vehicular public traffic - **YES** temporary work bridge south of Pelican Creek causeway for construction access
Alternative C	**1.38**	**14.14**	**9.76**	**15.52**	Replace Bridge on existing alignment -**YES** temporary bridge **SOUTH** of existing bridge for vehicular public traffic -**YES** temporary work bridge **NORTH** of existing bridge for construction access
Alternative D	**2.25**	**14.14**	**9.76**	**16.39**	New alignment **SOUTH** from existing bridge -**NO** existing bridge for vehicular public traffic -**YES** temporary work bridge **SOUTH** of new alignment for construction access

Impacts of Alternative C: Reconstruct and Rehabilitate a Portion of the East Entrance Road and Replace Fishing Bridge in its Current Location

Construction activities under Alternative C would have the same affects to soils and vegetation as Alternative B, except that the permanent impacts would total 15.52 acres. Temporary impacts from staging/stockpile/disposal sites would be the same as for Alternative B at 9.72 acres. The additional impacts of Alternative C would be from 0.8 acres of permanent impacts due to soils and vegetation loss due to a new wider bridge being constructed on the same alignment as the existing Fishing Bridge. A wider bridge and wider road approaches would account for the increased acreage. Permanent vegetation impacts within the project area would result from grading, compacting, paving operations over existing vegetation. The impacts would be the same as those described for Alternative B, except that the newly constructed road, bridges, walks, and parking would result in a total soil and vegetation loss of approximately 15.52 acres. None of the vegetation that would be lost is considered rare. In the context of the Fishing Bridge area, and the park as a whole, the vegetation loss would not affect ecosystem-scale vegetation processes. Areas of temporarily disturbed vegetation would be restored with native vegetation following construction. Infestation and spread of invasive noxious weeds, including cheat grass is possible, though monitoring and treatment would likely keep this threat under control. Weeds frequently invade disturbed ground where they easily establish and out-compete native species if left

unchecked. Annual monitoring for weeds and mechanical or chemical control efforts approved in the park's *2013 Invasive Vegetation Management Plan and Environmental Assessment* would be implemented. Monitoring and control efforts are usually done for a period of 3-5 years following project completion. Revegetation of disturbed areas is expected to occur within one to three years.

Cumulative Effects:

Vegetation loss of approximately 2 acres of lodgepole pine trees from a recent water and sewer line replacement project, and vegetation loss from clearing under powerlines in the area have occurred from recent past projects. The cumulative effects to vegetation from implementation of Alternative C are the same as under Alternative B except that Alternative C does result in some additional (0.8 acre) vegetation loss, thereby incrementally adding to the overall adverse cumulative effect to vegetation. Although the contribution of effect from Alternative C does increase the overall adverse cumulative effect to vegetation, the incremental addition of vegetation impact under Alternative C is nominal and does not contribute substantially to the overall effect. Therefore, considering the impacts to vegetation from Alternative C in the context of the other past, present, and reasonably foreseeable future projects, the overall cumulative effect to vegetation is adverse.

Impacts of Alternative D: Reconstruct and Rehabilitate a Portion of the East Entrance Road and Replace Fishing Bridge in a New Location

Construction activities under Alternative D would adversely affect vegetation in the project area as a result of grading, trampling, and paving over vegetation. The impacts would be the same as those described for Alternative C, except that the newly constructed road, bridges, walks, and parking would result in a total vegetation loss of approximately 16.39 acres. Staging areas used for the duration of the construction project (2-3 years) would affect 9.76 acres of vegetation through trampling, storage of materials, and moving equipment. The additional impacted acreage increase from Alternative C is from the Fishing Bridge being located one a new alignment south of the existing bridge. The new alignment would require new approaches on both the east and west sides of the bridge. This would increase permanent vegetation loss by 0.87 acres. None of the vegetation that would be lost is considered rare. In the context of the Fishing Bridge area, and the park as a whole, the vegetation loss would not affect ecosystem-scale vegetation processes. Areas of temporarily disturbed vegetation would be restored with native vegetation following construction. Infestation and spread of invasive noxious weeds, including cheat grass is possible, though monitoring and treatment would likely keep this threat under control. Weeds frequently invade disturbed ground where they easily establish and out-compete native species if left unchecked. Annual monitoring for weeds and mechanical or chemical control efforts approved in the park's *2013 Invasive Vegetation Management Plan and Environmental Assessment* would be implemented. Monitoring and control efforts are usually done for a period of 3-5 years following project completion. Revegetation of disturbed areas is expected to occur within one to three years.

Cumulative Effects:

The cumulative effects to vegetation are the same as under Alternative C except that Alternative D does result in some additional (0.87 acre) vegetation loss from the new road approaches for the new location of the Fishing Bridge in this alternative. This increased acreage of vegetation loss thereby incrementally adds to the overall adverse cumulative effect to vegetation resources. Although the contribution of effect from Alternative D does increase the overall adverse cumulative effect to vegetation, the incremental addition of vegetation impact under Alternative D is nominal and does not contribute substantially to the overall effect. Therefore, considering the impacts to vegetation from Alternative D in the context of the other past, present, and reasonably foreseeable future projects, the overall cumulative effect to vegetation is adverse.

Wetlands

Affected Environment

Thirty-seven wetlands have been identified within 200 feet of either side of the Fishing Bridge to Indian Pond road segment. Wetlands within the 200 foot wide survey area are at risk of alteration by road building activities.

Wetlands were surveyed during the field season of 2016 by the park's wetlands biologist (Anderson, 2016). Within the Cowardin hierarchical classification (Cowardin, et.al., 1979), two systems were found: palustrine (P) and riverine (R), with some variation in classes and water regime within the systems. The palustrine wetlands consisted of seeps, snowmelt-fed wet meadows, slope wetlands, forested wetlands and riparian area wetlands. The riparian areas were adjacent to Yellowstone River and Pelican Creek. There were also a few unnamed tributaries. Streams classified in the riverine system were found to be both perennial and intermittent. Species common in the Palustrine communities were water sedge (*Carex aquatalis*), tufted hairgrass (*Deschampsia cespitosa*), Nebraska sedge (*Carex nebrascensis)*, water ragwort (*Senecio hydrophilus*), bluejoint (*Calamagrostis Canadensis*), slender cinquefoil (*Potentilla gracilis*), and smallwing sedge (*Carex microptera*). T

he Palustrine wetlands impacted by this project are beneficial in serving the following functions: they temporarily store surface water and are sources of water vital for streamflow maintenance; the marshes provide habitat for waterfowl and waterbirds; they perform nutrient transformation; sediment and other particulate retention; help in shoreline stabilization and retention; provide habitat for fish, shellfish, waterfowl and waterbirds, and other wildlife.

The existing roadway fill of the present constructed Pelican Creek causeway bisects the wetland and impacts water flow, and some limited infiltration beneath the road bed.

The National Park Service has a "No Net Loss of Wetlands" policy. In short, this means that if a project permanently removes any wetlands, and the loss is not covered by an exemption in the DO-77 manual, the Service would restore previously lost or impacted wetlands with a ratio of at least 1:1.

A Wetlands Statement of Findings may be found in Appendix A of this document.

Impacts of Alternative A – No Action/Continuation of Current Practices

Alternative A would not impact the wetlands because there would be no change to existing conditions. With no construction related activities, excavation, or ground disturbance, no wetlands would be impacted, there would be no change to existing wetland characteristics and values.

Cumulative Effects: There would be no direct or indirect impacts to wetlands under Alternative A; therefore, this alternative would not contribute to cumulative impacts of other projects in this region of the park.

Impacts of Alternative B: Reconstruct and Rehabilitate a Portion of the East Entrance Road and Rehabilitate Fishing Bridge (NPS Proposed and Preferred Action)

Alternative B would result in short- and long-term, direct beneficial impacts to the wetlands as the result of removing road fill that is presently located within the lower Pelican Creek drainage system. By removing the existing Pelican Creek Bridge and replacing it with a a1,500-foot long viaduct, 1.88 acres of and palustrine wetland functions would be permanently restored. Restoration of these wetland acres would slightly increase the ability to store surface water and provide water vital

for streamflow maintenance. The 1.88 acres of restored palustrine wetland would provide additional habitat for fish, waterfowl and waterbirds, and other wildlife. In this same area (the area of removed road fill from the Pelican Creek causeway), water infiltration and water flow of the wetland would be restored. These restored wetlands would perform nutrient transformation, sediment and particulate retention, and help in shoreline stabilization and retention.

Staging areas would be situated outside any wetlands. Best management practices, including ensuring that no pollutants enter the creeks, lakes, or waterways during construction, minimizing sedimentation and erosion to the extent possible, and designing the structures to leave the streambank in its present configuration would help minimize adverse effects. While there are numerous wetlands within the park, there is no accurate accounting of how many acres there are. The Pelican Creek causeway is likely one of the largest impacts of a wetland within the park. Removal of the causeway would have a noticeable beneficial impact to the functioning of this wetland.

0.78 acres of wetlands would be impacted by construction of temporary work platforms for equipment needed to set the girders and drill the piers for the Pelican Creek viaduct. These platforms would be in place for 2-3 years during most of the planned construction. The work platforms would either be constructed on fill material placed in the wetland, or on piles driven into the wetland, on which a work platform would be constructed. Placement of piers for the proposed viaduct, temporary piers for a work bridge for the Pelican Creek viaduct, and fill material located at the toe of the slope for parking area expansions of existing and new pullouts along the East Entrance Road, would result in the permanent loss of 0.66 acre of wetland, 0.78 acres temporary wetland impacts, and 1.88 acres of palustrine wetlands restored. During the time of construction, and before the causeway is removed, an additional 0.78 acres of palustrine wetland would be impacted, further reducing wetland functions such as those listed in the above paragraph.

Construction of a new Pelican Creek viaduct would occur within the wetlands adjacent to Pelican Creek. The placement of piers and abutments would be outside the streambank and channel of Pelican Creek. The piers and abutments would be permanent new features anticipated to be within the wetland for a term of at least 50-years. The potential obstacles created from the 24 piers would likely not inhibit water flow, infiltration, or movement of wildlife relying on this wetland habitat. The piers of the new viaduct would not have a noticeable effect on wetland functions such as water flow, infiltration, nutrient transport or waterfowl habitat. These piers would have direct, adverse effects by removing approximately 170 square feet from palustrine wetland habitat and function. This is an almost unmeasurable amount when compared to the Pelican Creek wetland that is approximately 400 acres in size.

Removal of the existing roadway fill of the causeway would vastly and permanently improve wetland function as nutrient transport would once again function unimpeded towards Lake Yellowstone. Increased sedimentation into the wetland adjacent to the causeway may be observed as a result of removing the causeway, and construction of a viaduct at Pelican Creek. Sedimentation could cause wetland habitat to be impacted for 2-3 years while construction occurs. In addition to the mitigation measures previously mentioned, the new viaduct would be designed for structural durability and minimal resource impacts. Further, the new bridge span would be sufficiently long to drastically reduce segmentation of wetland habitat by the present causeway. While not anticipated to be needed, if required, any in-water work would be completed during low flow periods to reduce compaction of soils, reduce vegetation trampling, and reduce sedimentation within wetlands.

Construction vehicles could introduce pollutants and increase sedimentation into the stream and decreased water quality; however, mitigation measures and best management practices, such as checking equipment for leaks prior to use, would be used to all but eliminate the risk of these adverse effects.

Cumulative Effects: Past road reconstruction projects along the East Entrance Road have impacted wetlands along this road edge due to road widening. Mitigation for these impacts was accomplished through the restoration of wetland impacted by the Turbid Lake Road. The Turbid Lake Road was removed over a decade ago to restore wetland that had been impacted since its installation. The restoration of these wetlands succeeded in restoring impacted wetlands and their associated functions. These restored wetlands are located along the now removed road alignment located east of the Pelican Creek Trailhead. The cumulative effects to wetlands from the implementation of Alternative B would be beneficial from restored wetland functions resulting from removing 1.88 acres of road fill from the Pelican Creek causeway, and in combination of the wetlands restored on the old Turbid Lake Road. These restored wetlands and associated functions (wetland habitat, water infiltration and storage, nutrient source, waterfowl and bird habitat} would have a cumulative impact that is beneficial, in that most recent, or foreseeable future projects for this area do not impact wetlands.

Impacts of Alternative C: Reconstruct and Rehabilitate a Portion of the East Entrance Road and Replace Fishing Bridge in its Current Location

Impacts resulting from the implementing Alternative C would be the same as those described for Alternative B, except that construction work would include construction of a temporary bypass bridge and a temporary construction bridge. These bridges would increase temporary wetland impacts as stated below. These temporary bridges and roads would be in use for the 2-3 year construction project, and would increase sedimentation during construction activities related to the installation of the piers for these structures, and construction of the replacement of the Fishing Bridge. Mitigation measures (use of sediment curtains at the Fishing Bridge site) would likely reduce sedimentation and turbidity impacts but would not totally eliminate them. The increased number of piers from these three bridges during the construction phase would likely increase ice jams at the bridge locations. Ice jams could impact water flow locally during the time the ice comes off Lake Yellowstone by making the flow more turbulent near the bridge site. Wetland function in this localized area of the Yellowstone River could experience some streambank erosion potential. Temporary road approaches would cause temporary impacts (loss of waterfowl habitat, nutrient transport) to occur for up to three years, on approximately 1.43 acres of wetland located on the eastern bank of the Yellowstone River, directly south of the existing Fishing Bridge. These impacts would occur from fill placed in the wetland, or from H-piles driven to carry the load of the temporary traffic bypass, and temporary construction bridges. Impacts from these temporary bridges would last for the duration of the construction, 2-3 years. After construction, the temporary bridges and approach roads would be removed and the area restored so that wetland values and characteristics would not be permanently impacted..

Cumulative Effects: The cumulative effects to wetlands are the same as under Alternative B except that Alternative C results in a total of 1.43 acres of temporary adverse impacts, including 0.77 acre on the west bank of the Yellowstone River from temporary road approaches. Although the added temporary impacts from Alternative C does decrease the overall beneficial cumulative effect to wetlands of the project, the benefits of removing road fill at Pelican Creek is still beneficial overall of this alternative. The incremental increase of temporary adverse wetland impacts over Alternative B is not likely to be noticeable over time. Therefore, considering the beneficial impacts

to wetlands from Alternative C in the context of the other adverse impacts of past, present, and reasonably foreseeable future projects, the overall cumulative effect to wetlands is beneficial.

Impacts of Alternative D: Reconstruct and Rehabilitate a Portion of the East Entrance Road and Replace Fishing Bridge in a New Location

The impacts to wetlands from implementation of Alternative D due to construction work, including excavation and grading of 1.09 acres of new permanent road approaches to the new bridge location, and 0.73 acre of temporary (up to three years) approaches to the temporary work bridge location would increase sedimentation, and decrease wetland values during construction activities. Long-term, the temporary bridge approach road would be removed, yet the approaches to the new bridge location would remain. Existing bridge approaches would be removed and rehabilitated. Once all mitigation measures were applied and all rehabilitation of the site was complete, temporary short-and long-term adverse impacts of these approaches would occur, but would not be at a level that would have noticeable effects on wetland values or characteristics. The benefits of removing road fill at Pelican Creek would occur under this alternative as well as Alternatives B and C. Overall the project impacts would be considered beneficial.

Cumulative Effects: The cumulative effects to wetlands are the same as under Alternative C except that Alternative D results in 1.09 acre of permanent impacts to wetlands, and 0.73 acre of temporary impacts. This would be considered an adverse effect. The east and west bank of the Yellowstone River would require permanent road approaches to the new bridge location. When considered with the wetland mitigation of past restoration of wetlands affected by the Turbid Lake Road, and wetlands restored at Pelican Creek as part of this alternative, the cumulative effect of the alternative D on wetlands would be considered beneficial. Although the contribution of effect from Alternative D does decrease the overall beneficial cumulative effect to wetlands of the project, the benefits of removing road fill at Pelican Creek is still beneficial overall of this alternative. The incremental increase of adverse wetland impacts over Alternative C is not likely to be noticeable over time due to restoration of the area along the banks of the Yellowstone River where the current road approaches are located. Therefore, considering the beneficial impacts to floodplains from Alternative D in the context of the other adverse impacts of past, present, and reasonably foreseeable future projects, the overall cumulative effect to wetlands is beneficial.

Cultural Resources

Affected Environment

Historic and Prehistoric Archeological Resources

In spring of 2016, all prehistoric and historic archeological sites and historic structures within the Area of Potential Effect (see figures on following pages), including road features, all areas within 100 feet of the centerline on both sides of the Fishing Bridge to Indian Pond segment of the East Entrance Road, pullouts, parking lots, and potential staging areas (see the preceding figures 8-23), were documented and evaluated for the National Register of Historic Places (NR) eligibility. Consultation with the Wyoming State Historic Preservation Officer is ongoing to provide concurrence on those NR eligible archeological sites found with the area of potential effect of the road. Refer to the cultural resource table below for an itemized list of the NR eligible historic properties .

Table 4 - Cultural Resources within the Area of Potential Effect of the Proposed Fishing Bridge to Indian Pond Project

	Name	Trinomial	NRHP Status	Effect
1	Fishing Bridge Peninsula Site	48YE001	Portions Eligible	Avoid where possible, monitor in impacted areas. Anticipate No Adverse Effect
2	Lake Outlet Site	48YE304	Eligible (D)	Avoided
3	Grand Loop Road Historic District	49YE520	Listed	No Adverse Effect
4	Unnamed	48YE549	Eligible (D)	Area to be impacted has been previously disturbed. No Adverse Effect
5	Fishing Bridge Historic District	48YE675 BRDG037P	Eligible / Nominated	Area to be impacted has been previously disturbed. Bridge to be rehabbed to Secretary of the Interior Standards for Rehabilitation. No Adverse Effect
6	Fishing Bridge Museum National Historic Landmark	48YE686	Listed Landmark	No Adverse Effect
7	Pelican Creek Bridge	48YE812	Contributing	To be removed. Adverse Effect has been addressed though consultation with WYSHPO
8	East Entrance Road Historic District	48YE829	Eligible / Nominated	Impacted by construction. Anticipate No Adverse Effect

Prehistoric Period

The park's prehistoric archeological sites provide evidence of human occupation in this area for approximately 11,000-13,000 years when small groups of Paleo-Indians moved through the area hunting large and small game animals, and likely fishing, as evidenced by riverbank and lakeside campsites. By about 7,500 years ago, major environmental changes greatly altered the range and quantity of plant and animal species. Archaic groups adapted to these changing conditions by developing new lithic technologies for hunting smaller game and increased their use of gathered plants. From around 5,000 years ago to about 500 years ago, native peoples such as the McKean, Pelican Lake, and Avonlea cultures utilized the area now within Yellowstone National Park and its resources, leaving behind archeological traces of campsites, hunting camps, some food processing areas, quarries, and lithic workshops. Around AD 1400 to about AD 1850 the climate cooled during a period known as the Little Ice Age with archeological evidence in YNP indicating there was significantly less use of the area than the preceding 1,000 years.

Yellowstone has archeological artifacts of cultures whose core areas were the Northern Great Plains, the Great Basin, and the Intermountain Plateau. These tangible remains provide an important means of understanding past cultures, which left no discernable written records. The prehistoric artifacts also provide the basis for continued scientific research expanding our

knowledge of their use of the parks resources, their travel patterns, and their day-to-day living experiences.

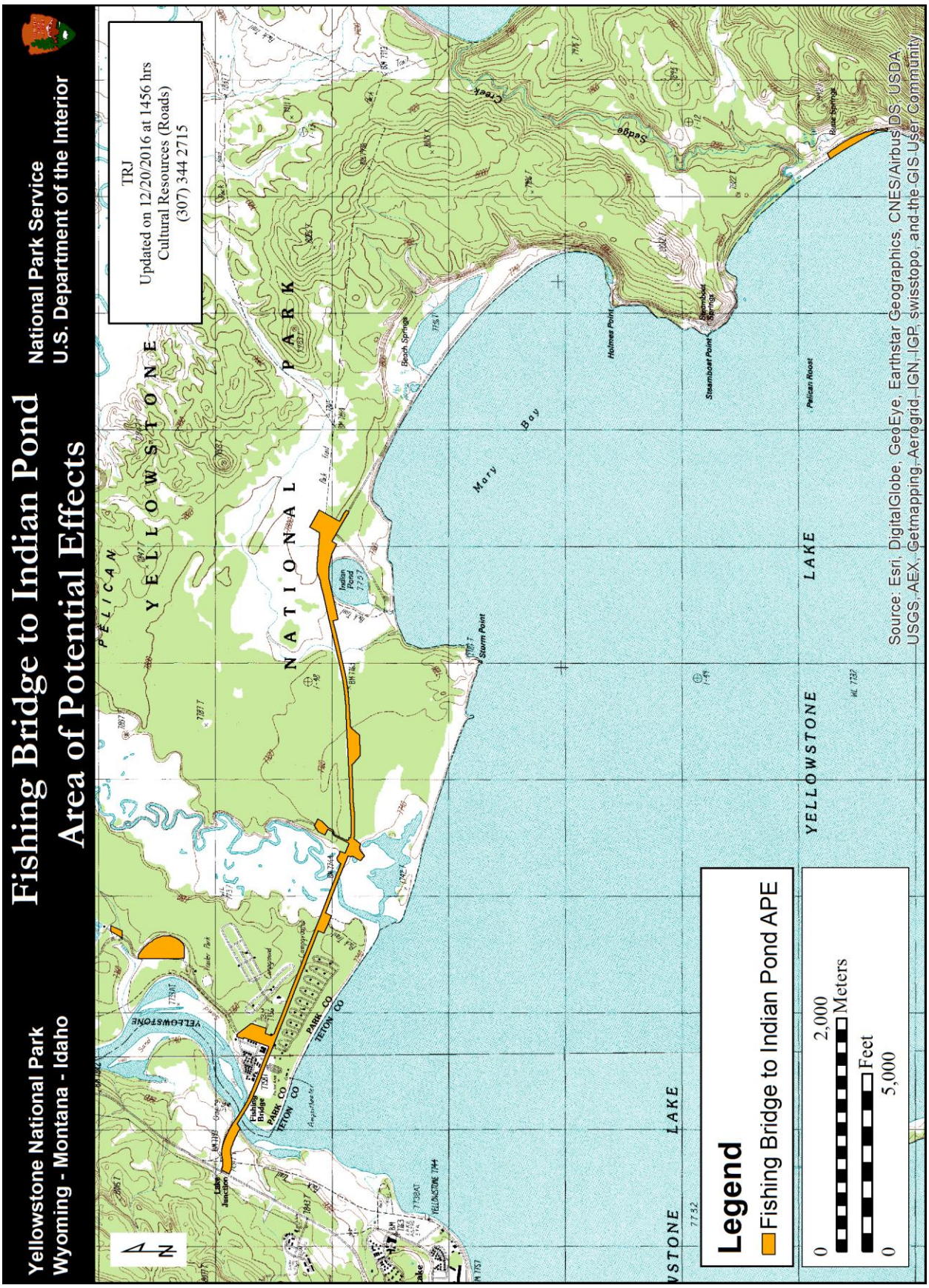
The Fishing Bridge to Indian Pond road segment and surrounding area is rich with pre-contact archeological sites, including some of the earliest known archaeological resources in the park. Many of these sites have not been impacted by the current road alignment. Archeological excavation of the sites in the area has provided the park with significant information on the environment early humans encountered, the technology involved in making tools, season of occupation, animal and plant resources used by these early visitors, and the travel and trade networks of the early cultures. Combined together the chronological information provides a history of cultural use of the park and its resources.

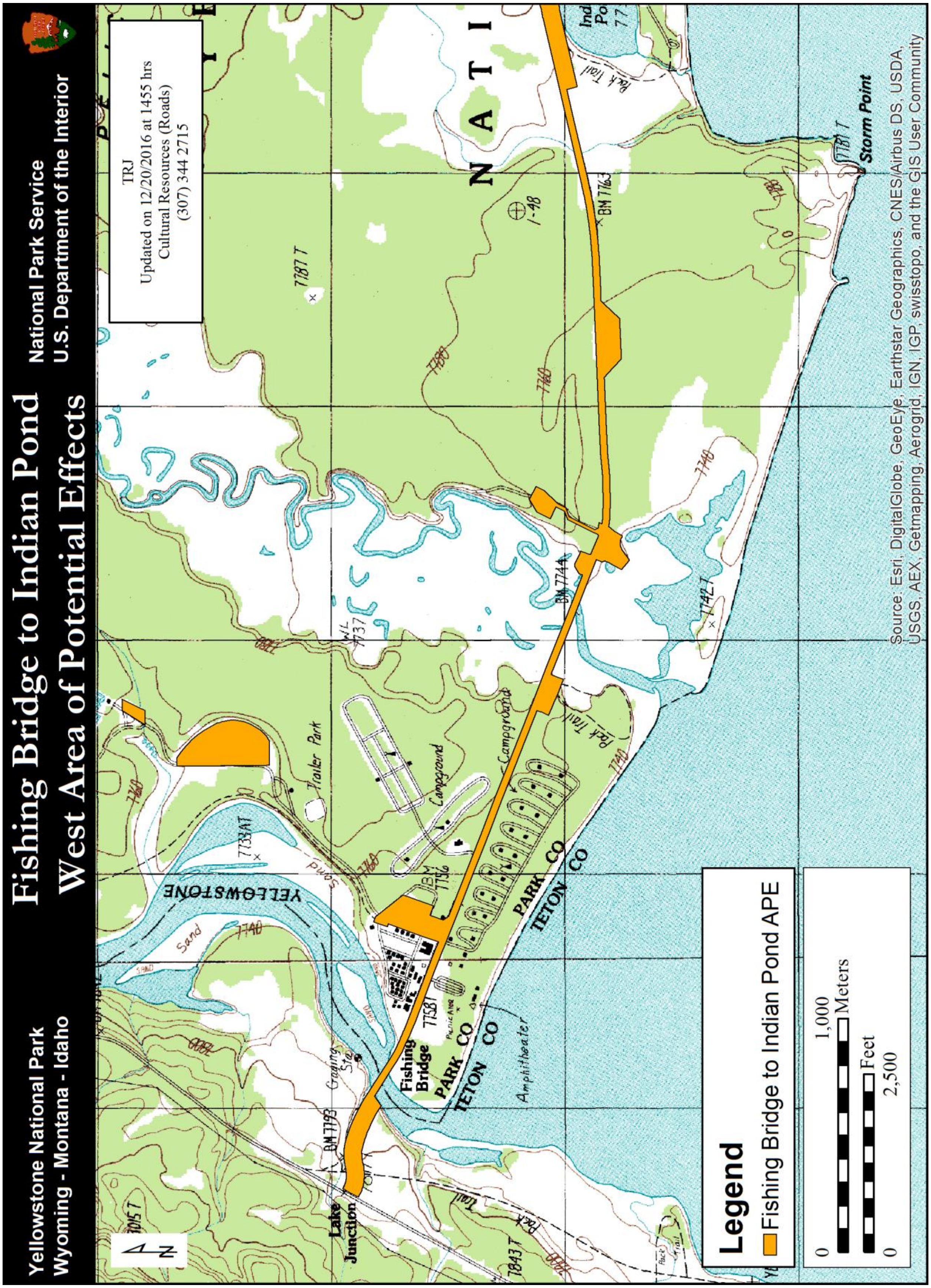
Contact Period

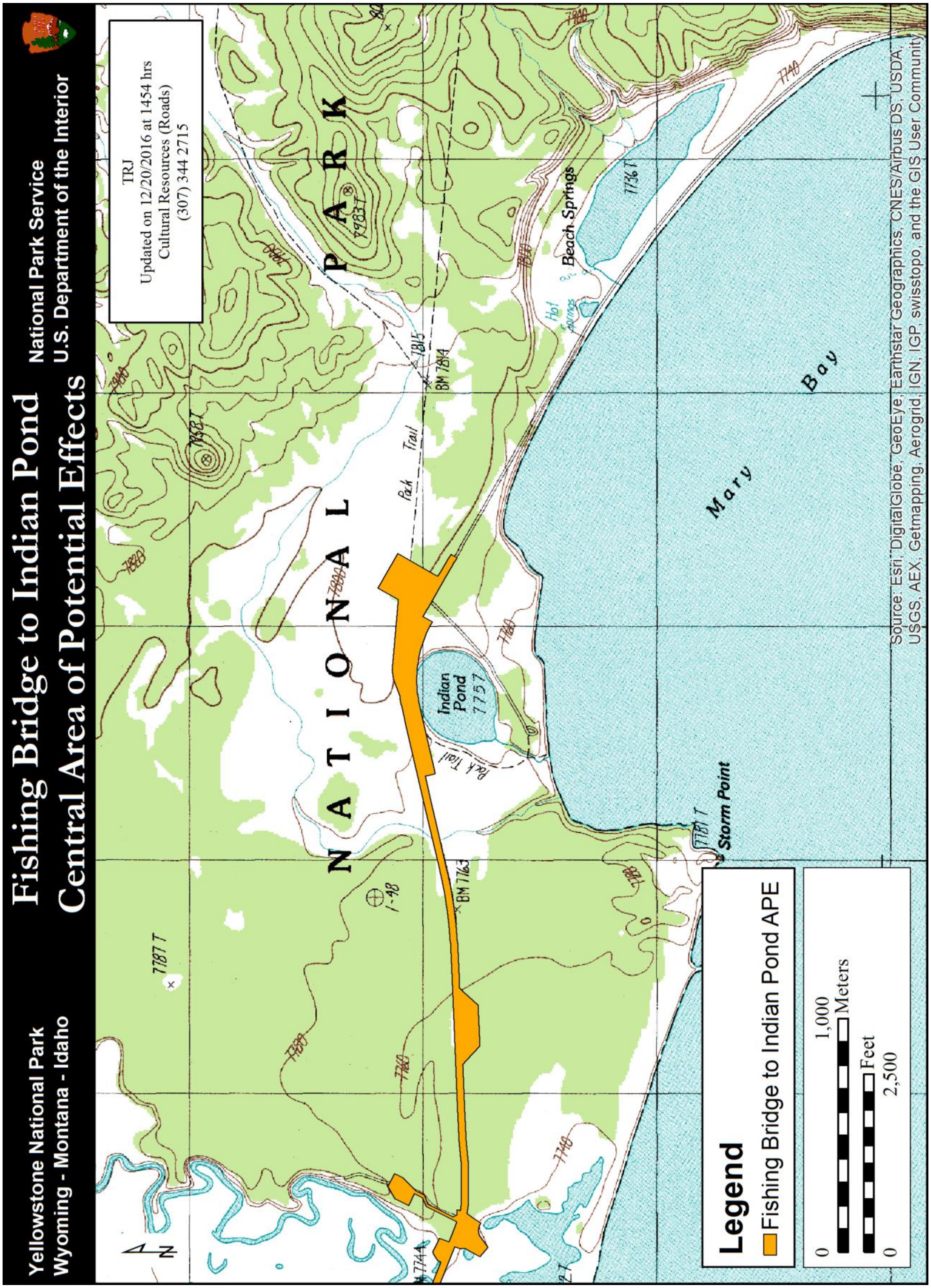
A number of tribes are known to have used this area historically, including the Crow and Blackfeet, both of whom had early treaty interests in the greater Yellowstone River drainage area. Early Euro-American explorers documented summer occupation of areas within the park by Shoshonean-speaking bands known as "Sheepeaters" and occasioned upon raiding bands of Blackfeet during the early and middle nineteenth century. By 1840, the great bison herds west of the continental divide had been decimated and some native peoples began traveling through Yellowstone National Park and the surrounding area in search of the bison herds to the north and east of the park. The 1878 Hayden survey party, undertaking the first mapping of Yellowstone National Park, found Bannock, Shoshone, and Crow people traveling through the park on ancient trails. The Nez Perce, in their flight of 1877, also traveled through YNP on ancient trails. With the creation of reservations around 1868, the remaining Native Americans were moved out of the park to the Wind River, Shoshone, Lemhi, and other reservations.

To date, only a few contact period (the earliest time when Native Indian People came in contact with the first Euro-Americans) archeological sites have been identified in the park, several of which can be culturally identified to the Nez Perce as they passed through the park fleeing capture by the Army. The Indian Pond site, immediately to the southeastern side of the project area, is one such site.

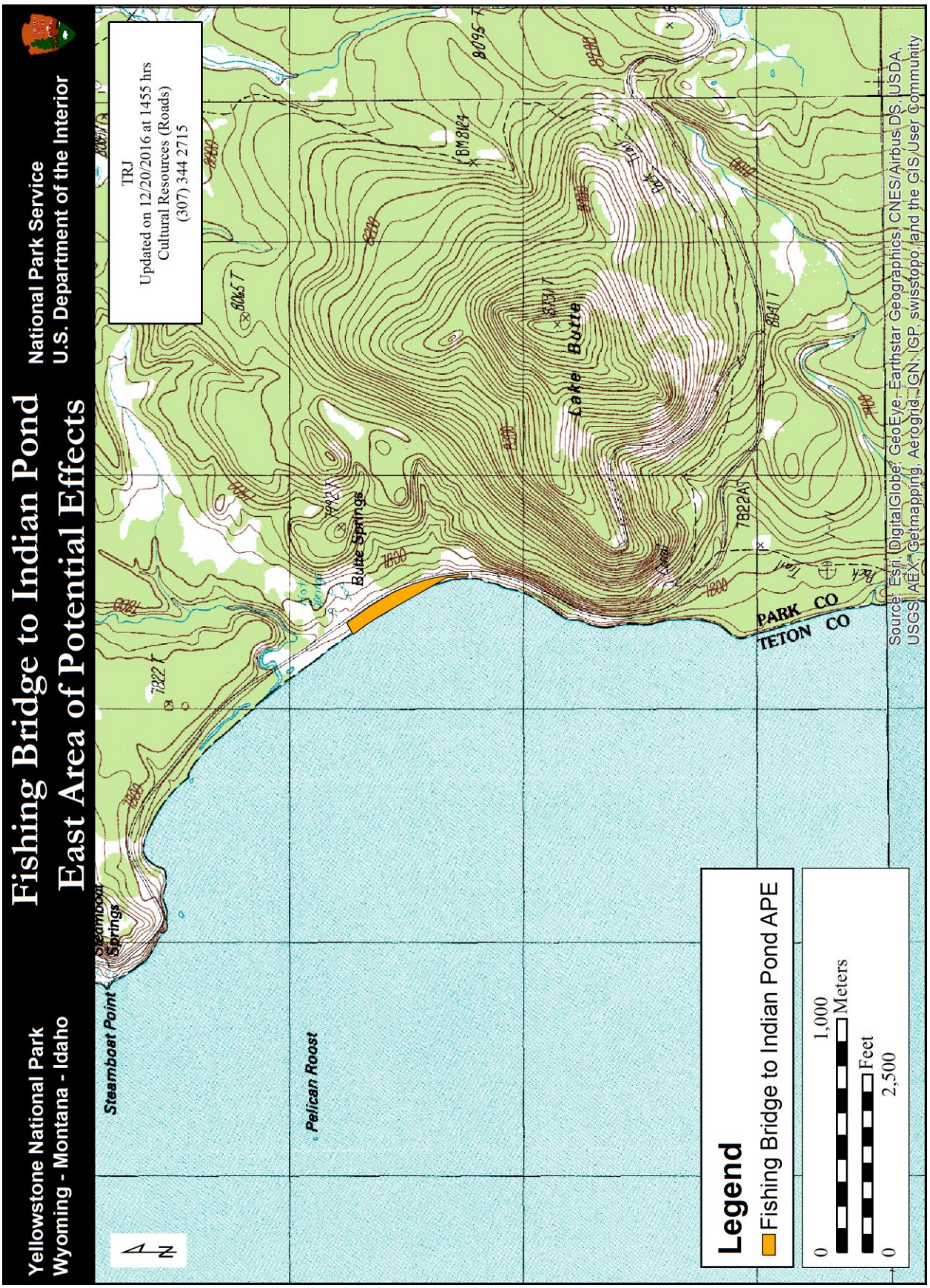
Today the tribes who are affiliated with Yellowstone National Park, and with whom consultation occurs are (listed in alphabetical order): Assiniboine and Sioux Tribes of Ft. Peck; Blackfoot; Cheyenne River Sioux; Confederated Tribes of Salish & Kootenai; Couer d'Alene Tribe; Crow Tribe; Crow Creek Sioux; Eastern Shoshone; Flandreau Santee Sioux; Gros Ventre & Assiniboine; Kiowa Tribe of Oklahoma; Lower Brule Sioux; Nez Perce of Lapwai; Nez Perce of Nespelem; Nez Perce of Colville; Northern Arapaho; Northern Cheyenne; Oglala Sioux; Rosebud Sioux; Shoshone-Bannock; Sisseton-Wahpeton Sioux; Spirit Lake Sioux; Standing Rock Sioux; and Yankton Sioux.


Yellowstone National Park
Wyoming - Montana - Idaho
Fishing Bridge to Indian Pond
Area of Potential Effects
National Park Service
U.S. Department of the Interior
TRJ
Updated on 12/20/2016 at 1456 hrs
Cultural Resources (Roads)
(307) 344 2715
Legend
Fishing Bridge to Indian Pond APE
0
2,000
Meters
0
5,000
Feet
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community
YELLOWSTONE NATIONAL PARK
LAKE
Mary Bay
Storm Point
Holmes Point
Steamboat Point
Pelican Roost
Indian Pond
Fishing Bridge
Lake Junction
PARK CO
TETON CO


Fishing Bridge to Indian Pond
West Area of Potential Effects
Yellowstone National Park
Wyoming - Montana - Idaho
National Park Service
U.S. Department of the Interior
TRJ
Updated on 12/20/2016 at 1455 hrs
Cultural Resources (Roads)
(307) 344 2715
Lake Junction
Fishing Bridge
YELLOWSTONE
Trailer Park
Campground
Amphitheater
PARK CO
TETON CO
Storm Point
Legend
Fishing Bridge to Indian Pond APE
0 1,000 Meters
0 2,500 Feet
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community



Yellowstone National Park
Wyoming - Montana - Idaho
Fishing Bridge to Indian Pond
Central Area of Potential Effects
National Park Service
U.S. Department of the Interior
TRJ
Updated on 12/20/2016 at 1454 hrs
Cultural Resources (Roads)
(307) 344 2715
NATIONAL PARK
Indian Pond 7757
Storm Point
Mary Bay
Beach Springs
Hot Springs
Pack Trail
BM 7763
BM 7814
7787 T
7736 T
Legend
Fishing Bridge to Indian Pond APE
0
1,000
Meters
0
2,500
Feet
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community


Yellowstone National Park
Wyoming - Montana - Idaho
Fishing Bridge to Indian Pond
East Area of Potential Effects
National Park Service
U.S. Department of the Interior
TRJ
Updated on 12/20/2016 at 1455 hrs
Cultural Resources (Roads)
(307) 344 2715
Steamboat Point
Steamboat Springs
Pelican Roost
Butte Springs
Lake Butte
PARK CO
TETON CO
Legend
Fishing Bridge to Indian Pond APE
0
1,000
Meters
0
2,500
Feet
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Historical Archeological Sites.

During the latter part of the nineteenth century, Euro-Americans homesteaded the upper Yellowstone River area. Increasing numbers of explorers, scientists, and visitors publicized Yellowstone's resources and scenery, leading to formal establishment of the area as Yellowstone National Park in 1872 under the Department of the Interior. Conflicts with the Nez Perce and Bannock Indians combined with inadequate funding and personnel needed to control poaching and vandalism resulted in transfer of park management to the U.S. Army in 1886. Early park management (the Army, and after 1918 the NPS) helped to shape the philosophical direction for the park. This philosophy carried over into design and construction of visitor facilities, including roads, stage stops, resorts, hotels, camps, and dumps.

The archeological ruins of cabins associated with early tourism are located within the present-day Fishing Bridge Village, and a derelict campground is located immediately north of the project area of potential effects.

Yellowstone's historic resources reflect a number of noteworthy historic themes, including the growth of tourism, Yellowstone as a "proving ground" for America's national park system, Army protection and management of the park's resources, and the park's pioneer road transportation system. One of the major rationales for the existence of the Fishing Bridge Historic District is that it was among the earliest examples of "strip mall tourism." The Fishing Bridge development provided a one-stop location for shopping, fuel, camping, and recreation opportunities. Likewise, the area is home to the East Entrance Historic District, an important example of early federal highway and road transportation engineering.

Historic Structures

The National Register of Historic Places (National Register), is the official list of the Nation's historic places worthy of preservation and is administered by the NPS. Authorized by the National Historic Preservation Act of 1966, the National Register is part of a national program to coordinate and support public and private efforts to identify, evaluate, and protect America's historic and archeological resources.

The National Register includes significant properties, classified as buildings, sites, districts, structures, or objects. To be considered eligible for the National Register, a property must meet the National Register Criteria for Evaluation. This involves examining the property's age, integrity, and significance:

- Age and Integrity. Is the property old enough to be considered historic (generally at least 50 years old) and does it still look much the way it did in the past (integrity)?
- Significance. Is the property associated with events, activities, or developments that were important in the past (National Register Criterion A)? With the lives of people who were important in the past (National Register Criterion B)? With significant architectural history, landscape history, or engineering achievements (National Register Criterion C)? Does it have the potential to yield information through archeological investigation about our past (National Register Criterion D)?

National Historic Landmarks (NHLs) are nationally significant historic places designated by the Secretary of the Interior because they possess exceptional value or quality in illustrating or interpreting the heritage of the United States. The NHL Program draws upon the expertise of NPS staff who guide the nomination process for new Landmarks and provide assistance to existing Landmarks.

The National Register and National Historic Landmark properties described below are within the area of potential effect (APE) for the proposed Fishing Bridge to Indian Pond road reconstruction work.

The Fishing Bridge Historic District (48YE0675) was determined eligible in 1981 for the National Register of Historic Places and is significant at the state level under National Register Criteria A and C. The period of significance is 1924–1942. The district in part derives its significance from a linear concentration of commercial buildings designed in the rustic style and located east of the rustic historic Fishing Bridge, a contributing structure within the district. At its peak of development, the Fishing Bridge area (figure 40) contained hundreds of lower-cost accommodations including an auto campground, tent cabins, and wooden cabins. It also contained a bath house, ranger station, cafeteria, general store, photo shop, repair garage, service station, and dormitory.

Figure 40 - Fishing Bridge area, 1963. Aerial oblique view from southeast

The lack of funding during the Depression and WWII took a heavy toll on the development. During the 1980s, the importance of this area as grizzly bear habitat led to the removal of the Fishing Bridge campground and nearly all of the tourist cabins that had been constructed in the 1920s-30s. Today, some historic structures that had been slated for removal in the 1988 Fishing Bridge Development Concept Plan/EIS remain extant and continue to support park visitor activities including: Auto Repair Shop (HS-5104); Auto Service Station (HS-5501); Boy's Dorm (HS-5101); Fishing Bridge Warming Hut (former Ranger Station) (HS-030); and 5 One-Room Cabins (HS-7139, HS-7140, HS-7141, HS-7143, and HS-7144) that are vacant.

Of the 284 cabins that once served as visitor accommodations, five remain. They are one-room cabins built between 1924 and 1942 by the Yellowstone Park Company. They are exposed log-frame constructed buildings approximately 15' x 21' and constructed on a concrete foundation. They have horizontal, 7" shiplap siding between log framing members and have wood- shingled gable roofs. Concrete stoops lead to the paneled entry doors. Windows include both awning and six-light, with a sliding sash that opens along the interior wall.

Though diminished by the loss of hundreds of rustic structures and campsites (figure 41), the character of the setting for the Fishing Bridge Historic District continues to convey historic associations with early twentieth century development of the site and the rustic design style employed by the NPS to connect visitors with the natural environment. The developments themselves were carved from the native lodgepole and subalpine forest using native stone, boulders, and logs. The linear arrangement of visitor facilities and parking were both connected to and separated from the East Entrance road through a system of planted medians. Vegetation was planted around the buildings and parking areas, which integrated the development into the

landscape. Rustic style crenelated stone curbing, stone/rock/boulder edging, and log and stone fencing were employed along trails, parking areas, medians, and roads throughout the Fishing Bridge Historic District.

The Fishing Bridge (BRDG037P) is a contributing element to both the Fishing Bridge Historic District and the East Entrance Road Historic District. It is a two-lane log trestle bridge set obliquely on the Yellowstone River at its outlet of Yellowstone Lake, and is included as a part of the Fishing Bridge Historic District. The structure carries out the rustic theme that dominated the NPS buildings and structures of the 1920s and 1930s. It was built by the NPS in 1937. The spans (pilings, braces, and caps) and stringers are imported cedar logs. The guardrails and guardrail posts are native lodgepole pine. Timbers are used for the decking and sheathe the concrete abutments at each end of the bridge. In addition, there are two stairways of log construction that provide access to the pedestrian way. The bridge is 523 feet long and 24 feet wide with 19 spans spaced 28 feet apart. The road surface is asphalt over timber decking. The extant structure is the third bridge constructed in this location. The first was constructed in 1902 and rebuilt in 1919 due to flood and ice damage. The present structure was constructed in 1937as a much wider bridge with walkways that accommodated pedestrians and anglers. The 1919 bridge reached the east bank of the river farther upstream from where the new 1937 bridge was built.

Figure 41 - Fishing Bridge area, 2011. Aerial oblique view from the northeast showing open space where 284 tourist cabins historically stood. The five remaining cabins are visible in the center of the photo.

Fishing Bridge Museum NHL (48YE0686) was listed as a National Historic Landmark in 1987 along with two other surviving museums (Norris and Madison museums) designed by architect Herbert Maier as part of a trail-side museum program developed throughout the park. They are considered significant for their rustic architecture and as the work of a master. The Fishing Bridge Museum has been noted as one of the most important architectural expressions of rustic style developed during the period and is known to have inspired national and state park architecture. Maier worked to integrate his buildings with their setting, specifically designing structures that appeared to have grown up naturally out of the terrain.

Figure 42 - Fishing Bridge Museum and Naturalist Residence shortly after construction (1932).

Figure 43 - Stone and Log entry from the parking lot

The Fishing Bridge Museum NHL complex (figure 42), which includes the Naturalist Residence, amphitheater, terraces, and stone and log entry fence (figure 43) from the parking lot, retains a high degree of historic integrity. The complex was integrated into the changes in topography using terraces, stone walls, and stone steps that helped connect visitors to the views and shore of the lake and adds to the character of the setting. Existing native vegetation and plantings, used to complement the Museum, were utilized within tree wells in the terraces and along structures such as stone walls and building foundations. The stone and log entry fence forms a gateway between the museum and parking lot. Crenelated stone curbing and planted medians delineate the parking lot, which has an entry road that is axially aligned with the museum entry gate.

Figure 44 - 1937 reconstruction of Fishing Bridge

The East Entrance Road Historic District (48YE0829), which extends through the Fishing Bridge Historic District, is nominated for inclusion on the National Register of Historic Places as a Nationally significant feature under Criterion B, for U.S. Army Corps of Engineering Officer Hiram Martin Chittenden for his vital and innovative role in the development of Yellowstone's road system, for his role in the very early recognition of Yellowstone's place in history in the United States, for his important historical contributions to the literature of the American West, and for his role toward the development of the design philosophy which the NPS later adopted for its roads and building programs. The East Entrance Road is also significant at the State level under Criterion A as a part of the first, large-scale designed road systems planned by the Federal government, and Criterion C

representing the continuing design philosophy of blending with nature. Along this road segment, Fishing Bridge and Pelican Creek Bridge are contributing structures to the significance of the district. The portion of the East Entrance Historic District within the project area maintains its integrity for inclusion on the National Register of Historic Places.

The Grand Loop Road Historic District (48YE0520) was listed on the National Register of Historic Places in 2003 as nationally significant under Criteria A, B, and C. Under Criterion A, the significance is at the national level as the first large-scale designed national road system built at a time when road building was a new concept, and at a State Level for its importance in the development of the entrance roads and gateway communities to Yellowstone National Park. It is significant under Criterion B for the involvement of U.S. Army Corps of Engineers Officer Hiram Martin Chittenden, for his vital and innovative role in the development of Yellowstone's road system, for his role in the very early recognition of Yellowstone's place in history in the United States, for his important historical contributions to the literature of the American West, and for his role toward the development of the design philosophy which the NPS later adopted for its roads and building programs. Under Criterion C, the Grand Loop Road represents the continuing design philosophy of blending with nature. There are no contributing features to the Grand Loop Road Historic District in the project area, however ingress and egress lanes leading to the Fishing Bridge to Indian Pond project will be constructed along the Grand Loop Road, and the Fishing Bridge to Indian Pond project will be visible from the Grand Loop Road Historic District. The Fishing Bridge to Indian Pond project will be designed to a standard that will not create an adverse impact to the viewshed of the Grand Loop Road.

Historic and Prehistoric Archeological Resources

Impacts of Alternative A – No Action/Continuation of Current Practices

No action would be taken, and there would be no new impacts to historic or prehistoric archaeological sites. The no-action alternative would result in the continuation of ongoing impacts to prehistoric and historic archaeological sites previously bisected by road and parking area construction, repair and maintenance of culverts and bridges, the creation of social turnouts for wildlife viewing and visitation of the Fishing Bridge Village sign near 48YE001, and unauthorized collection of surface artifacts by park visitors. Natural deterioration of the road structure would contribute to the deterioration of those archeological features adjacent to the roadway.

Though the no action alternative is not an undertaking under Section 106 of the NHPA, this alternative could lead to a finding of adverse effect under 36 CFR 800(a)(2)(vi) as an example of neglect of a historic property which causes its deterioration due to the continued deterioration of known NHPA eligible archaeological sites.

Cumulative Effects: Because there are no new impacts from the project, for the purposes of NEPA, there would be no cumulative impacts on any archaeological resources.

Impacts of Alternative B: Reconstruct and Rehabilitate a Portion of the East Entrance Road and Rehabilitate Fishing Bridge (Proposed and Preferred Action)

Archaeological survey of the entire Area of Potential Effect was completed by the University of Montana in the spring of 2016, and recommendations have been made as to how to mitigate damages to known archaeological resources in the area. Archaeological monitoring would take place during any work in the vicinity of known archaeological sites. Avoidance of archaeologically sensitive areas, and data collection efforts that would take place during any necessary bisection of archaeological sites would mean that the National Register eligibility status of the sites would not

be affected. Data recovery plans would be put in place covering any unanticipated discoveries. Archaeological monitoring would take place in the areas surrounding the NRHP eligible portions of 48YE001. Installation of a formalized pullout in the 48YE001 site would be limited to the currently impacted area, and would prevent further deterioration of the site caused by motorists driving further off of the paved area adjacent to the site, resulting in a positive impact to that site. A staging area in the vicinity of 48YE549 has the potential to impact that site, however the staging area is designated for water pumping from the Yellowstone River, and impacts to the site would be eliminated by requiring vehicles to remain on the currently graveled road nearby.

Cumulative Effects: Past, present, and reasonably foreseeable future actions that have impacted prehistoric and historic archaeological sites within the project area include the original construction of the Fishing Bridge development and subsequent expansions and removals of portions of the development. These actions include the construction of the East Entrance Road, the Fishing Bridge, stores and gas stations in the area, the Fishing Bridge Museum, the no longer extant auto camp, the no longer extant cabin camp and utilities to serve these developments including water, sewer, gas, telecommunications and electricity. All of these developments were ground disturbing in nature and had an incremental effect, each project damaging slightly greater area of intact soil along with the archaeological remains contained within. Future impacts to the area should be primarily limited to currently disturbed areas under the Lake Comprehensive Plan, and should have a relatively minimal impact to remaining archaeological resources.

Alternative A would expand the road into areas that are either currently disturbed, or that have been surveyed and found to be devoid of archaeological resources, or which could be mitigated through monitoring and fencing. Cumulative effects to archaeological sites would be minimized through mitigation measures. NRHP eligible portions of 48YE001 and 48YE549 are within the project boundaries, but mitigation measures would ensure that they would not be adversely impacted.

The impacts to the sites, when combined with overall negative impacts from other past, present, and reasonably foreseeable future actions, as well as beneficial impacts from the construction of the formal pullout at 48YE001, would result in a minimal level of adverse cumulative impacts.

Impacts of Alternative C: Reconstruct and Rehabilitate a Portion of the East Entrance Road and Replace Fishing Bridge in its Current Location

Impacts would be the same as those outlined in Alternative B, above.

Cumulative Effects: would be the same as those outlined in Alternative B, above.

Impacts of Alternative D: Reconstruct and Rehabilitate a Portion of the East Entrance Road and Replace Fishing Bridge in a New Location

Impacts would be the same as those outlined in Alternative B, above, and the new bridge location would involve substantial disturbance to 48YE001 and 48YE304 during earthwork that would be needed during the installation of new approach lanes and bridge abutments. Excavations for bridge abutments and earth moving during road re-alignment would risk disturbing in-situ archaeological contexts at the sites. Archaeological excavations for mitigation of adverse effect would be necessary within this area due to intact stratified archaeological materials.

Cumulative Effects: Most of the cumulative impacts of Alternative D would be the same as in Alternatives B and C. An additional negative impact would be encountered where the new road alignment to the new Fishing Bridge would be built. The western portion of 48YE001 and eastern portion of 48YE304 would be unavoidably bisected, leading to an adverse effect. The impacts to the sites, when combined with overall negative impacts from other past, present, and reasonably foreseeable future actions would result in adverse cumulative impacts.

Historic Structures

Impacts of Alternative A – No Action/Continuation of Current Practices

No action would be taken, and there would be no new impacts to historic structures or districts. The No-Action alternative would result in continued incremental deterioration, with the potential for the eventual need to rehabilitate and potentially close and reconstruct or remove the bridges, the road, historic bridges, and parking areas, of though periodic maintenance activities would provide short-term fixes. Historic stone curbs throughout the area would continue to deteriorate due to poor drainage (freeze-thaw) and inadequate turning radii (wheels running over curbs). Vegetation loss would continue as a result of off-road parking due to inadequate parking in the area.

Though the no action alternative is not an undertaking under Section 106 of the NHPA, this alternative could lead to a finding of adverse effect under 36 CFR 800(a)(2)(vi) as an example of neglect of an historic property which causes its deterioration. The incremental deterioration caused by the no action alternative, with eventual need to either remove or reconstruct the bridges would result in an adverse impact to the Historic Districts through the removal of key contributing elements to the eligibility of the districts. This would eventually threaten the integrity of the historic structures and would lead to their removal from the National Register of Historic Places once they became too far deteriorated for repair.

Cumulative Impacts: Because there would be no new impacts from the project, for the purposes of NEPA, there would be no new cumulative impacts on any Historic Districts or Structures.

Impacts of Alternative B: Reconstruct and Rehabilitate a Portion of the East Entrance Road and Rehabilitate Fishing Bridge (Proposed and Preferred Action)

East Entrance Road Historic District: The widening of the East Entrance Road Historic District road from its current 19 – 22 foot width to the current park standard 30-foot width would accommodate 11-foot travel lanes with 4-foot paved shoulders that allow safer wildlife viewing stops. This alteration and the associated rehabilitation/reconstruction of culverts, headwalls, and retaining walls would be done in accordance with the park road standard established in the *Programmatic Agreement Among NPS, the Advisory Council on Historic Preservation, Wyoming State Historic Preservation Officer, Montana State Historic Preservation Officer, for Principle Park Road System Improvement for Yellowstone National Park* (Roads Programmatic Agreement). Following the Roads Programmatic Agreement as a guideline for cultural preservation during the build alternatives would ensure that the historic character of the districts in the area would be maintained and the project would not affect their integrity as related to the National Historic Preservation Act criteria of significance.

Safer ingress and egress lanes would be added to the intersection of the Grand Loop Road Historic District and the East Entrance Road Historic District. The new road, parking areas, pull outs and Pelican Creek Viaduct would be additions of non-contributing elements to the East Entrance Road

Historic District, however these additions would be consistent with historic use and the overall characteristics of the district. The repaving of nine road pull-out/turn-outs, with some expansion to get parked vehicles fully off of travel lanes, would likewise be in line with historic character and use of the district and would have no adverse impact on the East Entrance Road Historic District.

Pelican Creek Bridge is listed as a contributing element within the East Entrance Road Historic District. The project calls for the removal of Pelican Creek Bridge and its associated causeway; the bridge and causeway would be replaced with a 1,500 foot long viaduct. The removal of a contributing element to a historic district is by definition an adverse effect under the NRHP. Though the bridge is a contributing element to the district, the removal of this bridge and replacement with a viaduct would be a minor overall change to the look and feel of the district, and the replacement of one contributing element out of many does not threaten the integrity of the district as a whole. The removal of the current bridge would allow for the natural meandering of Pelican Creek, which would be beneficial in that the original purpose of the road, which became the historic district, was allowing for vacationers to enjoy a natural setting. The Roads Programmatic Agreement, requires Historic American Engineering Record documentation of the bridge as a mitigation measure to address adverse impacts from removing bridges that are beyond their useful structural life. Such documentation was completed in 1994, and WYSHPO concurrence has been received that the documentation level done at that time is adequate.

Fishing Bridge Historic District: The existing planted median between the road and parking area would be preserved, though with fewer, more-controlled intersections with East Entrance Road through the use of compatible stone and log curbing, thus maintaining the overall historic pattern of a vegetated median. Revegetation/new plantings would restore the natural spacing, abundance, and diversity of native plants that play a role in the character of the setting. The addition of an 11-foot center turning lane and pedestrian crosswalks to ease congestion and improve safety along this section of East Entrance Road Historic District would widen the road overall, but would have no adverse effect on the historic district, due to the fact that the district's significance lies not within the road itself, but in the "strip mall tourism" aspect of the development, including the Fishing Bridge Museum, the store, service station, and the Fishing Bridge itself. The rehabilitation of the parking area between the East Entrance Road and the visitor facilities within the Fishing Bridge Historic District would correct poor drainage and inadequate turning radii and widths to lessen the deterioration of historic stone curbing through freeze-thaw and automotive damage to curbs. Expansion of the existing parking lot to the east side of the Fishing Bridge Hamilton, Inc. General Store (HS-5500) from 30 parking spaces to approximately 83 car and 13 oversized vehicle parking spaces would be a continuation of a compatible historic function within an area that is well vegetated and screened from view, and therefore would not impact the district. The preservation and repair of Fishing Bridge Museum NHL parking area including the resetting and, if deteriorated, replaced-in-kind of crenulated stone curbing would not impact the district as compatible construction materials and methods would be used. Pedestrian walkways would be re-graded to allow for ADA accessibility in accordance with the Secretary of the Interior Standards for Rehabilitation; retaining the characteristic stone edging would allow for district integrity to be maintained and therefor the ADA accessibility would not entail any adverse effect.

Fishing Bridge itself (BRDG037P) would be altered slightly; however this alteration would lead to a longer expected use life for the bridge. The rehabilitation of Fishing Bridge in place would entail minor visual and structural changes to the bridge itself, while keeping its character intact and allowing it to maintain its integrity as a part of the historic district.

Table 5 - Fishing Bridge Historic District (48YE0675) Contributing Structures		
Name	Number	Eligibility Date
Fishing Bridge Ranger Station (warming hut)	HS-0301	1981
Fishing Bridge Museum (NHL 48YE0686)	HS-0302	5/28/1987
Fishing Bridge Museum Amphitheater	HS-0302A	1981/87
Fishing Bridge Museum Observation Terrace	HS-0302D	1987
Fishing Bridge Museum Stone and Log Fence	HS-0302C	1987
Fishing Bridge Museum Naturalist's Residence	HS-0303	1981/87
Fishing Bridge Pumphouse/Vault	HS-0310, 0310A	2004
Fishing Bridge Repair Garage	HS-5104	1981
Fishing Bridge Hamilton Stores, Inc. General Store	HS-5500	1981
Fishing Bridge Service Station	HS-5501	1981
Fishing Bridge Tourist Cabin-One Room #2	HS-7143	1981
Fishing Bridge Tourist Cabin-One Room #19	HS-7144	1981
Fishing Bridge Tourist Cabin-One Room #52	HS-7140	1981
Fishing Bridge Tourist Cabin-One Room #32333	HS-7139	1981
Fishing Bridge Tourist Cabin-One Room #35211	HS-7141	1981
Fishing Bridge	BRDG037P	1981

Cumulative Impacts:
Past actions that have impacted historic structures in the project area include the removal of the associated auto camp and cabins, ongoing maintenance of the facilities in the area, and installation of new utilities.

The overall impact of this presently proposed alternative would result in a minor degradation of the East Entrance Road Historic District as it currently stands through the removal of the contributing Pelican Creek Bridge. The restoration of Pelican Creek's more natural setting would be is in line with the character embodied by the original road. Both the East Entrance Historic District and The Fishing Bridge Historic District would be impacted through the addition of non-historic elements including roads, parking lots, and pull outs, however these elements would be designed to fit in with the historic characteristics of the area and would be compatible with the historic use of the area. Many elements, such as stone and log curbs, would be replaced in kind where warranted, and this would result in no overall change to this historic district.

Future foreseeable actions are primarily related to maintenance of the structures, roads and bridges in the area. Despite the rehabilitation proposed in Alternative B, Fishing Bridge will eventually reach a point where it will no longer be safe to use, and its demolition and replacement will be necessary.

These impacts from Alternative B, when combined with overall low intensity negative impacts from other past, present, and reasonably foreseeable future actions, as well as beneficial effects, would result in a minimal level of adverse cumulative impacts.

Impacts of Alternative C: Reconstruct and Rehabilitate a Portion of the East Entrance Road and Replace Fishing Bridge in its Current Location

Most impacts to the East Entrance Historic District and Fishing Bridge Historic District would be the same as those listed in Alternative B, above, however, in addition to the impacts above, the replacement of Fishing Bridge would diminish the historic fabric of both districts. Though the reconstructed bridge would be designed to retain the historic character of the existing bridge in accordance with the Secretary of Interior's Standards on Historic Preservation and the materials would be of a compatible substitute so as to maintain the visual character of the bridge, the new bridge would have two eleven-foot wide travel lanes, three-foot wide shoulders, and six to seven-foot wide sidewalks on each side of the bridge, substantially wider than the current bridge. This combination of factors means that, though the new bridge would be visually similar to the current bridge, it would not maintain full integrity as an historic resource. The current wooden construction of the bridge would not be reproduced, removing much of the park rustic aesthetic for which the bridge is known. Additionally the new bridge would be wider than the current bridge, the decking and railing material would be substantially different, and the bridge would likely be higher. Elevating the bridge deck higher would change the way visitors view the Yellowstone River and the cutthroat trout spawn for which the bridge is famous. The removal of the Fishing Bridge would reduce the overall integrity of the historic district which bears its name, as the existence of the bridge was the driving force behind the original development.

Cumulative Impacts: Past actions that have impacted historic structures in the project area include the removal of the associated auto camp and cabins, ongoing maintenance of the facilities in the area, and installation of new utilities.

The overall impact of this presently proposed alternative would result in a minor degradation of the East Entrance Road Historic District as it currently stands through the removal of the contributing Pelican Creek Bridge. This impact would be offset through the restoration of Pelican Creek's more natural setting, which is in line with the character embodied by the original road. An impact to the historic fabric of both the East Entrance Historic District and The Fishing Bridge Historic District would be the removal of the Fishing Bridge, which would greatly interrupt the historic fabric of these districts and potentially threaten their ongoing National Register of Historic Places listing. Both of these historic districts would also be impacted through the addition of non-historic elements including roads, parking lots, and pull outs, however these elements would be designed to fit in with the historic characteristics of the area and would be compatible with the historic use of the area.

Future foreseeable actions are primarily related to maintenance of the structures, roads and bridges in the area.

These impacts from Alternative C, when combined with overall low intensity negative impacts from other past, present, and reasonably foreseeable future actions, as well as beneficial effects, would result in an adverse cumulative impact.

Impacts of Alternative D: Reconstruct and Rehabilitate a Portion of the East Entrance Road and Replace Fishing Bridge in a New Location

This alternative would have impacts of the same nature as those listed in Alternative C, above. An additional adverse impact above and beyond that in Alternative C would be the relocation of the Fishing Bridge alignment, which would impact the East Entrance and Fishing Bridge Historic Districts by reducing their historic character.

Cumulative Impacts: would be the same as listed in Alternative C, above, with an additional adverse impact in the realignment of Fishing Bridge.

Threatened and Endangered Species

Affected Environment

The Canada lynx, grizzly bear, and gray wolf are protected pursuant to the Endangered Species Act (ESA) of 1973, as amended, and present within potential project areas (action area) in the park. In accordance with the Endangered Species Act, the NPS contacted the U.S. Fish and Wildlife Service with regards to federally listed special status species for the Parkwide Road Improvement Plan. A biological assessment was prepared by the park, and a subsequent biological opinion was issued by the U.S. Fish and Wildlife Service. This consultation covered road and maintenance projects within the park for the period of 2008 through 2028, including this segment of road proposed for reconstruction. The analysis impacts of the proposed project alternatives to Threatened and Endangered Species are all consistent with the determination of the formal consultation between the NPS and USFWS for the Parkwide Road Plan in 2008. Therefore, no further consultation with USFWS regarding this project specifically would occur.

No plants of special concern were found during a survey (Summer 2016) of the project area (Anderson, 2016).

Canada Lynx (*Lynx canadensis*) - **Status Threatened:** Lynx require cold boreal and montane conifer forests with dense understories and snowshoe hares *(Lepus americanus*), the lynx's principal prey (Ruediger, et.al., 2000). The distinct population segment of lynx in the contiguous United States was listed as threatened under the Endangered Species Act in 2000 because existing regulatory mechanisms in USFS Land and Resource Management Plans were inadequate to protect lynx or lynx habitat (Ruediger, et.al., 2000). Critical habitat for lynx was designated in YNP and surrounding lands in southwestern Montana and northwestern Wyoming (USFWS, 2009).

Lynx in the contiguous United States are considered part of a larger metapopulation whose core is located in the northern boreal forest of Canada. Lynx disperse from Canada into the United States and help bolster populations in the northern Rocky Mountains and North Cascades range (McKelvey et al. 2000). Three lynx populations occur from western Montana to Washington, but survey data are not sufficient to estimate population sizes or trends (Ruediger, et. al., 2000).

Historical information suggests lynx were present, but uncommon, in YNP during 1880 to 1980 (Murphy et al. 2004). The presence and distribution of lynx in YNP was documented during 2001 to 2004, when several individuals were detected in the vicinity of Yellowstone Lake and the Central Plateau (Murphy et al. 2004, 2006). Another lynx was photographed near the Indian Creek

Campground in the northwestern portion of YNP during 2010, and lynx tracks were verified near the Northeast entrance in the winter of 2014. Reliable detections of lynx continue to occur in surrounding National Forest System lands. Evidence suggests lynx successfully reproduce in the GYE, though production is limited.

In accordance with the Canada Lynx Conservation and Assessment Strategy (Ruediger et al. 2000), personnel from YNP mapped suitable lynx habitat—typically late successional or mature forests dominated by mesic subalpine fir *(Abies lasiocarpa*), Engelmann spruce (*Picea engelmanni*), and lodgepole pine (*Pinus contorta* var. *latifolia*)—and lynx habitat currently in an unsuitable condition (successional forests one to 20 years after disturbance). Twenty Lynx Analysis Units were identified. There is not lynx habitat outside these areas. These units were primarily associated with andesitic and sedimentary soils in the northern and eastern portions of YNP (Despain 1990). No Lynx Analysis Units were identified in the central and west-central portions of YNP where dry lodgepole pine stands predominate. Lynx Analysis Units typically occurred in the backcountry of YNP, though seven were transected by major roads. The proposed project area is not located within a Lynx Analysis Unit. All LAUs within the park contain suitable habitat, or habitat that is likely to become suitable for habitation by lynx in the future.

Managers use the standards and guidelines provided in the Canada Lynx Conservation and Assessment Strategy (Ruediger, B., 2000)to gauge the effects of projects on lynx. Under the strategy, projects occurring outside Lynx Analysis Units have no effects on lynx. Projects inside Lynx Analysis Units may affect lynx, but not adversely, if the location occurs: 1) outside of lynx habitat; 2) in habitat currently unsuitable for lynx foraging; or 3) in lynx foraging habitat, but ample suitable habitat is otherwise available. The project area is located outside of any lynx analysis units.

Grizzly Bear (*Ursus arctos horribilis*); **Status - Threatened:** A recovery plan for grizzly bear populations in the lower forty-eight contiguous United States was implemented because grizzly bears were listed in 1975 under the Endangered Species Act (USFWS 1982). The plan was developed to provide direction for the conservation of grizzly bears and their habitat to federal agencies responsible for managing land within the recovery zone. That same year, YNP completed an Environmental Impact Statement (EIS) for a grizzly bear management program specifically designed to recover the subpopulation of grizzly bears inhabiting the park (NPS 1982). Management of grizzly bears in YNP has been successful in enabling grizzly bear recovery and reducing bear-human conflicts (e.g., property damage, incidents of bears obtaining human food, bear-inflicted human injuries) and human-caused bear mortalities in the park (Gunther 1994, Gunther and Hoekstra 1998, Gunther et al. 2000, Gunther et al. in press). The U.S. Fish and Wildlife Service removed grizzly bears in the Greater Yellowstone Ecosystem from the Federal List of Threatened and Endangered Wildlife on April 30, 2007. In 2009, a U.S. District Court returned the grizzly to the federal threatened species list, saying the Conservation Strategy was not enforceable and insufficiently considered the impact of climate change on grizzly food sources. The USFWS and the Department of Justice appealed. In 2012, a ruling was made to keep the grizzly bear on the federal threatened species list. The grizzly bear population in the GYA was estimated to range between 549 and 672 in 2012. Grizzly bears are frequently observed adjacent to the proposed project area. Grizzly bears are commonly seen in the area from late March through early December. There is typically at least a weekly presence foraging within the project area by one or two bears. They will feed on carcasses, elk calves, spawning fish, and whitebark pine nuts in the fall. The project area lies within what is considered excellent habitat for grizzly bears.

Gray Wolf (*Canis lupus*): Gray wolves were native to the Greater Yellowstone Area when the park was established in 1872. Historically hunted for their hides and as predators, they were eliminated

from the ecosystem by the 1930s. The USFWS released an EIS on wolf reintroduction in May 1994. In 1995 and 1996, 31 gray wolves from Canada were released in the park. A total of 14 wolves were released in the winter of 1994-1995; 17 additional wolves were released in 1996 (Phillips and Smith 1996). On May 5, 2011, the USFWS removed gray wolves in a portion of the Northern Rocky Mountain Distinct Population Segment (DPS) encompassing Idaho, Montana, and parts of Oregon, Washington, and Utah from the Federal List of Endangered and Threatened Wildlife. Gray wolves in Wyoming remain on the List of Endangered and Threatened Wildlife and continue to be subject to the provisions of our experimental population regulations codified at 50 CFR 17.84(i) and (n). Wolves reintroduced into YNP and central Idaho were classified -nonessential experimental according to section 10(j) of the ESA of 1973, as amended (16 U.S.C. 1531). In national parks and wildlife refuges, nonessential experimental populations are treated as threatened species, and all provisions of Section 7 of the ESA apply (50 CFR 17.83(b)). The gray wolf was removed from the federal list of endangered and threatened wildlife and from Wyoming's wolf population's status as an experimental population effective September 30, 2012. However, in September 2014, a District Court judge concluded it was unreasonable for the USFWS to determine it was necessary for Wyoming to manage for more than 10 breeding pairs and 100 wolves as a condition for delisting, but then accept a plan not including a requirement for a buffer above this minimum management target (U.S. District Court for the District of Columbia 2014). Thus, the judge ordered the reinstatement of rules to govern the management of wolves in Wyoming as threatened pursuant to the Endangered Species Act (U.S. District Court for the District of Columbia 2014).

In December 2014, at least 94 wolves in 11 packs occupied YNP (Smith et al. 2014). Suitable habitat appears to be saturated with resident wolf packs, and conflict among packs appears to be limiting abundance (Smith et al. 2011). Maintaining a wolf population above recovery levels in the GYE-segment of the northern Rocky Mountains area would depend on some wolf packs living outside YNP and surrounding wilderness areas (USFWS 2006). The Mollies pack home range abuts the northeast portion of the project area. The Mollie's pack continued to use Pelican Valley as their core territory, with only one known trip to northern Yellowstone. Alpha female 779F produced six pups, all of which survived to the end of the year. In 2014 the pack size was 12 (Smith et al. 2014). Every couple of weeks the pack may pass through the area surrounding the proposed project, if on a carcass, the pack may stay a few days until it is consumed.

Impacts of Alternative A – No Action

Alternative A would not have any additional effects on threatened or endangered species as no project construction would occur.

Cumulative Effects: Cumulative impacts on threatened and endangered species are based on the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions in YNP. Construction projects in YNP would continue to occur. As no action is proposed for this alternative, and there are not direct or indirect impacts, there are no cumulative effects from Alternative A to threatened or endangered species.

Impacts of Alternative B: Reconstruct and Rehabilitate a Portion of the East Entrance Road and Rehabilitate Fishing Bridge (NPS Proposed and Preferred Action)

Construction of the preferred alternative would impact 14.72 acres of roadside habitat that would be removed due to road widening. Construction activities would introduce noise and vibrations to the area. These activities would usually tend to keep listed species from using this section of the East Entrance Road that is in close proximity to construction zones. But, since the habitat in this area is very good for both grizzly bears and gray wolves, both of these species are expected to continue to use the general area even during active construction. None of the recent historical lynx

detections were located near the project area, and the proposed construction would be outside of Lynx Analysis Units and designated lynx critical habitat. No road-killed lynx have been reported either within or adjacent to the project area and no sign of snowshoe hares (their primary food source) in the proposed site. This project would have **"no effect on Canada lynx or Canada lynx critical habitat"**.

There are no bear management areas in the Fishing Bridge vicinity, though the area is considered one of the higher quality bear habitats in Yellowstone National Park (Gunther et al. 1998). The potential impacts from construction activities such as noise, vibration, and night lighting, are expected to be short-term (temporary from 2-3 construction seasons) and confined to the project area. As with all Yellowstone construction projects, the NPS would direct contractors to manage food and garbage so that they are not available to grizzly bears. Managing people and thjere actions has proven to be a much more effective way to reduce impacts to bears, than is trying to actively manage the bears themselves. By addressing food storage issues, and educating construction workers about working in bear country, the effect is successfully reducing human/bear interactions. Contractor's staff would be required to attend bear/food management orientation sessions and abide by the normal bear management guidelines.

Presently, grizzly bears are seen weekly traveling through the project area in the meadows along the road corridor or along the lake shore, displacement of resident populations is therefore, unlikely as habitat is good. While there is a potential that bear-human conflicts may occur with a small added influx of workers during the construction work phase, this potential would be combatted by implementing contractor education, and "working in grizzly bear country" protocols mentioned above. All outdoor food storage would adhere to park policies already in place, ensuring no unattended food sources would be available to wildlife. These mitigation measures would help reduce the temporary impacts of construction activities on bears. No impacts on bear populations, breeding, or long-term movement would occur. The project area is not designated critical habitat, and the project area is located within a high visitor use area of the park. The amount of visitors, vehicles, noise, and movement make it an undesirable location during the seasons of highest use. Impacts to grizzly bears and **"may affect, but would not adversely affect"** grizzly bears.

In general it is reported that wolves avoid a main road open for year-round public use, were attracted to some secondary roads with low human use, and neither avoided nor sought out the area adjacent to a major public highway (Thurber et al., 1994). In Yellowstone and other parks, wolves commonly travel along major roads and in road corridors, and may kill ungulates near roads (Carbyn 1974, Mech 1998, D. Smith pers. Com.). Presently gray wolves are seen occasionally (every couple of weeks) traveling through the project area, though there are no resident populations within the project area, much of Pelican Valley is considered the home range of the Mollies pack. All outdoor food storage would adhere to park policies already in place, ensuring no unattended food sources would be available to wildlife. Wolves traveling near the project area would likely avoid these areas due to human activity. There would be no impacts to wolf populations, breeding, or designated critical habitat as the project area is located within a high visitor use areas of the park and wolves typically avoid these areas. The amount of visitors, vehicles, noise, and movement make it an undesirable location for wolves during the periods of highest visitor use. Implementation of this alternative **"may affect, but would not adversely affect"** gray wolves.

Cumulative Effects: As there are no direct/indirect impacts on Canada lynx, as they are not found in the project area, there are also no cumulative effects on Lynx. Most previous construction projects have occurred within the Fishing Bridge development, the RV park, or from reconstructing the remainder of the East Entrance Road. These projects with the exception of the previous road

reconstruction have occurred in areas that bears would typically be hazed out of. As habitat in the project area is considered very good for both grizzly bears and gray wolves, impacts either direct or indirect are considered to be low. The habitat impacts from past, present and reasonably foreseeable projects are mostly from habitat loss along the East Entrance Road associated with widening that road to a 30-foot paved width. Widening this last 3.4 mile section of road to the same width would permanently remove an additional 14.72 acres of roadside habitat. Habitat quality of the project area is considered to be very high. A reduction of 14.72 acres would not be expected to have a measurable effect on grizzly bears or gray wolves at an individual- or population-levels. Alternative B, in conjunction with these past, present, and reasonably foreseeable projects would result in direct, long-term adverse impacts to threatened and endangered species due to reduced habitat. As the removal of habitat is adjacent to roads and developments, and these same habitat types exist on thousands of acres adjacent to the project site, these impacts would likely be hard to measure.

Impacts of Alternative C: Reconstruct and Rehabilitate a Portion of the East Entrance Road and Replace Fishing Bridge in its Current Location

As there are no direct/indirect impacts on Canada lynx, as they are not found in the project area, there are also no cumulative effects on Lynx. Construction of Alternative C would have the same affects as those described for Alternative B for grizzly bears and gray wolves. The project would introduce activities that would produce noise and vibrations. These activities would tend to keep listed species from using habitat directly adjacent to the road segment between Fishing Bridge and Indian Pond. The only activities that would be different than those described for Alternative B would be in the vicinity of Fishing Bridge. An additional work bridge, and a temporary traffic bridge would be constructed that would have additional impacts of about 1 acre in this area on the east and west shore of the Yellowstone River. There would be no changes in impacts to listed species due to these changes.

Cumulative Effects: The habitat impacts from past, present and reasonably foreseeable projects are the same as described in the cumulative effects section for Alternative B, except that and additional 0.8 acre of roadside habitat would be removed due to temporary bridges needed to reconstruct the Fishing Bridge. Alternative C, in conjunction with these past, present, and reasonably foreseeable projects would result in direct, short- and long-term adverse impacts to wildlife due to reduced habitat. As the removal of habitat is adjacent to roads and developments, and these same habitat types exist on thousands of acres adjacent to the project site. Long-term, direct, and cumulative effects of this alternative would be the same as Alternative B on Canada lynx, grizzly bears, and gray wolves due to the small area of land affected and its proximity to an existing developed area.

Impacts of Alternative D: Reconstruct and Rehabilitate a Portion of the East Entrance Road and Replace Fishing Bridge in a New Location

Construction of Alternative D would have the same affects as those described for Alternative C. The project would introduce activities that would produce noise and vibrations. These activities would tend to keep listed species from using habitat directly adjacent to the road segment between Fishing Bridge and Indian Pond. The only activities that would be different than those described for Alternative B would be in the vicinity of Fishing Bridge. An additional work bridge, and a temporary traffic bridge would be constructed as in Alternative C. Because of the change of location for the Fishing Bridge, this alternative would have additional permanent impacts of an additional 0.87 acre located on the east and west shores of the Yellowstone River due to road realignments needed to match the location of the new bridge location. Because of the location of

the additional impacts (close to a very heavily visited area), it is unlikely that there would be any additional impacts to listed species due to these changes.

Cumulative Effects: As there are no direct/indirect impacts on Canada lynx, as they are not found in the project area, there are also no cumulative effects on Lynx. The habitat impacts from past, present and reasonably foreseeable projects are the same as described in the cumulative effects section for Alternative C, except that and additional 0.87 acre of roadside habitat would be removed due to permanent road realignment needed to meet the new location of the reconstructed Fishing Bridge. Alternative D, in conjunction with these past, present, and reasonably foreseeable projects would result in direct, short- and long-term adverse impacts to wildlife due to reduced habitat. As the removal of habitat is adjacent to roads and developments, and these same habitat types exist on thousands of acres adjacent to the project site. Long-term, direct, and cumulative effects of this alternative grizzly bears, and gray wolves due to the small area of land affected and its proximity to an existing developed area.

COMPLIANCE REQUIREMENTS, CONSULTATION, AND COORDINATION

Agency Consultation

United States Fish and Wildlife Service, Consultation was completed via formal consultation in 2008 on a Biological Assessment of the Yellowstone Parkwide Road Plan 2008-2028.

Wyoming State Historic Preservation Office, Consultation is ongoing and would be completed prior to a decision document being approved.

Native American Consultation

Consultation is ongoing with members of Yellowstone's 26 associated tribes

Environmental Assessment Review and Recipients

This EA is available for a 30-day public comment period. The public was notified of the EA availability through news releases to a number of state and local media outlets and a letter and or document to various agencies, tribes, groups businesses and individuals who have asked to receive notification or are otherwise required to get notification. The document will be available for review on the park's planning website at http://parkplanning.nps.gov/FBIP. Copies of the EA will be provided to other interested individuals upon request.

During the 30-day public review period, the public is encouraged to submit their written comments to the NPS, as described in the instructions at the beginning of this document. Following the close of the comment period, all public comments will be reviewed and analyzed prior to the release of a decision document. The NPS will respond to substantive comments received during the public comment period.

As the nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering sound use of our land and water resources; protecting our fish, wildlife, and biological diversity; preserving the environmental and cultural values of our national parks and historical places; and providing for the enjoyment of life through outdoor recreation. The department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people by encouraging stewardship and citizen participation in their care. The department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

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APPENDIX A

STATEMENT OF FINDINGS FOR EXECUTIVE ORDER 11990
(PROTECTION OF WETLANDS)

Fishing Bridge to Indian Pond Road Reconstruction

YELLOWSTONE NATIONAL PARK

Recommended: _____ _____

Superintendent, Yellowstone National Park Date

Certified for Technical Adequacy and Servicewide Consistency:

_____ _____

Chief, WASO Water Resources Division Date

Approved: _____ _____

Regional Director, Intermountain Region Date

STATEMENT OF FINDINGS

INTRODUCTION

Yellowstone National Park (YNP) has prepared and made available an Environmental Assessment (EA) analyzing alternatives for reconstructing a segment of the East Entrance Road from Fishing Bridge to Indian Pond.

The purpose of this Statement of Findings document is to comply with NPS wetland protection and floodplain management procedures. Executive Orders (EO) 11988 (Floodplain Management) and 11990 (Protection of Wetlands) require the NPS and other federal agencies to evaluate the likely impacts of actions in floodplains and wetlands. NPS Director's Order #77-1: Wetland Protection and NPS Procedural Manual #77-1 provide NPS policies and procedures to comply with EO 11990. NPS Procedural Manual #77-2 provide procedures to comply with EO 11988. The Statement of Findings will be published with the Final EA.

PROPOSED ACTION

The proposed project would reconstruct a 3.2 mile segment of the East Entrance Road from Fishing Bridge to Indian Pond within Yellowstone National Park. The project would include the road, associated parking areas and turnouts, Fishing Bridge, and Pelican Creek Bridge.

The project would reconstruct and widen the existing 22 to 24-foot paved road to a 30-foot paved width. Within the vicinity of Fishing Bridge Village, an eleven foot left turn lane would be constructed to accommodate access to the Village. Parking areas located at the east and west ends of the Pelican Creek viaduct would be reconstructed and formalized. Each parking area would accommodate approximately 20 vehicles and one parking area would install a vault toilet. The west parking area would connect into the trailhead leading to the mouth of Pelican Creek. The parking area at Storm Point Trailhead would be formalized to accommodate 20 vehicles and provide room for vehicles to back out of the parking space without entering traffic on East Entrance Road. A vault toilet would be installed at this location. Another parking area at Pelican Valley Trailhead would be relocated to the east to improve vehicle accessibility. The existing access road would be removed and the area restored.

Rehabilitation of Fishing Bridge would include three main elements; 1) rehabilitation of the timber deck and driving surface, 2) construction of a new abutment, and 3) installation of new Fiber Reinforced Polymer jackets on all timber piles. The current bridge is 532 feet long and would be rehabilitated in place. The existing bridge spans and bents would remain the same. The existing piles would be rehabilitated in place. No temporary traffic bridge or work bridge would be constructed at Fishing Bridge.

The Pelican Creek Bridge would be replaced with the construction of an approximately 1,500 foot long viaduct on an adjacent alignment approximately 40 feet to the south of the existing Pelican Creek Bridge. The viaduct would span the existing floodplain and Pelican Creek. Existing bridge, piers, and abutments would be removed and

approximately 1,300 linear feet of existing causeway would be removed restoring the floodplain. The viaduct would have nine spans, placed on approximately 16-24 large diameter steel pipe piles. Temporary structures would consist of eight platform structures placed adjacent to the existing causeway. Platforms would consist of geotextile blanket place on the existing ground with sand and rip-rap on top. All temporary platforms would be removed at the completion of the project and the area restored.

The project would be constructed in 2018 and 2019 as one construction contract. Rehabilitation of the Fishing Bridge would be the first order of work. Construction of Pelican Creek Viaduct would require the most time to construct and dictate the duration of construction. Pelican Creek Bridge substructure would be constructed in 2018 with the superstructure constructed in 2019. The remainder of road improvements, parking areas and trailhead would be scheduled accordingly to be complete within the two-year construction period. The parking areas and turnouts along this road segment would be repaved on the existing footprint. The parking area adjacent to the east side of the Fishing Bridge General Store would be expanded and reconfigured to the east of its original location.

WETLAND DELINEATIONS

Wetlands along the 3.2 mile segment of the East Entrance Road from Fishing Bridge to Indian Pond were delineated during the field season of 2016 using the 1987 U.S. Army Corps of Engineers methods. A total of 33 wetlands (32.50 acres) were identified within 200 feet of either side of the Fishing Bridge to Indian Pond road segment. Each wetland was classified according to the Cowardin classification system.

Cowardin wetland systems present included: Palustrine and Riverine, with some variation in classes and water regime within the systems. Thirty-three Palustrine wetlands, totaling 26.30 acres consisted of seeps, snowmelt-fed wet meadows, slope wetlands, forested wetlands and riparian area wetlands.

Two Riverine wetlands, totaling 6.23 acres included the Yellowstone River and Pelican Creek as well as a few unnamed tributaries. Streams classified in the Riverine system were found to be both perennial and intermittent.

Species common in the Palustrine communities were water sedge (*Carex aquatalis)*, tufted hairgrass (*Deschampsia cespitosa)*, (Nebraska sedge) *Carex nebrascensis*, water ragwort (*Senecio hydrophilus)*, bluejoint (*Calamagrostis Canadensis)*, slender cinquefoil (*Potentilla gracilis)*, and smallwing sedge (*Carex microptera)*. No plants of special concern were found during a survey (Summer 2016) of the project area.

FUNCTION ASSESSMENT

Streams and lakes in Yellowstone National Park are designated as Class I, Outstanding Natural Resource Waters, by the state of Wyoming. Class I waters are anti-degradation waters, which means that existing water quality must be maintained. Water bodies located within the project area include:

Yellowstone River
The project area at Fishing Bridge is located in the Yellowstone River, the last major undammed river in the lower 48 states. The river begins northwestern Wyoming in the Bridger-Teton Wilderness and enters the park and meanders through the Thorofare region into Yellowstone Lake. It leaves the lake at Fishing Bridge and flows north over LeHardy Rapids, through Hayden Valley and north. It is considered the principal tributary of the upper Missouri. The mainstem of the Yellowstone River is more than 700 miles long. At the headwaters, elevations exceed 12,800 feet above sea level and descend to 1,850 feet at the confluence with the Missouri River in North Dakota. The substrate for the Yellowstone River is primarily composed of large and fine gravel.

Pelican Creek
This major tributary enters Yellowstone Lake on its north shore and has approximately 190 miles of streams within its 78 square mile watershed. The substrate of Pelican Creek is primarily composed of silt, sand, and fine gravel. Base flow during the fall is approximately 33 ft^3/second. During periods of high water Yellowstone Lake backs up into Pelican Creek and elevates creek levels at the bridge. Because the lake level fluctuates only a few feet, there has never been a hazardous flood at the bridge. Many thermal features can be found in the upper reaches of Pelican Creek drainage which greatly affects water chemistry. The three prevalent groups of ions detected in this drainage include sulfates, bicarbonates, and sodium.

Both the Yellowstone River and Pelican Creek contain five fish species: Yellowstone cutthroat trout (*Oncorhynchus clarkii*), lake chub (*Couesius plumbeus*), longnose dace (*Rhinichthys cataractae*), redside shiner (*Richardsonius balteatus*), and longnose sucker (*Catostomus catostomus*). The Yellowstone River is an important spawning stream for Yellowstone cutthroat trout. Pelican Creek use to be an important spawning stream for Yellowstone cutthroat trout but the number of fish spawning in the creek has declined substantially in the past two decades, possible a result of drought and whirling disease.

Three amphibian species: blotched tiger salamander (*Ambystoma tigrinum melanostictum*), western (Boreal) chorus frog (*Pseudacris maculate*) Columbia spotted frog (*Rana luteiventris*), and one reptile species, the western terrestrial garter snake (*Thamnophis elegans vagrans*) are known to occur in the project area.

The Fisheries and Aquatic Sciences Branch staff collected aquatic invertebrate information from Pelican Creek in October 2003 and 2004. Benthic macroinvertebrates are excellent indicators of water quality conditions because they are sensitive to environmental changes. During these years, invertebrate taxa belonging to Trichoptera, Coleoptera, and Diptera which are commonly called caddisflies, beetles, and true flies respectively (Arnold, Pers.Comm).

The Palustrine wetlands impacted by this project are beneficial in serving the following functions: they temporarily store surface water and are sources of water vital for streamflow maintenance; the marshes provide habitat for waterfowl and waterbirds; they perform nutrient transformation; sediment and other particulate retention; help in

shoreline stabilization and retention; provide habitat for fish, waterfowl and waterbirds, and other wildlife. Most of these functions would be enhanced by the restoration of wetland acreage due to the removal of the Pelican Creek causeway.

WETLAND AND FLOOPDPLAIN IMPACTS

Under the preferred alternative, 1.69 acres of wetlands and floodplains would be impacted, 0.35 permanent and 1.34 temporary (Figures 1-3). It should be noted that the estimates of impacts are “worst case” based upon construction designs that are 50% complete. Actual impacts may be less as the construction designs are refined and finalized.

1.34 acres of temporary wetland impacts would occur due to construction of platforms for equipment needed to set the girders and drill the piers needed for the Pelican Creek viaduct. Permanent wetland impacts of 0.35 acres would result from placement of piers for the viaduct, and expansion of the roadway. Construction of the Pelican Creek viaduct from placement of piers and abutments would be new permanent features within the 100-year floodplain. The new viaduct span would be sufficiently long to drastically reduce 100-year floodplain impacts, and in-water work would be completed during low flow periods.

1.88 acres of floodplains and wetlands would be restored as compensatory mitigation as a result of removing road fill that is presently located within the lower Pelican Creek drainage system. Estimates of compensatory mitigation may prove to be similarly conservative, but under no circumstances would mitigation be less than 1.679 acres.

Figure 1 - Wetland Impacts Near Fishing Bridge

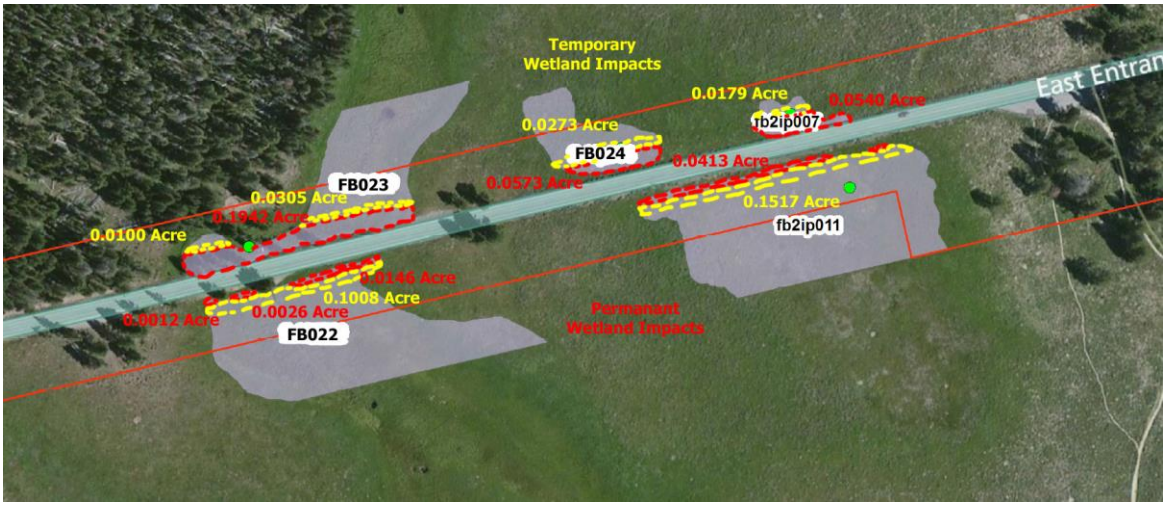

Figure 2- Wetland Impacts Near Indian Pond

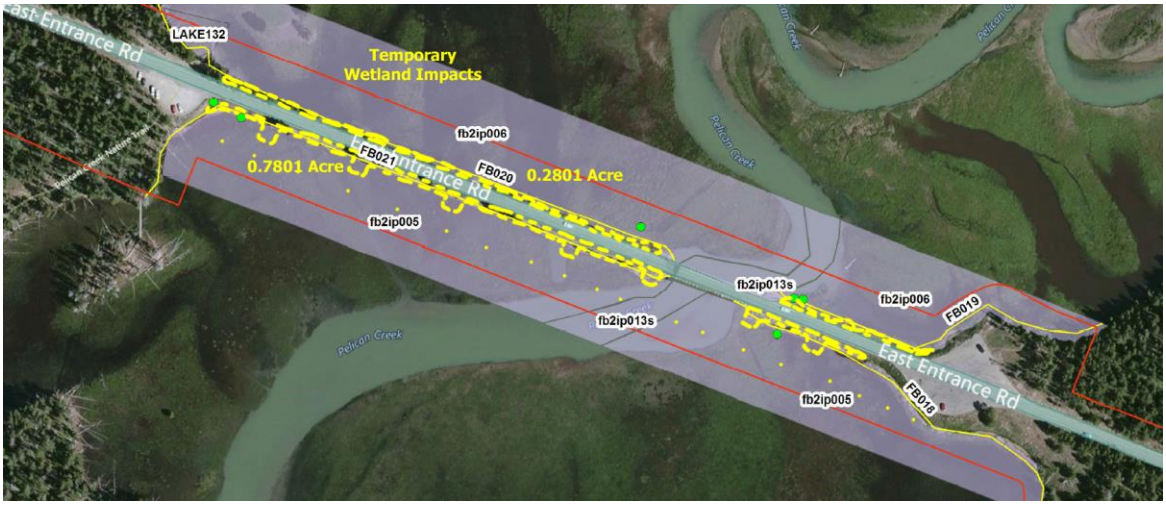

Figure 3- Wetland Impacts Near Pelican Creek

WHY ACTIONS MUST BE LOCATED IN THE WETLAND

The purpose of the proposed project is to preserve the existing vehicle access route from Fishing Bridge to the East Entrance by reconstructing the road to meet engineering safety standards while ensuring park resources. This segment of road is in an advanced state of deterioration, primarily due to age. The pavement is rutted from wear and cracking because of poor drainage, poor-quality base material, and heavy vehicle use. The road was not designed or constructed to accommodate current traffic volumes, vehicle widths, lengths, and weights. The current width of the road varies from 19 to 22 feet. The 30-foot paved reconstructed road would be based upon the National Park Service road standards.

Both of the bridges are listed as a Priority of Improvement Category B which means the structure is seriously deficient or presents a safety hazard, but can remain in service at

reduced loads or with frequent inspection. If the bridges would remain as is, maintenance such as patching, rail and deck repairs would continue. Deterioration of the structural elements would continue until safety concerns would eventually cause restrictions or closure of the bridges.

OTHER ALTERNATIVES CONSIDERED

Alternative A: No Action

Under Alternative A the current alignment would remain unchanged. The road width would remain at its existing 22-24 feet in width. The road would likely need increasing amounts of maintenance to the road surface in the future as the road condition declines. Safety issues such as steep drops at pavement edge, vehicles stopping in road to view wildlife, and narrow road surface would not be addressed.

Fishing Bridge and Pelican Creek Bridge would not be reconstructed or rehabilitated. Issues related to the aging of the existing bridges would not be addressed. The NPS would continue to complete periodic minor repairs for continued operation of the bridges such as patching, rail maintenance, and repair of the deck. Deterioration of the structural elements would continue until safety concerns eventually cause restriction or closure of the bridges.

Alternative C: Reconstruct and Rehabilitate a Portion of the East Entrance Road and Replace Fishing Bridge in its Current Location

Alternative C would consist of the same actions described for the proposed action with the exception of Fishing Bridge. This alternative would replace the existing Fishing Bridge wood structure in its current location. The bridge would have two eleven-foot wide travel lanes, three-foot side shoulders, and up to seven-foot wide sidewalks on each side of the bridge. The current bridge is 532 feet long; the new one would be approximately 560 feet. The bridge would have approximately ten spans and nine bents. Each bent would have approximately six piles for a total of 60 piles and would be 24-inch diameter steel pile filled with concrete and driven into the river bottom.

Temporary bridge structures would be placed on both sides of the existing Fishing Bridge. Each structure would have piles driven into the streambed of the Yellowstone River. Road approaches to the temporary bridge structures would require temporary impacts to the adjacent wetlands.

This alternative was not selected because it would not retain the historic character of Fishing Bridge and temporary impacts to wetlands (1.43 acres) would be greater than the proposed action.

Alternative D: Reconstruct and Rehabilitate a Portion of the East Entrance Road and Replace Fishing Bridge in a New Location

Alternative D would consist of the same actions described for the proposed action with the exception of Fishing Bridge. This alternative would replace Fishing Bridge structure in a new location. The bridge would have two eleven-foot wide travel lanes, three-foot side shoulders, and up to seven-foot wide sidewalks on each side of the bridge. The current bridge is 532 feet long; the new one would be approximately 840 feet. The bridge would have approximately 15 spans and 14 bents. Each bent would have approximately six piles for a total of 84 piles and would be 24-inch diameter steel pile filled with concrete. Piles would be driven into the river bottom. A temporary construction work platform to construct the new bridge would be 30 feet wide and 750 feet long and be located 45 feet south of the new bridge. Road approaches to the platform would require temporary impacts to the adjacent wetlands.

This alternative was not selected because it would not retain the historic character of Fishing Bridge and permanent impacts to wetlands (1.59 acres) would be the greatest out of all the action alternatives.

ALTERNATIVES CONSIDERED BUT DISMISSED

Reconstruct the Pelican Creek Bridge at its Present Location and Length

This alternative was considered to maintain the existing condition and reduce overall cost. This alternative did not recognize the decision made in the 1992 East Entrance Road Reconstruction EA to remove this severely deteriorated bridge, remove the existing road fill from wetland, and construct a viaduct over the Pelican Creek Wetland. As a decision has already been made to construct a viaduct and this alternative would not restore wetland functions impacted by existing road fill, this alternative was dismissed because it only partially meets the purpose and need for the project and the project objectives.

Reconstruct the Road at a 24-foot Width

This alternative consisted of reconstructing the road to a 24 foot width as was done on the Dunraven Road. As with the above listed alternative, this alternative did not fully meet an objective to improve traffic flow. The narrower road width would not allow traffic to flow when both lanes stop to view wildlife in the absence of turnouts along the roadway. The majority of the East Entrance Road has already been reconstructed to a 30-foot paved width, and to be consistent with that width the alternative was eliminated for feasibility reasons and because the alternative would not meet the project's objectives.

MITIGATIVE ACTIONS

All wetlands within the project area were surveyed and mapped before road design began so the designer could reduce impacts to wetlands.

To minimize possible petrochemical leaks from construction equipment, the contractor will regularly monitor and check construction equipment to identify and repair any leaks. Hazardous material spill kits will be required on site.

Equipment will not be serviced or refueled near streams; storage and refueling or construction parking and staging areas, will be at least 46 meters (150 feet) from streams or riparian areas. Fuel will be stored in fuel trucks or aboveground storage tanks, and all fuel storage will be in staging areas. If refueling needs to occur for stationary equipment (cranes, trackhoes, pumps), within 150 feet of streams and riparian areas, special precautions will be put in place to alleviate the risk of fuel spills.

Stormwater runoff control measures, including silt capture techniques such as silt fences will be employed to improve quality of runoff and prevent degradation of the water bodies.

Design and construction measures will include development of surface water control features to minimize post-construction run-off.

Sediment curtains will be used when needed to contain sediment to the immediate work zone.

Silt fencing fabric will be inspected weekly or after every major storm. Accumulated sediments will be removed when the fabric is estimated to be approximately 50% full. Silt removal will be accomplished in such a way as to avoid introduction of fine particle materials into any wetlands or flowing water bodies.

Wooden pallets will be placed over wetland areas wherever heavy equipment will be driven. This will result in some soil compaction, crushing of vegetation, and prevent rutting in the soft soils. Any disturbed wetland soils will be graded by hand to original grade elevations and replanted with appropriate native-wetland species.

PROPOSED COMPENSATION

Compensation mitigation for 1.69 acres of impacted wetlands will be accomplished through removing 1.88 acres of road fill that is presently located within the lower Pelican Creek drainage system (Figure 4). By removing road fill in former wetlands and the existing Pelican Creek Bridge and replacing it with a 1,500-foot long viaduct on an adjacent alignment approximately 40 feet to the south of the existing Pelican Creek Bridge. The viaduct would span the existing wetland and Pelican Creek. By removing the existing bridge, piers, and abutments, approximately 1,300 linear feet of causeway would be removed and 1.88 acres of floodplain and wetland functions restored.

The compensation ratio is therefore 1.1 to 1 or 1.88 acres restored: 1.69 acres impacted.

On XXX, the Western Federal Lands Highway Division of the Federal Highway Administration, in cooperation with Yellowstone National Park submitted an application for an U.S. Army Corps of Engineers (USACOE) 404 Authorization for reconstructing a 3.2 mile segment of the East Entrance Road from Fishing Bridge to Indian Pond. The USACOE reviewed the application and determined the project would impact 1.69 acres of wetlands at eight locations.

The USACOE reviewed and has accepted as adequate mitigation the restoration of 1.88 acres of floodplain and wetlands from removal of the existing Pelican Creek Bridge and causeway. (Reference USACOE letter & reference files).

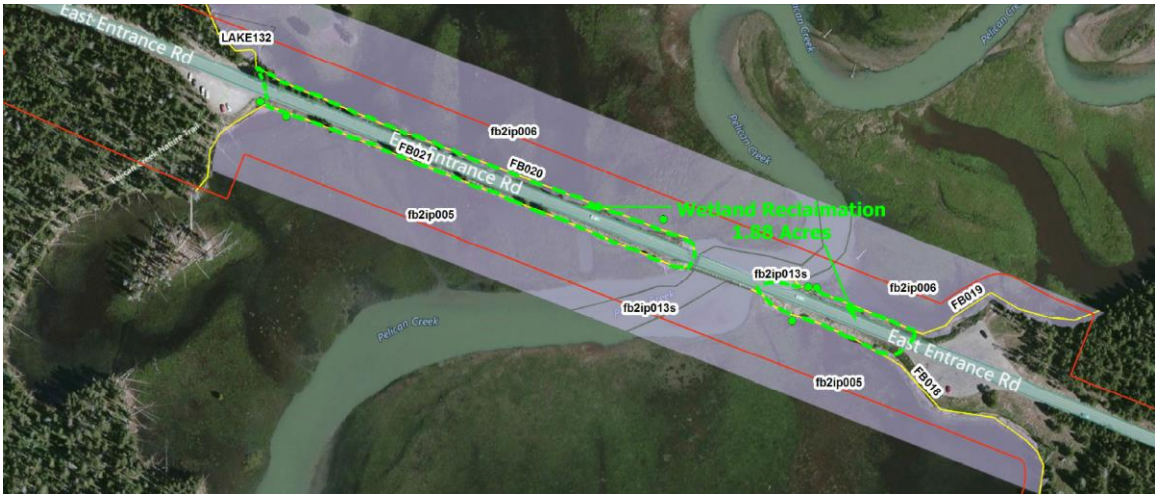

Figure 4- Pelican Creek Restoration Area

MONITORING AND REPORTING

Annual monitoring reports documenting wetland mitigation progress and eventual success must be submitted to the USACOE Regulatory Office. The first report is due XX after the first full year after construction and planting of the wetland mitigation site. Reports are to be submitted for a period not to exceed three years or until the mitigation is determined by the USACOE to be successful, whichever is less. If success is not achieved within three years, the permittee will be required to modify the site(s) and/or implement other mitigation plan(s), both of which are subject to approval by the USACOE. Monitoring requirements may be extended if success is not achieved within the three year period. Monitoring reports must include:

a) Post-construction wetland delineation completed in accordance with the U.S. Army Corps of Engineers 1987 Wetland Delineation Manual. Sampling is to be accomplished during the middle of the growing season. Vegetation data must be collected at established quadrat sampling points along established transects to determine vegetation composition. Transects are to be spaced at 100-foot intervals along the length of each wetland mitigation site or adjusted to ensure that each site is adequately sampled to support wetland determinations that proposed acreage is achieved. There are to be a minimum of three sampling stations per transect with one quadrat sampling points per cover type per sampling station. Vegetation assessments are to be accomplished in accordance with USACOE accepted sampling techniques. Hydrology data must be collected at established locations. Water data, surface and subsurface, must be recorded at the normal peak of the hydrograph and/or groundwater. Frequency and duration of adequate hydrology must be documented. Soils must also be

investigated for evidence of redoximorphic features as well as soil color and texture.

b) Plan view map showing wetland mitigation site and indicating areas where wetlands are developing as well as identification of type. Acreage of each wetland/water type based upon the Cowardin classification (palustrine emergent, aquatic bed, unconsolidated bed, scrub-shrub) will be specified in tabular form and correlated to the plan view drawing. Additional clarification of wetland type should be included for the emergent class, if warranted, such as meadow, shallow marsh, and deep marsh.
c) Comparison of monitoring results with the approved mitigation plan. Data collection and analysis must be accomplished by a qualified individual proficient in wetland delineation and functional assessment techniques with conclusions discussed in each report.
d) Photographs of each reclaimed wetland and/or open water area from established locations taken during the growing season.
e) Mitigation success is achieved when the mitigation site has more than 60% gross vegetative aerial coverage as determined by the average of all quadrat sample plot data. Hydrophytes must comprise a minimum of 80% of the dominant species as determined from the average of all data points from the polygons. All wetland data points must be comprised of more than 50% hydrophytes, which are native species.

1. Vegetation. Annual samples will be gathered using transect quadrant sampling, point intercept sampling, photos, and visual inspection. Based on field inspections, estimates will be made to determine the percentage of the area covered by hydrophytes, which will be compared to the existing condition baseline data. A determination will be made as to the need for a weed control plan.
2. Hydrology. Groundwater levels shall be determined annually by the use of groundwater monitoring wells or excavation of test pits. Areas to be flooded, even intermittently, shall be measured by the use of gages. Site visits shall be done once during the projected peak of the hydrograph and/or seasonal high groundwater and once during the low water elevation periods.
3. Soils. The compensation consists of restoration of wetlands that were filled during construction of the road. Excavation of fill to at-or-below original grade will expose former wetland soils. It is expected that those soils will still retain some of the redoximorphic features that were formed before the wetlands were filled. Presence of redoximorphic features, therefore, will not be a reliable indicator that mitigation is successful, and soils will not be monitored beyond the initial survey to ensure that the entire fill has been removed.

The NPS would provide annual reports by XX following the completion of the mitigation sites documenting the finding of items # 1-4 from the sampling performed. In these reports, the NPS would identify:

1 Success criteria and how the compensation sites compare to those criteria.

2. A comparison of the sizes of the proposed and actual compensation areas to project impact areas.
3. Classification of compensation areas based on type (Cowardin classification).
4. Interpretation of data collected in items #1 and 2 and discussion as to how compensation is determined to be demonstrating success or failure.
5. Identification of problems that have arisen and corrective measures that have been implemented or proposed.
6. Routine wetland delineation data forms or similar forms, which contain appropriate data fields.
7. Plan view map(s).
8. Color photos of compensation sites from permanently established locations.
9. A contingency plan should the compensation plans and implementations prove unsuccessful.

CONCLUSION

Although 1.69 acres of wetlands will be impacted, this represents the minimum possible disturbance to carry out the NPS's responsibility for providing adequate and safe access within Yellowstone National Park. In accordance with the NPS no net loss of wetlands policy, impacted wetlands will be replaced with comparable wetland habitats via restoration of previously disturbed wetlands. A total of 1.88 acres of impacted wetlands will be restored to compensate for the impact to 1.69 acres of wetlands. This exceeds the minimum 1:1 no net loss ratio. We therefore find this project to be consistent with NPS procedures for complying with Executive Order 11990.

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APPENDIX 1. Fishing Bridge to Indian Pond Wetland Impacts

		Wetlands Impact Areas (acre)	
Wetland ID#	**NWI Code**	**Temporary**	**Permanent**
FB010	PEM	0.0009	
FB020	PEM	0.2081	
FB021	PEM	0.8001	0.0326
fb2ip013s	R2	0.0179	0.0054
FB022	PEM	0.1008	0.0184
FB023	PEM	0.0405	0.1942
FB024	PEM	0.0273	0.0573
fb2ip011	PEM	0.1517	0.0413
TOTALS		**1.347**	**0.3492**

APPENDIX 2. Plant Names and Wetland Indicator Status.

A list of plants found in wetlands within the project area for Fishing Bridge to Indian Pond. Nomenclature follows that used by Reed (1996), Dorn (1992), and Hitchcock and Cronquist (1973).

Wetland Indicator Status categories are defined as follows (Environmental Laboratory, 1987, and Reed, 1996):
OBL = OBLIGATE WETLAND PLANT: Occurs almost always (probability > 99%) in wetlands.
FACW = FACULTATIVE WETLAND PLANT: Usually occurs in wetlands (probability 67% - 99%).
FAC = FACULTATIVE PLANT: Has a similar probability (probability 33% - 67%) of occurring in both wetlands and non-wetlands.
FACU = FACULTATIVE UPLAND PLANT: One that occurs less often in a wetland as compared to a non-wetland (1% - 33% probability of occurring in a wetland).

Stratum	Scientific Name	Common Name	Wetland Indicator Value
Tree	*Pinus contorta*	Lodgepole Pine	FAC
Herb	*Achillea millefolium*	Common Yarrow	FACU
	Agrostis exarata	Spike Bentgrass	FACW
	Agrostis scabra	Rough Bentgrass	FAC
	Alopecurus aequalis	Foxtail	OBL
	Aster sp.	Aster	--
	Calamagrostis canadensis	Blue-joint Reedgrass	FACW+
	Cardamine breweri	Brewer's Bittercress	FACW+
	Camassia quamash	Small Camass	FACW
	Carex raynoldsii	Raynold's Sedge	FACU
	Carex pellita	Wooly Sedge	OBL
	Carex praegracilis	Clustered Field Sedge	FACW
	Carex praticola	Meadow Sedge	FACW
	Chamerion angustifolium	Fireweed	FACU+
	Collinsia parviflora	Blue-eyed Mary	NI
	Collomia linearis	Narrow-Leaved Collomia	FACU
	Deschampsia cespitosa	Tufted Hairgrass	FACW
	Eleocharis flavescens var. thermalis	Yellow Spikerush	OBL
	Eleocharis palustris	Creeping Spikerush	OBL
	Epilobium ciliatum	Hairy Willowherb	FACW-
	Equisetum arvense	Field Horsetail	FAC
	Festuca idahoensis	Idaho Fescue	FACU
	Fragaria vesca	Wood Strawberry	NI
	Galium boreale	Northern Bedstraw	FACU
	Geum macrophyllum	Large-Leaf Avens	FACW-
	Hierochloe odorata	Sweetgrass	FACW+
	Hordeum brachyantherum	Meadow Barley	FACW-
	Juncus tenuis	Rush	FACW-
	Luzula multiflora	Common Woodrush	FACU
	Maianthemum stellatum	Starry False Lily of the Valley	FAC-

Stratum	Scientific Name	Common Name	Wetland Indicator Value
	Mentha arvensis	Field Mint	FACW-
	Mertensia ciliata	Streamside Bluebells	FACW+
	Mimulus guttatus	Common Monkey Flower	OBL
	Perideridia montana	Montana Yampah	FAC
	Phleum alpinum	Alpine Timothy	FACW-
	Phleum pretense	Timothy Grass	FAC-
	Poa palustris	Fowl Bluegrass	FAC
	Poa pratensis	Kentucky Bluegrass	FAC
	Polygonum bistortoides	American Bistort	FACW
	Potentilla concinna	Elegant Cinquefoil	--
	Potentilla diversifolia	Varileaf Cinquefoil	FACU
	Potentilla gracilis	Northwest Cinquefoil	FAC
	Ranunculus sp.	Buttercup	--
	Rorippa palustris	Bog Yellowcress	OBL
	Senecio hydrophilus	Water Ragwort	OBL
	Senecio sphaerocephalus	Ball-Hard Groundsel	FACW
	Sparganium angustifolium	Narrowleaf Bur-Reed	--
	Stellaria longifolia	Stitchwort	FACW
	Taraxacum officinale	Common Dandelion	FACU
	Trifolium hybridum	Alsike Clover	FAC
	Trifolium pratense	Red Clover	FACU
	Veronica americana	American Speedwell	OBL
	Viola sp.	Violet	--
	Viola adunca	Hookedspur Violet	FAC