US Army Corps of Engineers
Walla Walla District

# TWIN BRIDGES SECTION 14
# EMERGENCY STREAMBANK PROTECTION

**RIRIE, IDAHO**

**PM-EC-2010-0001**

## Environmental Assessment

U.S. Army Corps of Engineers
Walla Walla District
Environmental Compliance Section

August 2012

If additional information regarding this document is required, please contact Alex Colter U.S. Army Corps of Engineers, Walla Walla District, at (509) 527-7254, or by email at alex.j.colter@usace.army.mil. Other correspondence can be mailed to:

Alex Colter
Project Manager
U.S. Army Corps of Engineers Walla Walla District
201 North Third Ave.
Walla Walla, WA 99362

## Table of Contents

**Draft FONSI**


1.0 Introduction ..... 1
- 1.1 Background ..... 2
- 1.2 Project Purpose and Need ..... 3

2.0 Measures ..... 4
- 2.1 Streambank Stabilization Measures ..... 4
- 2.2 Abutment Protection Measures ..... 6

3.0 Alternatives ..... 8
- 3.1 Alternative 1: No Action ..... 8
- 3.2 Alternative 2: Riprap Bank Stabilization with Sheet Pile Abutment Protection ..... 9

4.0 Affected Environment and Environmental Consequences ..... 10
- 4.1 Vegetation ..... 10
- 4.2 Wildlife ..... 11
- 4.3 Fish ..... 12
- 4.4 Threatened and Endangered Species ..... 13
- 4.5 Water Quality ..... 14
- 4.6 Floodplains ..... 15
- 4.7 Aesthetics ..... 15
- 4.8 Cultural Resources ..... 17
- 4.9 Recreation ..... 18
- 4,10 Air Quality ..... 19
- 4.11 Wetlands and Areas of Critical Environmental Concern ..... 19
- 4.12 Wild and Scenic Rivers ..... 21
- 4.13 Cumulative Effects ..... 22

5.0 Preferred Alternative ..... 23

6.0 Environmental Laws, Regulations, and Policies ..... 24
- 6.1 National Environmental Policy Act ..... 24
- 6.2 Clean Water Act ..... 24
- 6.3 Clean Air Act ..... 25
- 6.4 Endangered Species Act ..... 25
- 6.5 National Historic Preservation Act (NHPA) ..... 25
- 6.6 Native American Graves Protection and Repatriation Act ..... 26
- 6.7 Fish and Wildlife Coordination Act ..... 26
- 6.8 Migratory Bird Treaty Act ..... 26
- 6.9 Watershed Protection and Floodplain Management Act ..... 27
- 6.10 Wild and Scenic Rivers Act ..... 27
- 6.11 Executive Order 11988 Floodplain Management ..... 28

## Table of Contents (continued)

6.12 Executive Order 11990 Protection of Wetlands .....28
6.13 State and Local Laws, Policies, and Regulations .....28

7.0 Public and Agency Involvement .....28
7.1 Agency Consultation and Coordination.....28

8.0 References .....29

## Figures

1 Location of Twin Bridge Emergency Streambank Protection Project .....1
2 South Fork Snake River at Twin Bridges.....3
3 Typical section of proposed riprap revetment.....5
4 Typical section of proposed gabion revetment with sheet piling.....6

## Table

1 Criteria Matrix for Section 14 Measures.....7

## Appendices

**Acronym Glossary**

| | |
|---|---|
| °C | degrees Centigrade |
| ACEC | Area of Critical Environmental Concern |
| ATV | all-terrain vehicle |
| BLM | Bureau of Land Management |
| BMP | Best Management Practice |
| CFR | Code of Federal Regulations |
| cfs | cubic feet per second |
| Corps | U.S. Army Corps of Engineers |
| DEQ | Division of Environmental Quality |
| EA | Environmental Assessment |
| EIS | Environmental Impact Statement |
| ESA | Endangered Species Act of 1973, as amended |
| FONSI | Finding of No Significant Impact |
| GIS | Geographic Information System |
| IBA | Important Bird Area |
| mg/l | milligrams per liter |
| NHPA | National Historic Preservation Act |
| NEPA | National Environmental Policy Act of 1969, as amended |
| NWI | National Wetlands Inventory |
| OHV | off-highway vehicle |
| PL | Public Law |
| ROW | right-of-way |
| SAWQP | State Agriculture Water Quality Planning |
| SRMA | Special Recreation Management Area |
| USC | US Code |
| USFWS | US Fish and Wildlife Service |
| VOC | volatile organic compound |
| YBC | yellow-billed cuckoo |

**DRAFT***

FINDING OF NO SIGNIFICANT IMPACT

# TWIN BRIDGES SECTION 14
# EMERGENCY STREAMBANK PROTECTION
## RIRIE, IDAHO

1. BACKGROUND

The U.S. Army Corps of Engineers (Corps) is proposing to armor the highway embankment and bridge abutment at the North Twin Bridge on the Ririe-Archer Highway near Ririe, Idaho. The purpose of this work is to protect the bridge from streambank erosion created by the increasingly high flows in the South Fork of the Snake River. Flows in the north channel have been progressively moving from the south channel since a flood during 1997. Since that time Madison County has taken various actions, including trying to shift some of the flows back to the south channel by excavating gravel to lower the bed elevation of the south channel. These efforts had little long term effect on flows. The north and south abutments of the bridge have received considerable erosion in the past few years and the south abutment currently in need of immediate repair. Madison County has continually worked to protect the bridge abutments.

2. PURPOSE AND NEED

The purpose of this project is to prevent streambank erosion from damaging or eliminating an important north-south transportation route between Madison and Jefferson Counties in Idaho. The highway, a major transportation route in eastern Idaho, is one of two north-south routes linking Madison and Jefferson Counties. The highway serves as a major farm-to-market transportation route.

The proposed project would, using the Section 14 authority, protect the highway embankment and bridge abutment on the north Twin Bridge. To accomplish this, the south bank around the north bridge needs to be armored and the south abutment must be protected. On July 21, 2009 Madison County requested assistance under Section 14 authority from the Corps as authorized by Public Law (PL) 79-526, Flood Control Act of 1946, Section 14, as amended. The Corps determined there was an imminent threat to the bridge and that the project would qualify for assistance under the Section 14 authority. Any preferred or recommended alternative under the Section 14 authority must be feasible from an engineering standpoint, economically justified and environmentally acceptable.

3. ALTERNATIVES

Several alternatives and options for protecting the bridge were developed and analyzed. These alternatives included: 1) doing nothing (No Action); 2a) Riprap Revetment; 2b) Gabion Revetment; 2) Riprap Bank Stabilization with Sheet Pile Abutment Protection; and 3b) Riprap Bank Stabilization with Gabion Abutment Protection.

4. ENVIRONMENTAL CONSEQUENCES OF THE PREFERRED ALTERNATIVE

The preferred alternative is Alternative 2, Riprap Revetment. This alternative provides adequate protection to the bridge at the lowest cost and meets the purpose and need. This would have a minor

*This DRAFT FONSI has been prepared to reflect the Feasibility Study analysis to date. Additional information may be obtained during public review that will be included in the final decision on the applicability of a FONSI.

impact on wildlife. The loss of vegetation and the addition of riprap would have an effect on the esthetics of the river corridor. Fish would be displaced during construction, but would return to the area soon after construction. There would be no adverse effects on Endangered Species Act (ESA)-listed species. Water quality would be affected as described in the 404(b)(1) analysis. Turbidity levels would likely increase during construction. The environmental consequences of the preferred alternative are detailed in the environmental assessment prepared for this project.

5. COORDINATION

The project was coordinated with the U.S. Fish and Wildlife Service, Idaho Department of Environmental Quality, Idaho Water Resources, Idaho Fish and Game, the Idaho State Historic Preservation Office, Tribal Historic Preservation Office, and the public. The proposed project would be in compliance with the National Historic Preservation Act, Endangered Species Act, and Clean Water Act and would have no adverse impact on any of these categories.

a. Cultural Resources – The Idaho State Historic Preservation Office (SHPO) believes the project will have **no effect** on historic properties based on the information provided, including the revised project plans. However, the recommendation is made that if archaeological remains are discovered during project activities, all work must immediately halt in the area of discovery and the SHPO contacted. The Corps agrees with the SHPO determination and recommendation and adopts both. The Corps received concurrence from the Idaho State Historic Preservation Office on (add date).

b. Endangered Species – Endangered Species Act. An updated endangered species list was obtained from the U.S. Fish and Wildlife Service (USFWS). Based on project information and location and agency responses, the Corps agrees with the assessment that the proposed action will have no effect to threatened or endangered species or critical habitat and adopts this determination. The Corps received concurrence from USFWS on (add date).

c. Water Quality – The Idaho Department of Environmental Quality identified only short term negative effects on water quality. Best Management Practices would be incorporated into all construction activities to minimize impacts. The Corps received water quality certification on (add date).

6. FINDING

Appropriate environmental review and coordination of the proposed project was made along with providing public notice of availability. Upon completion of the public review period, comments will be inserted in Appendix A of this document.

I have taken into consideration the technical aspects of the project, the best scientific information available, public comments, and the determination of the environmental assessment. Based on this information, I determined the proposed action would not significantly affect the quality of the human environment, and an Environmental Impact Statement is not required.

Date:_____

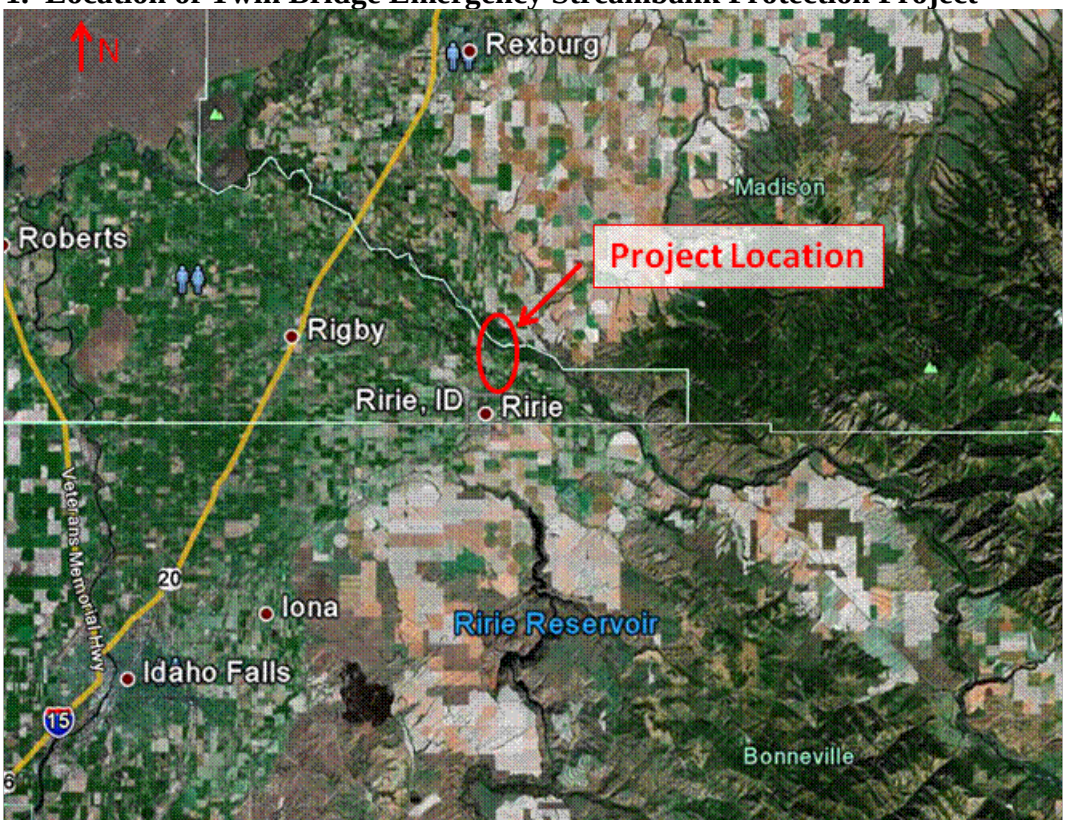
Andrew D. Kelly
Lieutenant Colonel, Corps of Engineers
District Commander

## 1.0 Introduction

The U.S. Army Corps of Engineers, Walla Walla District (Corps), in cooperation with the project sponsor, Madison County, Idaho, proposes to design and construct a streambank stabilization project under the authority of Section 14 of the Flood Control Act of 1946 (Public Law 79-526). Section 14 authorizes the Corps to study, design, and construct emergency streambank works (such as riprap or sheetpile) to protect public services including (but not limited to) streets, bridges, schools, water and sewer lines, National Register sites, and churches from damage or loss by natural erosion. The proposed work would take place on the left (south) bank of the South Fork Snake River, located in Sections 16 and 17, Township 4 North, Range 40 East, Boise Meridian, Madison County, Idaho (See Figure 1).

The Ririe-Archer Highway near the town of Ririe, Idaho is one of two major north-south links between Madison and Jefferson Counties, Idaho, and serves as a major farm-to-market road. Madison County is the fastest growing county in Idaho. Other surrounding communities include Archer, Plano, Salem, Sugar City, and Thorton. Main industries include farming, the Idaho National Engineering Laboratory under the direction of the US Department of Energy, and Brigham Young University - Idaho.

**Figure 1. Location of Twin Bridge Emergency Streambank Protection Project**




## 1.1 Background

This Environmental Assessment (EA) considers environmental effects of various potential alternatives for protecting the highway embankment and bridge abutment of the North Twin

Bridge on the north branch of the South Fork of the Snake River near the town of Ririe, Idaho, from erosive flows. Both the north and south abutments of the bridge have experienced considerable erosion in the past few years. The north channel is currently migrating to the south on the upstream side of the bridge and no protection or armoring has yet been identified to prevent the erosive damage caused by the channel migration. Madison County has made numerous attempts to shore up both the north and south bridge abutments, but the south bank has continued to erode to a point that compromises the integrity of the bridge structure.

There is a system of Federal levees along this reach of the South Fork Snake River between Heise, Idaho, and Roberts, Idaho. This is the longest set of levees in the Walla Walla District of the Corps. As a result of the levees and the completion of Palisades Dam in 1957, the flows have been substantially reduced in this area. However, in June 1997 a flood flow of 43,500 cfs came down the river. In terms of the pre-Palisades Dam hydrology, this was roughly a 20 year event (5%). Now that the river is regulated, the flood flow was in excess of a 500 year event (0.2%). This flood damaged both of the Twin Bridges on the Ririe-Archer Highway, washing out the south bridge and rendering the north bridge unusable. Both bridges were quickly rebuilt in similar configurations, but were built slightly longer than the previous structures. They were founded on driven piles, pile caps, and concrete footers buried beneath the existing river bed. The north bridge consists of two 80.4 foot spans for a total span of 160.8 feet. The south bridge consists of five 80.4 foot spans for a total span of 402 feet. See Figure 2 for an aerial view of the river and bridges.

The river in this reach is a braided-island configuration, which indicates an area where the river has been prone to wandering back and forth across the valley floor. A majority of the river flow has shifted to the north channel since the bridges were reconstructed in 1998. The north bridge was designed to handle 26% of the river flow, but now receives up to 90% of the high flow and 100% of the low flow. Historically the bulk of the flow went to the south channel. The scour potential at both bridges during a 100-year event has proven sufficient enough to expose the pile caps and concrete footers.

In April 2009, Madison County attempted to redirect flow towards its historical south channel course with a partially successful emergency excavation.. Reconstruction and armoring of the north abutment of the North Twin Bridge was completed in early 2010 to protect foundation piles exposed during the 2009 high flows. The south abutment embankment also experienced damaging scour. In March 2011, Madison County installed concrete panels and rip rap on the south abutment. However, high flows during that same year shifted the river course substantially to the south and the higher flow conditions under the bridge became much more adverse to the protection of bridge features. These conditions eroded a majority of the supporting embankment washing away the existing riprap and concrete panels. At present, the south abutment foundation piles are exposed to the river flow.

**Figure 2. South Fork Snake River at Twin Bridges.**

## 1.2 Project Purpose and Need

The purpose of this project is to prevent streambank erosion from damaging or eliminating an important north-south transportation route between Madison and Jefferson Counties in Idaho. The highway, a major transportation route in eastern Idaho, is one of two north-south routes linking Madison and Jefferson Counties. The highway serves as a major farm-to-market transportation route.

The high flows through the North Twin Bridge now greatly exceed the bridge design flow. The 2008 and 2009 high flow events peaked at 20,500 and 24,500 cfs, respectively. Historically, this would have yielded approximately 4,820 and 5,760 cfs based on the design flow split (24% north channel, 76% south channel). Assuming approximately 75% of the flow is now going to the north channel instead of the south channel, the North Twin Bridge may have experienced 14,460 and 17,280 cfs during those events. Comparing these flows to the historical 24% north and 76% south flow split, the North Twin Bridge received the equivalent of 61,530 and 73,530 cfs, respectively. While the overall flow events were on the order of a 20% exceedence flow event (5 year flow), the equivalent values are approximately double the 1% exceedence event (100 year flow).

Because the North Twin Bridge was designed for the historic flow split (24% north, 76% south), the opening is too narrow for the river in its current configuration (75-90% north, 10-25% south). This causes a constriction of the flow, which results in a higher water surface elevation and increased water velocities, leading to localized scour. When combined with the magnitude of

equivalent flows the North Twin Bridge is receiving, this scour has been severe. The north channel has been migrating south, eroding the river bank both upstream and downstream of the bridge.

The Corps determined there was an imminent threat to the bridge and that the project would qualify for assistance under the Section 14 authority. Any preferred or recommended alternative under the Section 14 authority must be feasible from an engineering standpoint, economically justified and environmentally acceptable. The proposed project would, using the Section 14 authority, protect the highway embankment and bridge abutment on the north Twin Bridge. To accomplish this, the south bank around the north bridge needs to be armored and the south abutment must be protected. On July 21, 2009 Madison County requested assistance under Section 14 authority from the Corps as authorized by Public Law (PL) 79-526, Flood Control Act of 1946, Section 14, as amended.

## 2.0 Alternative Development

During development of alternatives, numerous measures were considered to resolve the issue of streambank erosion and bridge protection. Measures identified include riprap, gabions, sheet piles, and concrete panels/revetment matting. Measures were considered individually and in combination, such as the use of riprap and gabions or riprap and concrete panels. The following paragraphs (2.1-2.2) provide details regarding the identified measures and development of the alternatives for a Section 14 Authority. Measures carried forward need to meet the following criteria; (1) engineering feasibility, i.e. preventing streambank erosion from damaging or eliminating the transportation route; (2) economically justified, i.e. consideration of construction, operations and maintenance costs v. benefits; and (3) environmental effects, including construction term environmental impacts and ability to minimize long-term negative effects. Conclusions have been summarized in Figure 3.

### 2.1 Measures for Streambank Stabilization

#### 2.1.1 Riprap Revetment

Riprap protection would include placement of specific size rock, along the shoreline of the highway fill. The riprap would be placed on the upstream side of the highway embankment, around the abutment and along the downstream side of the highway embankment. The rock would be installed on a 2 feet horizontal and 1 foot vertical (2H:1V) slope, requiring slope preparation as described in Figure 3. Geotextile fabric would be installed underneath the riprap to ensure segregation of fine material. An intermediate layer of sand between the riprap layer and fabric would be installed to help distribute the load and prevent tearing of the geotextile fabric. Riprap revetment is relatively inexpensive as compared to gabion construction, requires little design, simple construction, and easily maintained and repaired. The placement of riprap has the least impact on the river as it requires no coffer dams and limited in-water work. Therefore, this measure meets all three screening criteria identified in the previous section.

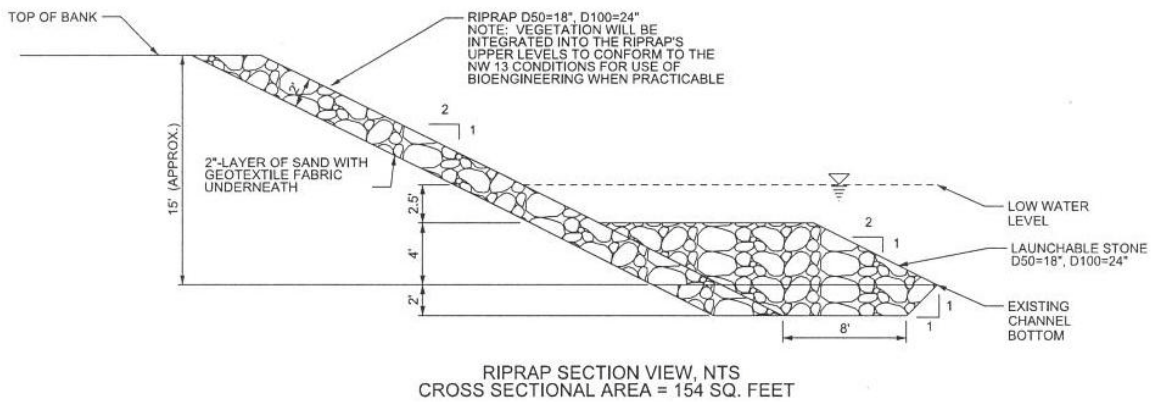



**Figure 3. Typical section of proposed riprap revetment**

### 2.1.2 Gabions

Gabions are welded or woven wire mesh baskets, filled with cobble or boulder material. They are very effective in maintaining stability and protecting stream banks. A gabion revetment would be constructed as shown in Figure 4. Gabion placement would include the upstream side of the highway embankment, around the abutment and on the downstream side of the highway embankment. Placement of gabions for this purpose would not require the construction area to be dewatered. Sheet piles, installed at the toe of the slope would protect the gabion mattress from scour and erosion. Sheet piles are long structural sections, typically made of steel, with a vertical interlocking system, driven into the earth, side by side. Geotextile fabric would be installed underneath the gabions to ensure segregation of backfill material and gabion stones. An intermediate layer of sand between the gabions and fabric would be installed to help distribute the load and prevent tearing of the geotextile fabric. The gabions for this application would be approximately 12 inches thick, requiring average stone size ($D_{50}$) of 3.5 inches.

Gabions utilized for revetment are susceptible to damage during high flow, possibly requiring emergency repairs, and have a larger structural footprint then other identified revetment techniques. This larger footprint would not fall within the identified highway right-of-way and the overall project would increase construction complexity and associated costs. In addition, because there is a requirement to construct a coffer dam and dewater the abutment area during construction, adding associated costs and environmental effects, the use of gabions does not meet any of the three identified screening criteria of being engineering feasible, economically justified, or environmentally sound.

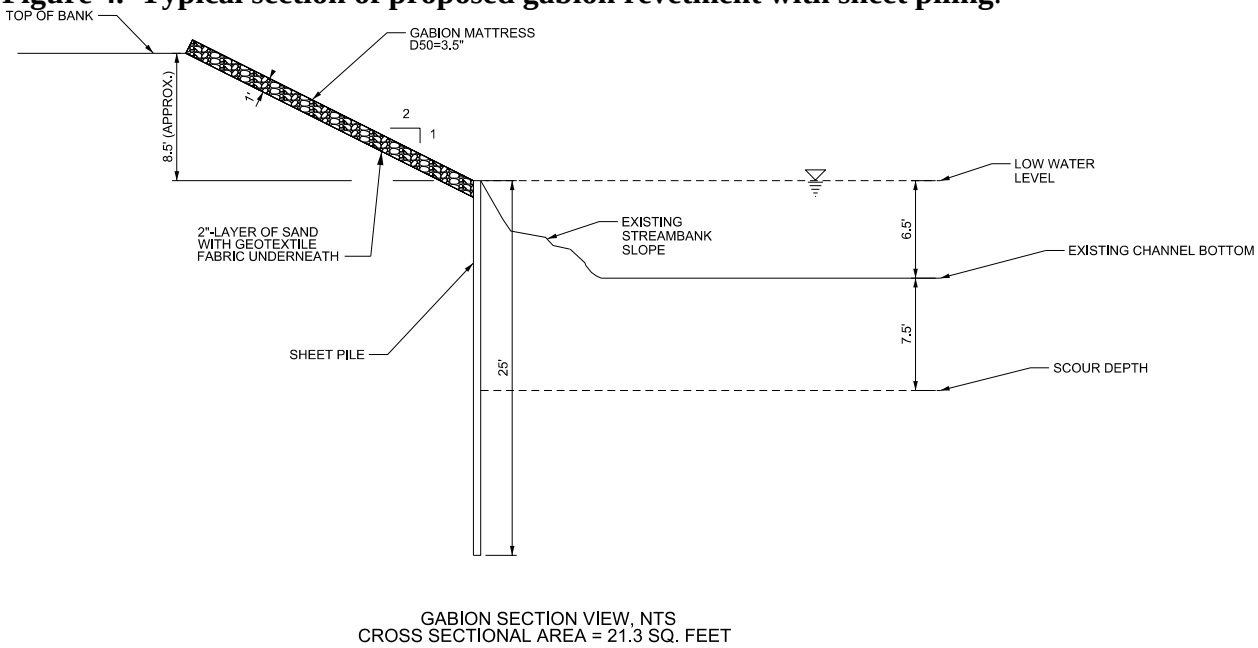
## 2.2 Measures for Enhanced Abutment Protection

These additional abutment protection measures are considered in combination with the embankment stabilization measures to increase strength at the abutment and to increase the cross-sectional area between abutments for flow. Embankment protection measures would be replaced at the abutment with these proposed abutment protection measures.

### 2.2.1 Sheet Pile

Sheet piles are long structural sections, typically made of steel, with a vertical interlocking system, driven into the earth, side by side, that would create a continuous vertical wall of protection for the abutment. The sheet pile would be anchored to assure stability. Sheet pile dimensions are typically narrow for this installation method, allowing the maximum conveyance area for river flow between the abutments, when compared to sloped alternatives such as riprap and some gabion design configurations. Sheet piles are resistant to damage caused by floating debris in the river. The use of sheetpile is engineering feasible, as the dimensions are typically narrow for this installation method, allowing the maximum conveyance area for river flow between the abutments, when compared to gabion design configurations. Sheet pile has been determined to be economically justified as compared to other abutment protection measures. Furthermore, this technique is environmentally sound as the use of sheet pile as abutment protection does not require dewatering during construction.

**Figure 4. Typical section of proposed gabion revetment with sheet piling**.




### 2.2.2 Gabions

Gabions are another viable alternative for abutment protection. The gabion slope would be at or near vertical, providing a large conveyance area for river flow underneath the bridge; however the gabion basket structure would require considerable space. The construction site underneath the bridge would require dewatering to allow construction below the scour depth. This would necessitate a cofferdam to keep the construction area relatively dry. Unlike concrete panels and sheet piles, gabions are susceptible to damage caused by floating debris in the river. The gabions would provide coverage to the entire abutment, and would be securely keyed into both the upstream and downstream riverbank revetments. Geotextile fabric would be placed behind the gabion baskets to allow backfill drainage and ensure segregation of gabion stones and backfill.

Gabions were eliminated from further considerations because they did not meet any of the three criteria necessary to carry the measure forward. Gabions are not engineering feasible because they would not be able to withstand the extreme conditions found under the bridge during high water periods. The measure could not be economically justified, nor would the construction techniques be environmentally sound, as the site would have to be dewatered during the entire construction period.

Gabions utilized for abutment protection are susceptible to damage during high flow, possibly requiring emergency repairs, and have a large structural footprint then other identified abutment protection techniques. This larger footprint would reduce the cross-sectional area under the bridge. In addition, because there is a requirement to construct a coffer dam and dewater the abutment area during construction, adding associated costs and environmental effects, the use of gabions does not meet any of the three identified screening criteria of being engineering feasible, economically justified, or environmentally sound.

### 2.2.3 Concrete Panels/Revetment Matting

Concrete panels or revetment matting would provide coverage to the entire abutment, and would be constructed using 5-7 precast or cast-in-place ”concrete logs” chained together to form a matting. The structure would be anchored into the abutment slope, and securely keyed into the upstream and downstream riverbank revetment. The structured slope would be at or near vertical, providing substantial conveyance area for river flow. The construction site underneath the bridge would be dewatered to allow construction at the scour depth, which would require a cofferdam to keep the construction area relatively dry. Concrete panels are resistant to damage caused by floating debris in the river. Geotextile fabric would be installed behind the concrete panels to allow backfill drainage without eroding away backfill. Concrete Panels/Revetment Matting was eliminated from further considerations because the measure could not be economically justified and construction techniques would not be environmentally sound, as the site would have to be dewatered during the entire construction period.

Precast panels have been used in this area unsuccessfully in the past. Concrete panels require a larger structural footprint then sheet pile, reducing the cross-sectional area under the bridge. In addition, because there is a requirement to construct a coffer dam and dewater the abutment area; adding associated costs, and environmental effects, this measure does not meet the identified screening criteria.

Measures that met all screening criteria were carried forward into the Alternative Section.

**Table 1. Criteria Matrix for Section 14 measures**

| | Engineering Feasible | Economically Justified | Environmentally Sound |
|---|---|---|---|
| **Streambank Stability** | | | |
| - Riprap | Yes | Yes | Yes |
| - Gabions | Yes | No | Yes |
| **Abutment Protection** | | | |
| - Sheet Pile | Yes | Yes | Yes |
| - Gabions | No | No | No |
| - Concrete Panels/Mating | Yes | No | No |

## 3.0 Alternatives

The use of riprap for revetment protection and sheetpile for abutment protection was carried forward into this section. It was determined that sheetpile would be more effective as abutment protection, as sheet pile dimensions are typically narrow for this installation method, allowing the maximum conveyance area for river flow between the abutments, when compared to gabion design configurations. For this reason, Alternative 2 was selected as the "Proposed Action." As a general rule projects must be formulated to reasonably maximize benefits to the national economy, to the environment or to the sum of both. Each alternative plan shall be formulated in consideration of four criteria described in the "Principle and Guidelines Report" (Corps 2009): completeness, efficiency, effectiveness, and acceptability. Completeness is the extent to which the alternative plans provide and account for all necessary investments or other actions to ensure the realization of the planning objectives, including actions by other Federal and non-Federal entities. Effectiveness is the extent to which the alternative plans contribute to achieve the planning objectives. Efficiency is the extent to which an alternative plan is the most cost effective means of achieving the objectives. Acceptability is the extent to which the alternative plans are acceptable in terms of applicable laws, regulations and public policies. Estimated costs are provided in Fiscal Year 2012 prices.

### 3.1 Alternative 1: No Action

As required by the National Environmental Policy Act (NEPA), a "no action" alternative must be considered as part of the Federal planning and decision process.

The "No Action" alternative would likely result in the eventual failure of the North Twin Bridge, and the necessary complete replacement of the bridge after failure occurs. The highway, a major transportation route in eastern Idaho, is one of two north-south routes linking Madison and Jefferson Counties. The highway serves as a major farm-to-market transportation route.

Madison County officials have estimated that only replacing the North Twin Bridge, with no treatment of the migrating banks upstream and downstream of the project, would cost approximately $1,800,000. Further treatment of the banks and abutments would be required as well, in order to protect any new bridge constructed from further migration of the stream channel. This in-kind replacement would not provide a bridge that adequately handles the channel changes that have occurred since 1997, but would only replace it with a structure exactly

like what is currently in place. A rational assumption is loss of the existing bridge will result in the need for a redesigned longer replacement bridge built to avoid problems associated with the existing bridge. The estimated cost of a longer bridge is estimated at $3.5 million. Regardless of the size of a replacement bridge, under the No Action alternative, failure of the existing bridge results in delay and detour costs of $8.9 million per year. The construction schedule for replacement of the bridge, once started, is estimated to be approximately one year. Any delay in completion of a replacement bridge will add significantly to the cost of the No Action alternative. Madison County is sparsely populated; making it unlikely that funding for major repair or a new bridge structure will become available in the near future.
The No Action alternative does not satisfy the project's purpose and need, but will be carried forward for detailed environmental analysis as required by NEPA for baseline comparison purposes for other alternatives.

### 3.2 Alternative 2 (Proposed Action): Riprap Bank Stabilization with Sheet Pile Abutment Protection

Riprap revetment would provide the least expensive option for providing streambank stabilization including the abutment, immediately upstream and downstream of the south bridge abutment. This is the most common revetment for this type of application. The riprap revetment would be constructed as shown in Figure 3. Based on an average flow velocity of 9 ft/s, the average stone size ($D_{50}$) would be 18 inches and riprap thickness would be approximately 24 inches. The revetment would extend south, approximately 900 feet along the east side of the highway fill and south, approximately 100 ft along the west side of the highway fill. Riprap would be installed on a 2H:1V slope, requiring slope preparation. Geotextile fabric and sand would be installed underneath the riprap. Rock would be obtained from a local commercial source, trucked to the bridge site or stockpiled nearby and placed by excavator or like equipment. This work could likely be accomplished with minimum intrusion on the river and no dewatering effort. Future toe scour would be mitigated by constructing a thickened toe, using launchable stone[1] placed directly in the river.

The upstream and downstream riprap would be keyed into the sheet pile structure. A continuous steel interlocking vertical wall would be constructed adjacent the south shore abutment to protect the bridge from high flows, high velocities and debris. This configuration would provide the maximum cross sectional area between the abutments to pass water.

It is technically feasible to install the sheet piling under the bridge with minimum intrusion in the river during the construction process. An access road would likely be constructed to provide adequate equipment access below the bridge girders. Sheet piles would not require site dewatering, thereby simplifying the overall construction process, likely minimizing costs, and reducing potential environmental impacts. Multiple sheet piles would be required to drive piles below scour depth. Horizontal welding would be used to splice together sheet piles as they are driven down. Sheet piles would provide coverage to the entire abutment. They would be integrated, or "keyed," into both the upstream and downstream bank revetments in such a way

[1] Launchable stone is stone placed along expected erosion locations, and above the zone of attack. As soil erodes, the stone is undermined, slides down the slope, and halts the erosion.

that the revetment materials would overlap to protect the joint. The total estimated cost is $1,848,000.

Best Management Practices (BMPs) would be followed to limit impacts on the environment. BMPs to be used are:

- All equipment used within 50 feet of the river will be cleaned prior to entering the work area.
- Only the excavator bucket will enter the water.
- Riprap will be placed not dumped into place.
- Equipment will be checked daily for leakage and any repairs will be made outside of the work area.
- Vegetable based oil will be used in the hydraulic systems of equipment working near the water.
- Spill response kits will be available within five minutes of an accidental spill of hydraulic fluid or other oil.

This alternative satisfies the project's purpose and need and will be carried forward for detailed environmental analysis.

## 4.0 Affected Environment and Environmental Consequences

### 4.1 Vegetation

#### 4.1.1 Affected Environment

The Snake River corridor in the vicinity of the Twin Bridges is generally well vegetated. The South Fork Snake River supports the largest riparian cottonwood gallery forest in the West and is among the most unique and diverse ecosystems in Idaho. Riparian vegetation moderates water temperatures, adds structure to the banks to reduce erosion, provides overhead cover for fish, and provides habitat for terrestrial prey species. Some erosion of the river banks due to high flows has occurred in some areas. The work area immediately around the south abutment of the North Twin Bridge has been disturbed in the past so there is little to no vegetation present. The south river bank has begun eroding at an accelerated rate in the past several years. This area has lost riparian vegetation due to the erosion.

#### 4.1.2 Environmental Consequences

- **Alternative 1 – No Action**

  The No Action alternative would have no direct effects on vegetation. Indirectly additional erosion could occur to the south bank of the north channel of the Snake River. This would reduce the amount of vegetation on the river bank. The amount of vegetation lost would depend on how much erosion occurs. The Snake River corridor near the North Twin Bridge is fairly well vegetated. The No Action alternative could add to the cumulative effects on vegetation due to the loss of vegetation caused by erosion.

- **Alternative 2 – Riprap Bank Stabilization with Sheet Pile Abutment Protection (preferred alternative)**

  This alternative would have a direct effect on vegetation. Some vegetation would be removed to install riprap along the highway embankment. Up to 0.7 acres of vegetation could be removed from along the highway embankment near the North Twin Bridge. This alternative would add to the cumulative effects on vegetation.

## 4.2 Wildlife

### 4.2.1 Affected Environment

The Snake River corridor is home to 126 bird species, including 21 raptors, which resulted in its "National Important Bird Area" designation. The river also supports the largest native cutthroat trout fishery outside of Yellowstone National Park. The corridor is also home for an impressive array of other wildlife including moose, deer, elk, mountain lions, black bears, bobcats, coyotes, river otter, beaver, fox, and mink.

Of the 243 bird species breeding in Idaho, 113 (46%) use riparian habitat as nesting habitat. Many of the other 130 species also use riparian habitat as a source of water, as migratory corridors, or for other purposes. Of the 119 neotropical migratory land birds, 68 (57%) use riparian habitat. Many of Idaho's mammals, amphibians, reptiles, fish, and mollusks also depend on riparian habitat for survival. Riparian forests are biologically diverse and productive systems compared to adjacent uplands. Shrub-riparian habitat, while lacking the tree layer of the forests, still tends to have higher avian diversity than the surrounding uplands, especially in arid and semi-arid areas. Bald eagles are a common winter resident in the geographic area of this project, but reproduction or non-winter use is not known.

"The yellow billed cuckoo (YBC) was designated as a Candidate species in the western U.S. including Idaho (66 FR 143. 386111-38626). This neotropical migrant species is considered an obligate riparian nester which breeds only in streamside forests especially if willow and cottonwood stands area dominant. They prefer mature cottonwood-willow forests and are dependent upon a dense willow understory and cottonwood overstory. The YBC are also found in open woodlands with thick undergrowth and deciduous riparian woodlands" (IMNH 2002). The YBC is known to inhabit the cottonwood corridor along the South Fork.

"There are 5 bald eagle nests within 5 miles of the project area. Two of them are within 1 mile of the project area. Cress Creek nest was established in 1988, has an average production of 1.29 young annually and has been occupied for 21 years and is 0.78 miles upstream. Lowder Slough nest was established in 2003, has an average production of 1.57 annually and has been occupied 7 years and is 0.36 miles south" (BLM, 2011).

### 4.2.2 Environmental Consequences

- **Alternative 1 – No Action**

There would be no direct effects to wildlife if the no action alternative were selected. Indirect effects could occur if the south bank of the river were to continue to erode. Vegetation, and thus wildlife habitat, would be lost.

The quantity of vegetation lost would be unpredictable. Wildlife are affected by a wide range of factors. However the area around the bridge is a small part of the habitat for any species. There would be little to no cumulative effects from the no action alternative.

- **Alternative 2 – Riprap Bank Stabilization with Sheet Pile Abutment Protection (preferred alternative)**

  Some direct impacts from this alternative may occur during construction. Very little wildlife habitat would be impacted by construction because the existing highway embankment is clear of wildlife habitat. The noise and construction activity would cause most wildlife to avoid the area during construction. Some wildlife may become habituated to the disturbance. Small mammals, reptiles and amphibians may be inadvertently injured or killed by the construction activities. Most animals would leave the area as construction progresses. Care would be needed so wildlife is not unduly harassed or injured during the construction process. Indirect effects could occur from the altered river bank. Animals would have to traverse the riprap slope to reach the water. Small mammals such as mink could benefit from the spaces provided by the riprap. Cumulative effects to wildlife are expected to be very minor. Some wildlife may be displaced by the construction activities, but would find suitable habitat nearby.

## 4.3 Fish

### 4.3.1 Affected Environment

Fish found within the project area are representative of those species found within the Columbia Basin. Native species include Yellowstone cutthroat trout, mountain whitefish, Utah chub, Utah sucker, mountain sucker, longnosed dace, speckled dace, redside shiner, mottled sculpin, shorthead sculpin, and Paiute sculpin. Introduced species include rainbow trout and brown trout. In general the South Fork provides most of the elements needed for good cold water fisheries habitat as demonstrated by its appeal as a destination fishery. The native and introduced salmonid populations are for the most part in good condition. The Yellowstone cutthroat trout is a BLM Type 2 Special Status Species. It has been petitioned for listing, but determined not warranted.

Non-game fish, such as the redside shiner, Utah chub and speckled dace, are not actively managed by the Idaho Department of Fish and Game through regulation, but are an important food source for a variety of fish and wildlife species and necessary for a healthy aquatic ecosystem. These smaller non-game fish are native to the area and are rather limited in their distribution.

### 4.3.2 Environmental Consequences

- **Alternative 1 – No Action**

  No direct effects to fish from the no action alternative are expected. Indirectly, fish could be impacted if the south bank continues to erode and remove riparian vegetation. Food and shade provided by the vegetation would be lost. Many factors such as flooding, water quality, and fishing affect fish in the Snake River. However, the no action alternative is not expected to add to the cumulative effects on fish.

- **Alternative 2 – Riprap Bank Stabilization with Sheet Pile Abutment Protection (preferred alternative)**

  Fish could be directly impacted by Alternative 2. Some riprap would be placed below the water line, which could cause fish to leave the area. Fish would be displaced from the work area for several weeks. This is not expected to have a major impact on them. Fish would return to the work area as soon as work is complete. The riprap would likely be maintained with no vegetation into the future. This impact is expected to be minor and would have a small effect on fish populations. Other construction projects within this reach of the Snake River are not known. Fish are impacted by many actions including, competition with nonnative species, harvest, poor water quality, and loss of habitat. Impacts associated with alternative 2 would add to the cumulative effects on fish.

## 4.4 Threatened and Endangered Species

### 4.4.1 Affected Environment

There are two Endangered Species Act (ESA) listed species that may be found within Madison County. These species are Canada lynx and Ute-ladies' tresses. A biological assessment was prepared and found that there would be no effect on Canada lynx. The proposed project may affect, but would not likely adversely affect Ute ladies'-tresses.

The nearest Ute ladies'-tresses population occurs at the Twin Bridges area, downstream and upstream of the proposed project site. The population is near the Twin Bridges Campground (downstream) and upstream ½ mile from the project site. Typical habitat for this species has sub-irrigated, alluvial soils along streams and rivers and their floodplains, including abandoned river channels, wet meadows, and open seepy areas. In Idaho, Ute ladies-tresses is known from several wetland community types, the most common two being the *Salix exigua*/mesic graminoid and mesic graminoid types. Others include the *Elaeagnus commutata*/mesic graminoid; *Eleocharis rostellata*; *Equisetum* spp., and *Carex lanuginosa* types. Commonly associated species include *Agrostis stolonifera*, *Poa pratensis*, and *Muhlenbergia richardsonis*.

The South Fork Snake River is a tributary to the Snake River. There are no endangered fish species in this section of the river. Anadromous fish species are unable to make it past Hells Canyon Dam on the Snake River.

### 4.4.2 Environmental Consequences

- **Alternative 1 – No Action**

  The no action alternative would not have any direct effects on Ute ladies'-tresses or Canada lynx. Indirect effects to Ute ladies'-tresses or Canada lynx are also not likely to occur. Ute ladies'-tresses is not known to occur on the south bank of the north channel of the Snake River, but it can be found a short distance south of the proposed project area. Canada lynx are also not known to inhabit the area. Cumulative effects to Ute ladies'-tresses or Canada lynx are not expected.

- **Alternative 2 – Riprap Bank Stabilization with Sheet Pile Abutment Protection (preferred alternative)**

  Alternative 2 would not directly, indirectly, or cumulatively affect Ute ladies'-tresses or Canada lynx.

## 4.5 Water Quality

### 4.5.1 Affected Environment

The South Fork Snake River from the Wyoming state line to Heise, and from Heise to Roberts (below the confluence with Henrys Fork) are designated by the Division of Environmental Quality (DEQ) as Special Resource Waters. Special Resource Waters are specific segments or bodies of water recognized as needing intensive protection to preserve outstanding or unique characteristics, or maintain current beneficial uses. The South Fork Snake River is currently designated by DEQ for the following beneficial uses: domestic water supply, agriculture water supply, coldwater biota, salmonid spawning, and primary and secondary contact recreation (Drewes, 1991). The South Fork of the Snake River at this location is not on the 2008 303(d) list of water quality-limited streams. Water quality along this reach is generally good, supporting a variety of trout and other aquatic species.

The mean water temperature of the reach was 7.25$^{o}$C and the range was 0-23.0$^{o}$C. pH ranged from 6.5 to 8.8 with a mean of 7.9. Dissolved oxygen ranged from 7.8 to 13.6 mg/l, with a mean of 10.4 mg/l (Milligan et al., 1983).

### 4.5.2 Environmental Consequences

- **Alternative 1 – No Action**

  There would be no direct effects to water quality caused by the no action alternative. Indirect impacts could occur if the south river bank were to continue to erode. Turbidity would increase while the erosion was occurring. Cumulative effects to water quality are not expected from the no action alternative.

- **Alternative 2 – Riprap Bank Stabilization with Sheet Pile Abutment Protection (preferred alternative)**

  Work at and under the bridge to drive sheet pile could generate slightly more turbidity than the riprap revetment alone. The increase in turbidity should be minimal because flows through the bridge are relatively high, not allowing much fine sediment to settle in the area. Indirectly there should be less frequent rises in turbidity because the riprap and sheet pile would halt erosion of the river banks and material around the bridge abutments. Cumulative effects to temperature could occur. Any raise in water temperature would be very small. Permits under sections 401 and 404 of the Clean Water Act will be required for this alternative.

## 4.6 Floodplains

### 4.6.1 Affected Environment

The Snake River floodplain in the area of the Twin Bridges lies in a braided-island configuration. However, all of the water is forced to go through the bridges. The river has shifted to mainly the north channel. With the extra water flowing in the north channel, the channel is trying to widen by eroding the river banks. The flow is still restricted to going through the bridge. The floodplain of the north channel is also widening. Up and down the South Fork, however, the floodplain generally has been greatly reduced by Palisades Dam and the levee system.

### 4.6.2 Environmental Consequences

- **Alternative 1 – No Action**

  The no action alternative would not have a direct effect on the floodplain. Indirect effects could occur as the river erodes the river banks, widening its channel. No cumulative effects to the floodplain would occur.

- **Alternative 2 – Riprap Bank Stabilization with Sheet Pile Abutment Protection (preferred alternative)**

  Alignment of the riprap would be along the highway embankment and have no direct effects on the floodplain.

## 4.7 Aesthetics

### 4.7.1 Affected Environment

Important visual resources are those sensitive areas viewed from roads and highways with relatively heavy use, communities, recreation areas, recreational trails, the river, and other areas where the public would spend time viewing a particular scene. In the Heise area the observer would move into a transition zone where sagebrush can be seen on the gentle slopes surrounding the river. From this point downstream the observer would notice more developments along the

shore including diversions and bridges. The lower stretch of the river is all floodplain with large stands of old growth cottonwoods. Much of the river frontage has limited access due to surrounding private land. The river is also more braided through this stretch. The Twin Bridges are located on the Ririe-Archer Highway approximately four miles north of Ririe, Idaho. Ririe is located about 17 miles northeast of Idaho Falls. Near the proposed project area Twin Bridges and Lorenzo Bridge are the only two bridges that interrupt the landscape.

This part of the river is primarily used by fishermen fishing from the river. The existing vegetation is high quality riparian habitat. The river is highly braided creating many well vegetated islands. There is a campground immediately to the south of the north Twin Bridge. The area has many trees and undergrowth. There are deer and moose in the area and even bears and mountain lions have been sighted from time to time. It is also a great area for bird watching.

The South Fork country looks the way it does today because of geological events that took place up to several hundred million years ago. Look to the east of the South Fork and you'll see the Snake River Mountain Range, where the tallest peaks east of the river rise more than 9,000 feet. On the south side of the river, the Swan Valley Range rises from Antelope Flats, with mountains reaching about 7,000 feet. Sedimentary rock, carried by water 400 million years ago, is the building blocks of these mountains.

Antelope Flats, a long, broad bench above the river, formed when volcanoes oozed basalt lava in a series of eruptions about two million years ago. The lava blocked the flow of the South Fork for a time, flooding much of the upper river valley. The river eventually burst through and carved its way across the lava, forming the South Fork canyon.

### 4.7.2 Environmental Consequences

- **Alternative 1 – No Action**

  Direct effects from the no action alternative include leaving an eroded river bank upstream and downstream of the North Twin Bridge. Most people passing over the bridge in vehicles are not likely to see the damage. Boaters floating through the area would likely notice the eroded and unstable appearing shoreline and may be somewhat concerned about the long term stability of the bridge. Indirect effects that could be caused by the no action alternative include washing out the south bridge abutment during high flows and causing damage to the bridge which could appear unpleasant and uninviting. Cumulative effects to aesthetics/visual resources are difficult to predict. The amount of erosion along the rest of the river is unknown. If the erosion along the river is isolated to just around the bridge, people’s perception of the problem would likely be higher than if erosion along the river is widespread. Most people would be passing the bridge in automobiles and would not notice the damage.

- **Alternative 2 – Riprap Bank Stabilization with Sheet Pile Abutment Protection (preferred alternative)**

Alternative 2 would have sheet pile driven in front of the south abutment under the bridge. This would be most visible during construction which would last up to two weeks. No indirect impacts were identified. Cumulative effects on aesthetics would be much the same as Alternative 1.

## 4.8 Cultural Resources

### 4.8.1 Affected Environment

Cultural resources are locations of human activity, occupation, or use. Cultural resources is a broadly defined term meant to include archaeological sites buried beneath the ground surface and aboveground, built structures and features. Cultural resources include archaeological sites, places where important events occurred, buildings, structures, objects, travel routes, and other physical manifestations created by human groups who occupied and used the landscape.

In addition, the broad definition of cultural resources under certain laws (e.g., the National Historic Preservation Act (NHPA) which refers to cultural resources as historic properties) includes places of traditional cultural and religious importance to Native American and other ethnic groups. Such traditional cultural properties and places can include natural features, plant or mineral gathering locations, hunting or fishing locations, or geographic areas that are considered to be important to a culture, subculture, or community associated with traditional life ways or religious practices.

Cultural resources are commonly divided into one of two broad time periods. The Prehistoric or Pre-contact Period refers to the time before circa 1800, when Euro-American settlers came into contact with native peoples in Idaho; the Historic Period in Idaho refers to the time after 1800. In general, identified cultural resources in the planning area reflect the long prehistoric-pre-contact use of the area by native peoples, historic era exploration and access to the west, settlement, farming, and grazing activities, and the continuity of Native American cultural traditions and practices until modern times.

The proposed project is located in an area where cultural properties could be found. However, extensive disturbance caused by the construction of the bridge is likely to have destroyed any cultural deposits around the bridge in the project area. Erosion of the stream bank would also destroy any cultural deposits present.

### 4.8.2 Environmental Consequences

- **Alternative 1 – No Action**

  There would be no direct effects to cultural resources from the No Action Alternative. Indirect effects from the no action alternative could occur if the south river bank continues to erode and cultural resources were present. No cumulative effects on cultural resources are expected from the no action alternative.

- **Alternative 2 – Riprap Bank Stabilization with Sheet Pile Abutment Protection (preferred alternative)**

  No direct, indirect, or cumulative effects are expected from excavation of the high way embankment and placement of riprap, but if cultural material is discovered during the project, work would stop until the find could be evaluated by members of the Corps, Walla Walla District, and the BLM archaeological staff. A cultural resources analysis and effect determination was prepared and sent to the Idaho State Historic Preservation Office (See Appendix A). Their response is pending.

## 4.9 Recreation

### 4.9.1 Affected Environment

The public lands along the South Fork Snake River are managed by the BLM as a Special Recreation Management Area (SRMA). The SRMAs are created where there are demands for specific structured recreation opportunities. The SRMAs proactively produce recreation opportunities ensuring specific activities, experiences and benefits are realized. The South Fork provides a wide spectrum of recreation activities, which include but are not limited to: fishing, boating, developed and undeveloped camping, hiking, hunting, mountain biking, motorized recreation, and bird watching.

Among recreationists throughout the country, the South Fork is known as a premier blue ribbon trout fishery. More than 300,000 visitors each year enjoy fishing, camping, hiking, and boating. There are ten developed boat access sites, three developed campgrounds, numerous dispersed sites, and a number of private facilities along this stretch of river. Nearby BLM boat access sites include Conant, Byington, and Lorenzo.

Less than ½ mile from the project area is the Twin Bridges Boat Access and Campground, managed by Madison County. During high water flows, the boat access is useable. By July, the boat access becomes unusable by boats because of limited water flows in the channels that access the ramp. The campground is utilized year-round and the public can enter the dry river channels with OHV's through the campground and boat access during low water periods.

### 4.9.2 Environmental Consequences

- **Alternative 1 – No Action**

  No direct effects to recreation from the No Action Alternative have been identified. There could be indirect effects to recreation if the bridge were to fail. The damaged bridge could impede recreational boaters and fishermen. Cumulative effects could occur if the bridge is damaged and other roads in the area are also damaged or flooded, restricting access to recreation facilities.

- **Alternative 2 – Riprap Bank Stabilization with Sheet Pile Abutment Protection (preferred alternative)**

Under Alternative 2, a small amount of direct effects to recreation could occur during the construction period. Impacts would be similar to Alternative 2a. Vehicle access past the construction site could be delayed for short periods. Boaters floating through the area should not be impacted. No indirect effects to recreation from alternative 2 could be identified. Cumulative effects from protecting around the south abutment are unexpected.

## 4.10 Air Quality

### 4.10.1 Affected Environment

Air quality in Madison County is generally good because of its rural nature. There are minor amounts of fugitive dust generated by road traffic and construction. There are also low levels of carbon monoxide generated by highway vehicles. Solvent utilization and highway vehicles also add to the volatile organic compounds (VOC) levels. Other impacts to air quality include dust from agriculture, vehicle emissions, wood stove use and wildland burning. When smoke from burning is in combination with atmospheric conditions that lead to an inversion, air quality conditions can decline for days to weeks at a time. This is most likely to occur during the height of wildfire season in late summer and fall and again in winter when wood stove use is at its highest.

### 4.10.2 Environmental Consequences

- **Alternative 1 – No Action**

  The no action alternative would not have any direct, indirect, or cumulative impacts on air quality.

- **Alternative 2 – Riprap Bank Stabilization with Sheet Pile Abutment Protection (preferred alternative)**

  Alternative 2 would have a small amount of direct impact on air quality from the operation of trucks and equipment. This additional impact is not likely to be noticed. No indirect impacts are anticipated. The area around the work site is rural so any impact to air quality is not expected to add to the cumulative effects on air quality.

## 4.11 Wetlands and Areas of Critical Environmental Concern

### 4.11.1 Affected Environment

The Snake River corridor near the proposed work site lies in a braided section of the Snake River. This area has many wetland features associated with the river. The National Wetlands Inventory (NWI) shows freshwater forested/shrub wetlands near the North Twin Bridge. These mapped areas would not be affected by the proposed project. Riparian-wetland habitat borders the river. The size of the riparian-wetland has increased in recent years due to the additional water flowing in the north-channel and floodplain.

The riparian-wetland vegetation along the South Fork of the Snake River in the project area is dominated by an overstory of narrowleaf cottonwood, red-osier dogwood, willow, silverberry, box elder, and juniper, with an understory of Nebraska sedge, cattail, and quackgrass. Musk thistle, spotted knapweed, and hounds tongue are present, but they make up less than one percent of the total vegetative canopy cover. The riparian vegetation along this river reach is in proper functioning condition. The vegetative cover is excellent at nearly 100%, and the reach is represented by vigorous riparian species.

Designated in 1985, the Snake River Area of Critical Environmental Concern (ACEC) covers approximately 88 miles of river on public lands and includes the South Fork of the Snake River (South Fork) from Palisades Dam to the confluence with the Henrys Fork of the Snake River (Henrys Fork), the Henrys Fork from the confluence to St. Anthony, Idaho, and the main stem of the Snake River (Main Snake) from the confluence south to Market Lake Canal below Lewisville Knolls. The Twin Bridges project represents a very small portion of the 20,282-acre ACEC.

The Snake River ACEC was designated with the intent to recognize and conserve a unique cottonwood ecosystem, scenic values, bald eagle habitat, and other wildlife species and their habitats. The river flows through some of the most valuable terrestrial and aquatic wildlife habitat in Idaho. Unique geologic features, wildlife, rare plants, and a cottonwood gallery forest make the ACEC an important ecological area.

### 4.11.2 Environmental Consequences

- **Alternative 1 – No Action**

  The no action alternative would have no direct, indirect, or cumulative impacts on wetlands. This alternative would not impact the values for which the 20,282-acre Snake River ACEC was designated.

- **Alternative 2 – Riprap Bank Stabilization with Sheet Pile Abutment Protection (preferred alternative)**

  Alternative 2 would have no direct, indirect, or cumulative impacts on wetlands. This alternative would not impact the values for which the 20,282-acre Snake River ACEC was designated.

## 4.12 Wild and Scenic Rivers

### 4.12.1 Affected Environment

The South Fork Snake River from Palisades Reservoir to its confluence with the Henrys Fork meets the criteria for possible inclusion in the National Wild and Scenic Rivers System. The South Fork is an eligible river because of outstandingly remarkable values including a unique cottonwood ecosystem, bald eagle habitat, other wildlife habitat, high scenic quality, and recreation opportunities. The South Fork adjacent to the project area has a tentative

classification of “recreational”. Classification represents an inventory of existing conditions. Recreational rivers are those rivers or sections of rivers that have some existing impoundments or diversions, with shorelines or watersheds with some development and substantial evidence of human activity, and are readily accessible by road. Further, the State of Idaho designated the South Fork as a state “Recreational” river through their comprehensive state water planning process.

When a river segment is determined eligible and given a tentative classification (wild, scenic, and/or recreational), its identified outstandingly remarkable values shall be afforded adequate protection, subject to existing rights, and until the eligibility determination is superseded, management activities and authorized uses shall not be allowed to adversely affect either eligibility of the tentative classification. The “outstandingly remarkable” values identified for the South Fork are recreation, fish, wildlife, botanical, cultural and ecological values. Following is a description of these values.

The South Fork attracts recreation visitors not only from the local region, but throughout the entire United States and from around the world. The South Fork is known world-wide for its outstanding fishing/fly-fishing opportunities. It is common for visitors to use both motorized and non-motorized boats to fish, but there are also many who fish from shore. The South Fork provides a blue-ribbon trout fishery that is unique to the entire State of Idaho.

The South Fork is home to one of the strongest and largest spawning population of native Yellowstone Cutthroat Trout in the State of Idaho. The high quality habitat of the tributaries in the South Fork watershed provide excellent spawning habitat. The abnormally high summer flows allow the trout deep pools and plenty of water to take refuge during the warmest time of the year. The cool temperatures of eastern Idaho also help provide a thermal sanctuary for trout species (Idaho Department of Fish and Game, 2007).

The cottonwood forest along the South Fork is the largest continuous cottonwood gallery in the western United States (Merigliano, 1996). The South Fork is also home to river habitat where the threatened Ute Ladies’ Tresses orchid *(Spiranthes diluvialis)* thrives. This unique habitat is home to more than half of Idaho’s bald eagles and one-third of the bald eagles in the regional Greater Yellowstone Ecosystem nest on the South Fork (GYBEWG, 1996). The South Fork is designated as a National Important Bird Area (IBA) where approximately 126 bird species are found, with 21 of those species being birds of prey. Of those 126 bird species, two-thirds of them are Neotropical migrants.

Historic sites in the river corridor include inscription rocks, ranches, cabins, roads, irrigation diversions, ferry landings and the homestead of a famous Idaho writer. These sites are unevaluated and have not been nominated to the National Register of Historic Places.

### 4.12.2 Environmental Consequences

- **Alternative 1 – No Action**

The no action alternative would have no direct, indirect, or cumulative impacts on the possible designation of the reach as a Wild and Scenic River.

- **Alternative 2 – Riprap Bank Stabilization with Sheet Pile Abutment Protection (preferred alternative)**

  Alternative 2 would have a no direct, indirect, or cumulative impacts on the possible designation of the reach as a Wild and Scenic River. Riprap would be placed in areas along the river that have already been altered by anthropogenic actions..

## 4.13 Cumulative Effects

Cumulative effects are any past, present, or reasonably foreseeable future actions affecting the same resources as a proposed action. The area around the proposed work site has likely been a braided island configuration for thousands of years. In 1998 the bridges were rebuilt after they were severely damaged by high flows. Recently there was an emergency dredging project upstream of the proposed project area where the channel was dredged in an attempt to get more flow into the south channel. This action was only partially effective. Now the river has altered its course, with substantially more flows in the north channel. If the preferred alternative is constructed, erosion of the highway embankment would be reduced.

Activities that occur on lands associated with this project, such as, recreational use, campers, hunters, potential ATV use, and real estate development, all affect wildlife, migratory birds and special status species use patterns, the quantity and quality of habitats, and population health. Development of homes and recreational properties on adjacent private lands has reduced value to wildlife habitat through fragmentation of existing habitats.

Eventually, due to constantly changing river channel flows, it is possible that the North Twin Bridge would be reconfigured or replaced with a longer bridge. With the current flow split, with up to 90% of the high flows passing through the north channel, changing the bridge design is possible. Until that time there may be a need to dredge the channel again.

The controlled flow releases in the South Fork, as opposed to the natural river hydrograph, may have reduced the maintenance of side channel habitat which is important juvenile and over wintering habitat for trout. River flow timing and quantity, based on irrigation demands, probably has the largest impacts on aquatic species in the rivers. When flows occur at a time and in sufficient magnitude to flush the river gravels after rainbow trout have spawned, but previous to Yellowstone cutthroat trout spawning, there is a benefit to the cutthroat population in the rivers. The release of cooler water in the summer due to high reservoir levels may directly benefit species by providing cooler, more oxygenated water in the summer. However, if reservoir levels are low, summer discharge temperatures may be higher with lower oxygen level and may stress fish population levels. Return irrigation water is also a concern. This water transports increased sediment loads and residues from irrigated fields. These flows may carry pesticides and herbicides that are toxic to aquatic species along with fertilizer residues.

Many factors contribute to the integrity of the riparian-wetland areas associated with the proposed project area. Activities such as road building, vegetation treatments, OHV traffic, mountain biking, horseback riding, developed and dispersed camping, unimproved boat ramps, parking areas, human waste, other dispersed recreational uses, controlled releases from Palisades Dam, irrigation diversions, development, clearing, and land uses resulting in a reduction of disturbance to the riparian/wetland vegetation (e.g., grazing non-use in adjacent allotments, conservation easements, conservation buyers), and similar activities on adjacent federal and private lands, all affect the character of riparian-wetland communities. Roads, trails, and off-site logging in the upper portion of the drainage may introduce sediment and seed sources to the river and other wetland areas and thus, may slightly alter the vegetative community.

- **Reasonably Foreseeable Future Actions**

  There are many factors that put pressure on the resources within the proposed project area. The beauty, recreation opportunities, and popularity of the planning area draw many visitors. Additional population growth in Bonneville, Fremont, Jefferson, and Madison counties is anticipated and out-of-area visitation has been on an upward trend for over a decade. These factors would likely result in additional demand for recreational opportunities.

  The effects of the proposed action are expected to vary widely by resource. For all of the resources, effects would be long lasting. The riprap would likely be in place for many years. All of the past and present actions discussed above are expected to persist through this time frame, though the relative intensity of these actions could vary.

## 5.0 Preferred Alternative

Alternative 2 is the recommended/preferred alternative. This alternative will protect the south shore highway fill upstream and downstream and will armor the south shore abutment. It provides the lowest cost shoreline revetment, primarily due to relatively easy construction access, and the least environmentally invasive structural component to protect the abutment. There is Federal interest in pursuing this project, and the Benefit/Cost ratio further justifies the selection of Alternative 2. It is recommended that this study move forward to the next steps (construction plans and document preparation) for implementation of this solution.

## 6.0 Environmental Laws, Regulations, and Policies

Section 6 identifies and discusses the legal, policy, and regulatory requirements with respect to the proposed project. Summaries of compliance and coordination activities for each of the laws, policies, or regulation are provided and pending compliance actions are identified.

### 6.1 National Environmental Policy Act

The Corps prepared this EA and circulated it to agencies and the public for review and comment. The Corps identified no impacts significantly affecting the quality of the human environment prior to distribution of the EA. If no such impacts are identified during the public review

process, compliance with NEPA would be achieved upon the signing of a Finding of No Significant Impact (FONSI). A draft FONSI will be circulated with the EA for review and comment. However, if such impacts are identified during the public review, an Environmental Impact Statement (EIS) would be required. Completion of an EIS and the signing of a Record of Decision would then achieve compliance with NEPA.

## 6.2 Clean Water Act

The Federal Water Pollution Control Act (33 U.S.C. §1251 et seq., as amended) is more commonly referred to as the Clean Water Act. This act is the primary legislative vehicle for Federal water pollution control programs and the basic structure for regulating discharges of pollutants into waters of the United States. The act was established to restore and maintain the chemical, physical, and biological integrity of the Nation's waters and sets goals to eliminate discharges of pollutants into navigable water, protect fish and wildlife, and prohibit the discharge of toxic pollutants in quantities that could adversely affect the environment. The act has been amended numerous times and given a number of titles and codifications.
Individual 401 water quality certification from the Idaho Department of Environmental Quality has been requested and is expected to be approved prior to construction. See Appendix A for the Corps' request for water quality certification.

Section 404 of the Clean Water Act established a program to regulate the discharge of dredged or fill material into waters of the United States, including wetlands. Activities in waters of the U. S. regulated under this program include fill for development, water resource projects (such as dams and levees), infrastructure development (such as highways and airports) and mining projects. Section 404 requires a permit before dredged or fill material may be discharged into waters of the U. S., unless the activity is exempt from Section 404 regulation. Many normal farming practices are exempt from Section 404. The definition of "fill material" within section 404 of the Clean Water Act was revised in 2002 (33 CFR Part 323). The term "fill material" means material placed in waters of the U.S. where the material has the effect of: 1) replacing any portion of a water of the U.S. with dry land, or 2) changing the bottom elevation of any portion of a water of the U.S. For the preferred alternative, riprap would be placed below ordinary high water, but the project would comply with section 404, though the Corps does not issue itself section 404 permits. See Appendix A for the Corps' 404(b)(1) analysis on water quality.

Section 402 of the Clean Water Act, the National Pollutant Discharge Elimination System (NPDES) program, pertains to discharge of pollutants. No pollutants would be discharged into waters of the U.S. as a result of this action.

## 6.3 Clean Air Act

The Clean Air Act of 1970 established a comprehensive program for improving and maintaining air quality throughout the United States. The goals of the Clean Air Act are achieved through permitting of stationary sources, controlling the emission of toxic substances from stationary and mobile sources, and establishing National Ambient Air Quality Standards. The act required the US Environmental Protection Agency to adopt national ambient air quality standards for priority pollutants, which include sulfur dioxide, particulate matter, carbon monoxide, ozone, nitrogen

dioxide, and lead. These standards are designed to protect human health and welfare. Areas in which the air pollutant levels exceed adopted standards for one or more pollutants are considered to be in "non-attainment." In those areas where pollutant levels do not exceed standards are considered to be in "attainment." Air quality in Madison County is 87 on a scale of 100, with 100 being the best (http://www.bestplaces.net/county/idaho/madison).

The proposed action would have relatively minor impacts on air quality from the operation of trucks and equipment. No indirect impacts are anticipated. The area around the work site is rural so any impact to air quality is not expected to add to the cumulative effects on air quality. The proposed action would be in compliance with the Clean Air Act.

## 6.4 Endangered Species Act

Section 7 of the ESA states each Federal agency shall, in consultation with and with assistance of the Secretary, insure that any action authorized, funded, or carried out by such agency is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of critical habitat. A biological assessment has been prepared and submitted to the US Fish and Wildlife Service (USFWS) for informal consultation under the ESA (See Appendix A). Assessment of the potential effects of the preferred alternative upon species listed under the ESA is ongoing. Compliance with the ESA will be documented in a FONSI, unless and EIS is required.

## 6.5 National Historic Preservation Act (NHPA)

The principal federal law addressing cultural resources is the NHPA, as amended (16 US Code [USC] Section 470), and its implementing regulations (36 Code of Federal Regulations [CFR] 800). The NHPA describes the process for identifying and evaluating archaeological and historic properties, for assessing the effects of federal actions on historic properties, and for consulting to avoid, reduce, or minimize adverse effects. The term, historic properties, refers to cultural resources that meet specific criteria for eligibility for listing on the National Register of Historic Places.

The NHPA requires that Federal agencies evaluate the effects of Federal undertakings on historical, archaeological, and cultural resources, and that they consult with the State Historic Preservation Office and other interested parties regarding adverse cultural resource impacts. The Idaho State Historic Preservation Office (SHPO) believes the project will have **no effect** on historic properties based on the information provided, including the revised project plans. However, the recommendation is made that if archaeological items are discovered during project activities, all work must immediately halt in the area of discovery and the SHPO contacted. The Corps agrees with the SHPO determination and recommendation and adopts both. It is expected that the Corps will receive concurrence from the Idaho State Historic Preservation Office prior to construction. See Appendix A for the Corps' cultural resource evaluation and accompanying letters requesting concurrence.

## 6.6 Native American Graves Protection Act

The Native American Graves Protection and Repatriation Act addresses the discovery, identification, treatment, and repatriation of Native American and Native Hawaiian human remains and cultural items (associated funerary objects, unassociated funerary objects, sacred objects, and objects of cultural patrimony).

In the event of an inadvertent discovery during construction the project would be stopped, the appropriate parties contacted, and the requirements of NAGPRA followed.

## 6.7 Fish and Wildlife Coordination Act

In accordance with the Fish and Wildlife Coordination Act, the Corps is required to consult with the USFWS and the lead fish and wildlife agency in the state that the work is to be performed on water resource projects. The Corps has coordinated with both the USFWS and the Idaho Department of Fish and Game to get their input on how to minimize the environmental impacts of the project.

The USFWS was contacted regarding the project, but did not provide any comments pertaining to the FWCA. They reserved their comments for a review under the ESA. See Appendix A for the Corps' letter requesting consultation.

## 6.8 Migratory Bird Treaty Act

The Migratory Bird Treaty Act involves conservation and protection of migratory birds in accordance with treaties entered into between the United States and Mexico, Canada, Japan, and the former Union of Soviet Socialist Republics; must protect other wildlife, including threatened or endangered species; and must restore or develop adequate wildlife habitat. The migratory birds protected under this Act are specified in the respective treaties. In regulating these areas, the Secretary of the Interior is authorized to manage timber, range, agricultural crops, and other species of animals, and to enter into agreements with public and private entities.

Any activities near potential migratory bird nesting sites would be monitored for active nesting prior to disturbance. If active nests are found, work in that area would be delayed until the young birds leave the nest.

The proposed construction will be conducted in winter, outside of nesting season and in an area that would eventually erode. Some trees would be removed, but since the work would be done outside the nesting season there would be no take under the MBTA. Therefore, the proposed action will not result in taking migratory birds, their nests, eggs, or parts thereof.

## 6.9 Watershed Protection and Floodplain Management Act

The purpose of the Watershed Protection and Flood Prevention Act is to protect watersheds from erosion, floodwater, and sediment damages. The Act provides assistance programs to local organizations for protection of watersheds including flood control. Alternatives considered for

this project would maintain designed levels of flood protection and improve natural floodplain values in the long term, and would not encourage development in the floodplain. The proposed project is in compliance with the Act.

### 6.10 Wild and Scenic Rivers Act

The National Wild and Scenic Rivers System was created by Congress in 1968 (PL 90-542; 16 U.S.C. 1271 et seq.) to preserve certain rivers with outstanding natural, cultural, and recreational values in a free-flowing condition for the enjoyment of present and future generations. The Act is notable for safeguarding the special character of these rivers, while also recognizing the potential for their appropriate use and development. It encourages river management that crosses political boundaries and promotes public participation in developing goals for river protection. Rivers may be designated by Congress or, if certain requirements are met, the Secretary of the Interior. Each river is administered by either a federal or state agency. Designated segments need not include the entire river and may include tributaries. For federally administered rivers, the designated boundaries generally average one-quarter mile on either bank in the lower 48 states and one-half mile on rivers outside national parks in Alaska in order to protect river-related values.

This reach of the South Fork Snake River was determined to be eligible for inclusion in the National Wild and Scenic Rivers System and the segment has a tentative classification of "recreational." Protective management for an eligible river under tentative classification is such that actions that take place would adequately protect identified outstandingly remarkable values, subject to valid existing rights. Authorized uses shall not be allowed to adversely affect either the eligibility or the tentative classification.

The proposed action would be in compliance with the Wild and Scenic Rivers Act as it is impacting only areas that have been previously modified with streambank protection works.

### 6.11 Executive Order 11988 Floodplain Management

This Executive Order outlines the responsibilities of Federal agencies in the role of floodplain management. Each agency shall evaluate the potential effects of actions on floodplains and should avoid undertaking actions that directly or indirectly induce development in the floodplain or adversely affect natural floodplain values. Alternatives considered for this project would maintain designed levels of flood protection and have no impact on the floodplain.

### 6.12 Executive Order 11990 Protection of Wetlands

This order directs Federal agencies to provide leadership in minimizing the destruction, loss, or degradation of wetlands. Section 2 of this order states that, in furtherance of the NEPA of 1969, agencies shall avoid undertaking or assisting in new construction located in wetlands unless there is no practicable alternative. The preferred alternative would have no impact on wetlands.

## 6.13 State and Local Laws, Policies, and Regulations

On a case-by-case basis, state or local laws and ordinances may also be applicable to any potential project implementation, based on aspects of the individual project. A state water quality certification is an example of an instance where a state permit or authorization is a requirement for project implementation. Water quality certification has been requested for this project and is included in Appendix A. The Corps expects to receive water quality certification prior to construction.

# 7.0 Public and Agency Involvement

This Environmental Assessment has been made available to potentially interested members of the public. Public comments will be accepted and incorporated into the final decision.

## 7.1 Agency Consultation and Coordination

Coordination was conducted with the following agencies during the Feasibility Study and preparation of the Environmental Assessment:

| **Federal:** | **State:** |
|---|---|
| U.S. Fish and Wildlife Service | Idaho Department of Fish and Game |
| | **Local:** |
| Idaho State Historic Preservation Office | |
| Madison County | Tribal Historic Preservation Office |
| | Idaho Department of Lands |
| | Idaho Department of Water Resources |
| | Idaho Department of Environmental Quality |

In compliance with NEPA rules/regulations, letters were sent to resource agencies and residents in the area; public notices will also be posted at public libraries within the project vicinity.

# 8.0 References


Bureau of Land Management, 2011. Inventory and Monitoring of Bald Eagles and Other Raptorial Birds of the Snake River, Idaho. Technical Bulletin 96-12.

Drewes, B. 1991. Antelope - Pine Creek Area, Water Quality Status Report No. 99. IDHWIDEQ State Agriculture Water Quality Planning (SAWQP) Study.

Idaho Museum of Natural History, 2002. A Survey for Yellow-billed Cuckoo in recorded historic and other likely locations in Idaho.

Milligan, J.H., R.A. Lyman, C.M. Falter, E.E. Kmmpe, and J.E. Carlson. 1983. Classification of Idaho's Freshwater Lakes. Idaho Water and Energy Resources Research Institute for Idaho Department of Health and Welfare, Division of Environmental Quality.

CENWW-PM-PD-ECS

**Cultural Resources Compliance Report**

| | | | |
|---|---|---|---|
| **Project Name:** | Twin Bridges Feasibility Study | | |
| **Report Date:** | July 29, 2012 | | |
| **Report Author:** | Mary Keith | | |
| **USACE Project Location:** | Non-federal land | | |
| **Project County, State:** | Madison, Idaho | | |
| **Township, Range, Section:** | T.4N., R40E., Sections 16 and 17 | | |
| **USGS Topographic Maps:** | Ririe, Idaho, 7.5', 1950, photo-revised in 1980 | | |
| **Landowner:** | Madison County, Idaho | | |
| **Cultural Report No.:** | 2011-NWW-021 | **Compliance Project No.:** | PM-EC-2012-095 |
| **Project Acres:** | 1.5 | **Survey Acres:** | 1 |
| **Site visit made specifically for this undertaking?** | April 25, 2012 | **Ground disturbance?** | Yes |

**1. Report purpose:**

☐ Initiate consultation (36 CFR 800.3) ☐ Concurrence on Area of Potential Effect (36 CFR 800.4)
☐ Concurrence for determination of eligibility (36 CFR 800.4)
☒ Concurrence for an assessment of effect (36 CFR 800.5)
☐ Documentation required in compliance with 36 CFR 800, but project is categorized as a routine activity through a Corps programmatic agreement, and SHPO consultation is not required.

**2. Has the area of potential effects been surveyed to identify cultural resources?**

☐ No
☐ No known cultural resources affected
☒ Yes, Source or reference: Keith (2012), and Hill (1996) who examined a portion of the Twin Bridge Park project area.

**3. Potentially Affected Resources in/adjacent the APE:**

☐ Archaeological Resources Resource & Eligibility:
☐ Historic Structures Resource & Eligibility:
☐ Cultural Landscapes Resource & Eligibility:
☐ Ethnographic Properties Resource & Eligibility:

**4. Have Tribes been consulted during the planning process?**

☐ Tribal consultation is complete.
☐ Tribes have been informed of the project through planning group meetings or Quarterly Consultation letters, but consultation is not complete at this time.
☒ Tribal consultation is occurring at the same time as SHPO consultation.
☐ Tribes affiliated with resources in the APE:

**5. The proposed action will:**

☐ Destroy, remove, or alter features/elements from a historic structure
☐ Replace historic features/elements in kind

**B. ASSESSMENT OF EFFECT:**

**1. Assessment of Effect:**
☒ No Historic Properties Affected ☐ No Adverse Effect ☐ Adverse Effect

**2. Documentation Method**
☒ Standard 36 CFR Part 800 Consultation
☐ Streamlined review under a Programmatic Agreement (specify agreement and criteria).

**3. Stipulations and Conditions: All**

**4. Mitigations/Treatment Measures:** Not applicable.

**5. Attachments**
☐ Property Record
☒ Maps attached
☒ Other attachments (List): Photos, schematic drawings

**6. Repository:** Original survey records, planning information, and reports are on file at the Corps office.
US Army Corps of Engineers, Walla Walla District
Environmental Compliance-Cultural Resources
201 North Third Avenue
Walla Walla, WA 99362

## Introduction

The U.S. Army Corps of Engineers, Walla Walla District (CENWW), in cooperation with the project sponsor, Madison County, Idaho, proposes to design and construct a streambank stabilization project under the authority of Section 14 of the Flood Control Act of 1946 (Public Law 79-526), as amended. The feasibility study will help Idaho's Madison County protect the North Twin Bridge for safe usage. There are two Ririe-Archer Highway bridge crossings over the South Fork of the Snake River, which gives the crossing its Twin Bridges name (Figure 1). The Ririe-Archer Highway is one of two major north-south links between Madison and Jefferson Counties, Idaho, and serves as a major farm-to-market road.

The project purpose is to plan and construct emergency streambank protection to protect the Ririe-Archer highway and bridge from high flows at the Northern Twin Bridge. The study will consider measures to protect the highway embankment, bridge abutment, and other existing structural components of the North Twin Bridge. The original study plans focused on stabilizing the river shoreline upstream and downstream of the bridge's south abutment. The intent was to slow the southward migration of the river's north-channel, and protect the bridge's south abutment with armoring. Aerial photographs from 1943 through 2011 demonstrate the south migration of the river's north-channel over time (Attachment A). The high flows in 2011's flood season removed the shoreline east of the bridge within the proposed project area. The study's preferred alternative is now to protect the bridge's south abutment from erosive high flows as the river continues to erode its south shoreline. The photographs in Attachment A show the progress of shoreline erosion and Madison County efforts to stabilize the area around the North Twin Bridge's south abutment.

The purpose of this report is to assess the preferred alternative's potential to affect cultural properties. The National Historic Preservation Act (NHPA) and amendments use its section 106 process to ensure federal agencies consider the potential effect of their actions on properties. The Corps is making a no effect to historic properties determination for the proposed federal undertaking.

## Project Description

When funding becomes available, the construction period work window will be during the fall and winter, beginning in early October after the local irrigation season has closed for the year. A layer of 18-24 inch diameter rip rap will protect the earthen Ririe-Archer Highway base along its east and west sides immediately south of the North Twin Bridge. The riprap stabilization structure will be designed to withstand 12 feet per second (fps) at the south bridge abutment and lesser water pressures for 900 feet south along the highway's east side, and 100-200 feet along its west side. The riprap structure would align with the form of the highway fill slope. A trench excavated down 5 to 12 feet along the toe of the highway would secure the rip rap structure to the fluvial substrate. Rip rap would be applied over the earthen highway ramp. Geotextile fabric may be placed beneath the riprap to ensure segregation of fine material with an intermediate layer of sand between the riprap. The fabric would help

distribute the weight load. Vegetation may be broadcast seeded on top or somehow integrated into the upper levels of riprap.

The North Twin Bridge's south abutment will be armored by driving sheet piling around the abutment's northern end and covered with large size class rip rap. The steel sheet piles with its vertical interlocking system will create a continuous vertical wall to efficiently convey river flow and resist damage from floating debris. Multiple sheet piles will be driven into the substrate below the river scour depth, around 10-15 feet below surface. Underneath the bridge sections of the sheet piling would be driven and then welded together. The length of the piling structure will be joined together with an interlock joints. The sheet pile structure would be integrated, or "keyed," into both the upstream and downstream bank revetments by overlapping the revetment structures and covering it with rip rap.

All construction work would occur from the top of the highway, and constructed platforms/earthen ramps off the sides of the highway embankment. The ground adjacent to the highway would be too water saturated for heavy equipment activities. Open and previously compacted ground surfaces on the west side of the nearby Madison County owned Twin Bridges Park (Park) will be used to store material and equipment. Gravel surfaced roads in the park will be used to access the staging area.

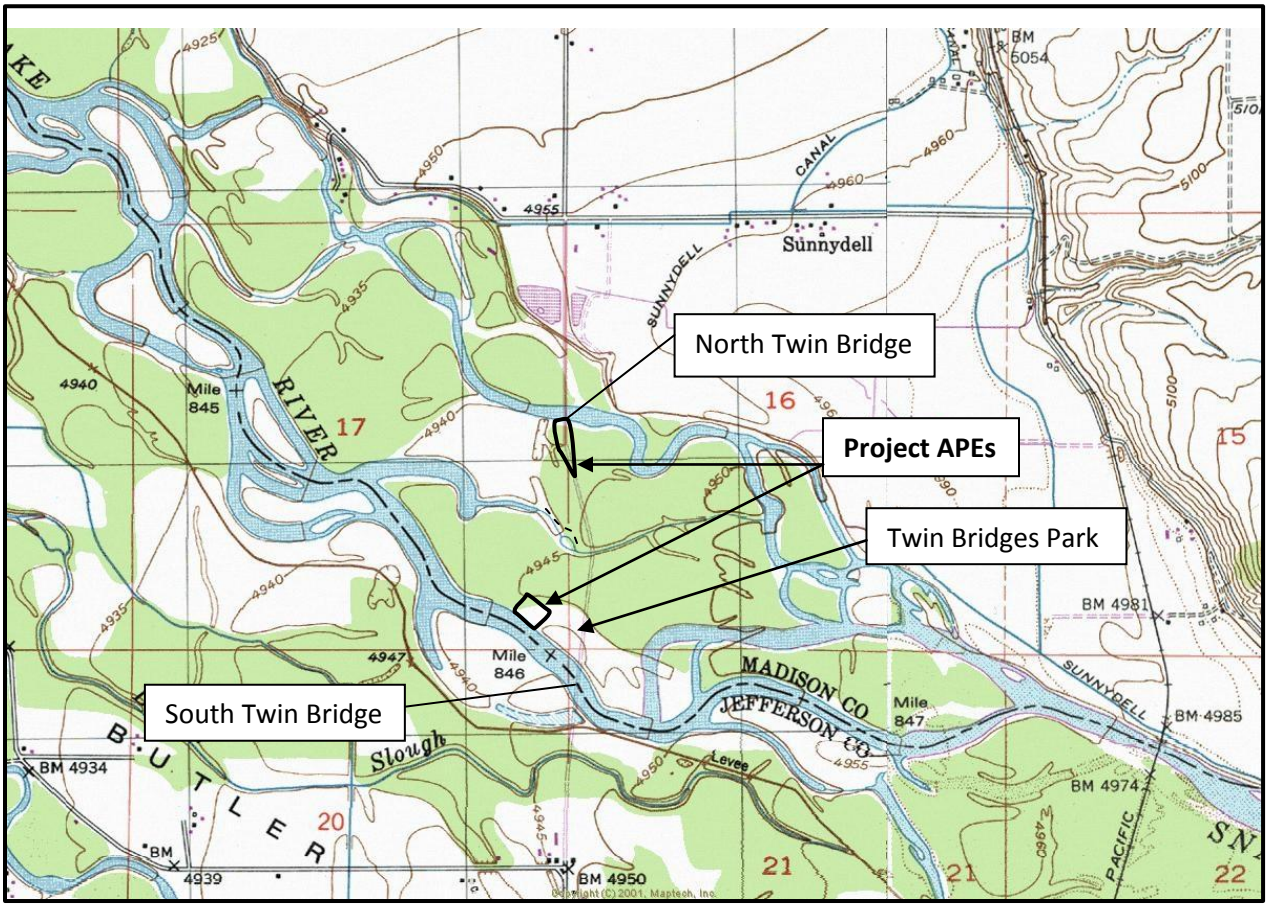



Figure 1. Based on the USGS Quadrangle Ririe, Idaho, 7.5', 1950, Photo-revised in 1980. The staging area lies at the Park's west end next to the South Fork Snake River's south channel.

## Area of Potential Effect

The Ririe-Archer Highway's North Twin Bridge project lies approximately 3.5 miles north of Ririe, Idaho. The undertaking's area of potential effect (APE) is focused at two locations between two (north and south) channels of the South Fork Snake River at River Mile 846. Madison County's southern boundary follows the river's south channel in this river reach. All construction work will take place at the highway's North Twin Bridge's south side, and the staging of material and equipment at the nearby Park. The total project acreage is around 1.5 acres and involves 0.3 linear miles of Park roads. The construction work will extend south of the North Twin Bridge for up to 1000 feet on the highway's east right-of way and 200 feet on its west side.

## Project History

Historically, the South Fork Snake River was split between the north and south channel at River Mile 848 upstream of the Twin Bridges. The two bridges are about a half mile apart and serve the Ririe-Archer Highway, which was re-constructed following a 43,500 cfs flood event in 1997. The flood caused damages to the highway and the North Twin Bridge, and destroyed the South Twin Bridge. The modern Twin Bridges (1998-present) were designed for greater river flows through the south river channel bed. Hence, the modern South Twin Bridge has three times a greater bridge span over the South Fork Snake River than the original bridge. Following the 1997 flood, the river established a preference for its north stream bed at the upstream fork above the Twin Bridges, and high flows soon began to significantly erode both abutments and the bridge center pier at the North Twin Bridge. The river then began to migrate south just upstream of the North Twin Bridge while a river bar also developed immediately above this bridge due in part to the north shoreline levee.

The width of the greater fluvial zone with multiple river channels, the large volume of sediment, and multiple channel elevation variations have challenged short term solutions. In April 2009, an emergency excavation at the river's fork was conducted to lower the south channel bed enough to encourage greater flow volume back into the historical south river channel. In early 2010, the North Twin Bridge's north abutment was reconstructed and armored with rip rap to protect the foundation piles exposed during 2009's high flows. In early 2010, Madison County armored the bridge's south abutment using concrete plates buried near the shoreline with rock filled sediment. In March of 2011, Madison County applied additional rock filled sediment along the east side of the bridge's south abutment ahead of the spring run off. Since 2010, the river's progressively southward positioning has meant it flows alongside the east side of Ririe-Archer highway before passing under the North Twin Bridge.

## Environment and Cultural History

The North Twin Bridge lies in the Snake River Plain subdivision of the Columbia Plateau's physiographic province. The project's reach of the South Fork Snake River is a wide braided fluvial zone. Hot springs are found five miles southeast along the river's precipitous north canyon slope and 10 miles southeast of the late Pleistocene Annis Butte (Little Buttes), the

remains of two tuff rings at the south end of an eight mile line of tuff cones including the Menan Buttes. The undertaking APEs lie immediately north of Butler Island and a mile west of Lyons Creek, which drains the local upland slopes off the west side of the Rocky Mountains. The Snake River is regulated through the Bureau of Reclamation's Palisades Dam (1957-present) and redirected by smaller dams, e.g. Diversion Dams (RM 852 and 843). Rock levees bound the north and south sides of the river's fluvial zone, and several historic irrigation features divert river water for agrarian purposes including the Sunnydale Canal (northeast), Reid Canal (northwest), and Lowder Slough to the south.

The project's fluvial zone is comprised of relic and active channels with Holocene period reworked alluvium comprised of gravel sand, and sandy silts. The project surface elevation is around 4944 at both project APEs. A 1998 Mussetter Engineering report examined the river scour potential around the new bridges and the river's potential to shift course following the 1997 flood. The study found the shoreline to be composed of medium gravel to large cobbles (ranging from 44 to 80 millimeters) in fine sand to small cobbles with less than one percent silt. Bore samples taken from the north abutment of the North Twin Bridge indicate six meters of fill, two meters of sand with some silt and 30 feet of river gravels and cobble indicating a long and very active fluvial zone (IDT 1997). High flows are largely controlled by releases from Palisades Dam (1957-present) located 35 river miles upstream. Since 1957, peak flows on the South Fork Snake River ranged between 13,000 and 24,000 cfs while the June 1997 peak flow reached 43,500 cfs, Between 1997-2009, significant sedimentation occurred above the Twin Bridges leaving the south channel flow capacity effectively reduced, and primary flows shifted from the south to the river's north channel.

The dense riparian cottonwood forest with its willow and red osier dogwood understory is a common western United States ecosystem able to withstand frequent flooding (Photograph 1). However, as the South Fork Snake River shifts southwards the environment is retaining flood waters the majority of the year. The riverine environment is habitat for a host of aquatic species of cultural significance to affected Shoshone-Bannock Tribes of the Shoshone Indian Reservation. Prehistoric peoples included the South Fork Snake River in their transhumance rounds for its fisheries, and to harvest plant and animals, e.g. salmonids, trout, deer, antelope, ducks, berries, and red osier dog wood, willow and cottonwood. Occupations were located out of the fluvial zone at higher nearby locations on the river plain. Hence, cultural properties in the project APEs would likely reflect small activities of limited duration. Historic period properties could include travel routes, river crossings, fencing, and recreation.

Previous project vicinity archeological investigations include those for flood control, and real estate actions (Hill 1996 and 2009), and a disposal site (Plager 1998). A records search of the Idaho SHPO identified no documented sites within one mile of the project vicinity. However, the Ririe-Archer Highway was originally built in the 1950s, and there are numerous historic canals and irrigation ditches in the local agrarian landscape. The historic route of the Union Pacific Railroad line lies about a mile to the east and within a five mile project radius there are historic structures and carvings, and prehistoric lithic scatters, rock shelter and cave sites. The Park (Twin Bridges) was constructed in the 1990s by Madison County.

**Photograph 1.** View northeast from Archer Highway project area at adjacent riparian cottonwood forest, April 25, 2011.

## Field Methods and Results

On April 25th, 2011, the author examined the project's two APEs, documented field conditions, and gathered information from the Madison County Natural Resources Conservation Service office. The author concluded the immediate project area along the Ririe-Archer Highway at the North Twin Bridge was inaccessible due to flooding, which extended into the adjacent fluvial zone. According to the Madison County records, the original Ririe-Archer Highway and bridge crossings were built in the 1950s and re-built in 1998 following the 1997 flood, which severely damaged the North Twin Bridge and removed the South Twin Bridge (Walrath 2012). The past construction and maintenance activities at the North Twin Bridge disturbed the immediate foot print of the highway to varying depths, and removed vegetation along its corridor. The highway south of the bridge rests on earthen fill, and for over 400 feet this fill base serves as a ramp that begins outside (south) of the project APE. The adjacent grassy ground cover and alluvial deposition from frequent flooding along the highway will preclude locating surface cultural resources in this area.

Although it was not necessary to survey the North Twin Bridge project area, the Park staging area was systematically inventoried using five meter spaced transect intervals oriented north-south. The proposed project's staging area, at the nearby Park, has been previously used for staging of heavy equipment. The area and its access roads have a thin gravel surface. The

area south of the parking area was also surveyed and here the exposed sandy silt sediment is irregular and has an open cottonwood tree stand with other riparian species including cedar, current, willow, and grasses. Only modern artifacts were observed including clear and brown bottle glass shards, aluminum pull tabs and a shot gun shell fragment.

**Summary and Conclusions**

Without further protection of the south shoreline, the South Fork Snake River will continue to migrate southward and ultimately undermine the North Twin Bridge's south abutment. There are no cultural properties within the undertaking's APEs. The remains of the 1950s North Twin and highway were removed and replaced 14 years ago. The project APE at the bridge has been disturbed and filled over by the construction and maintenance activities. Both the proposed excavation of a toe trench at the base of the highway, and driving down steel pilings next to the bridge abutment will extend through construction disturbances into the fluvial substrate and displace its re-worked alluvium. The author determined that no surface cultural resources are discoverable, even in dry conditions, along the edge of the highway due to the active alluvial environment. The subsurface is not likely to have an intact stratigraphic context. All earth moving equipment would operate from the highway. The Park staging area and two access roads are comprised of re-worked alluvium compacted from previous use by heavy equipment.

Mary E. Keith
Staff Archeologist

Erin J. Hudson
Archeologist/Reviewer

**Selected References**


Hill, Richard D.

1996 Twin Bridges Park R&PP Lease IDI-29087, CRI Report. Idaho Bureau of Land Management Archeological and Historical Inventory Record Form A – No Effect, No Historic Properties Present

2009 Madison County Road Right-of-Way IDD036461, CRI Report. Idaho Bureau of Land Management Archeological And Historical Inventory Record Upper Snake Field Office – Idaho Falls District Form A- No Effect, No Historic Properties Present.

Idaho Department of Transportation

1997 Foundation Investigation Report, Bridge Plans, Sheet 3 of 16, Higgins Engineers, IDT Twin Bridges Design Set Packet, Boise.

Plager, Sharon

1998 Twin Bridges – South Fork Snake River, Jefferson Madison Counties, IDT No. ER-6768 (100).

NRCS

1943 Aerial Photograph NRAP 80 166065 227, D-7.

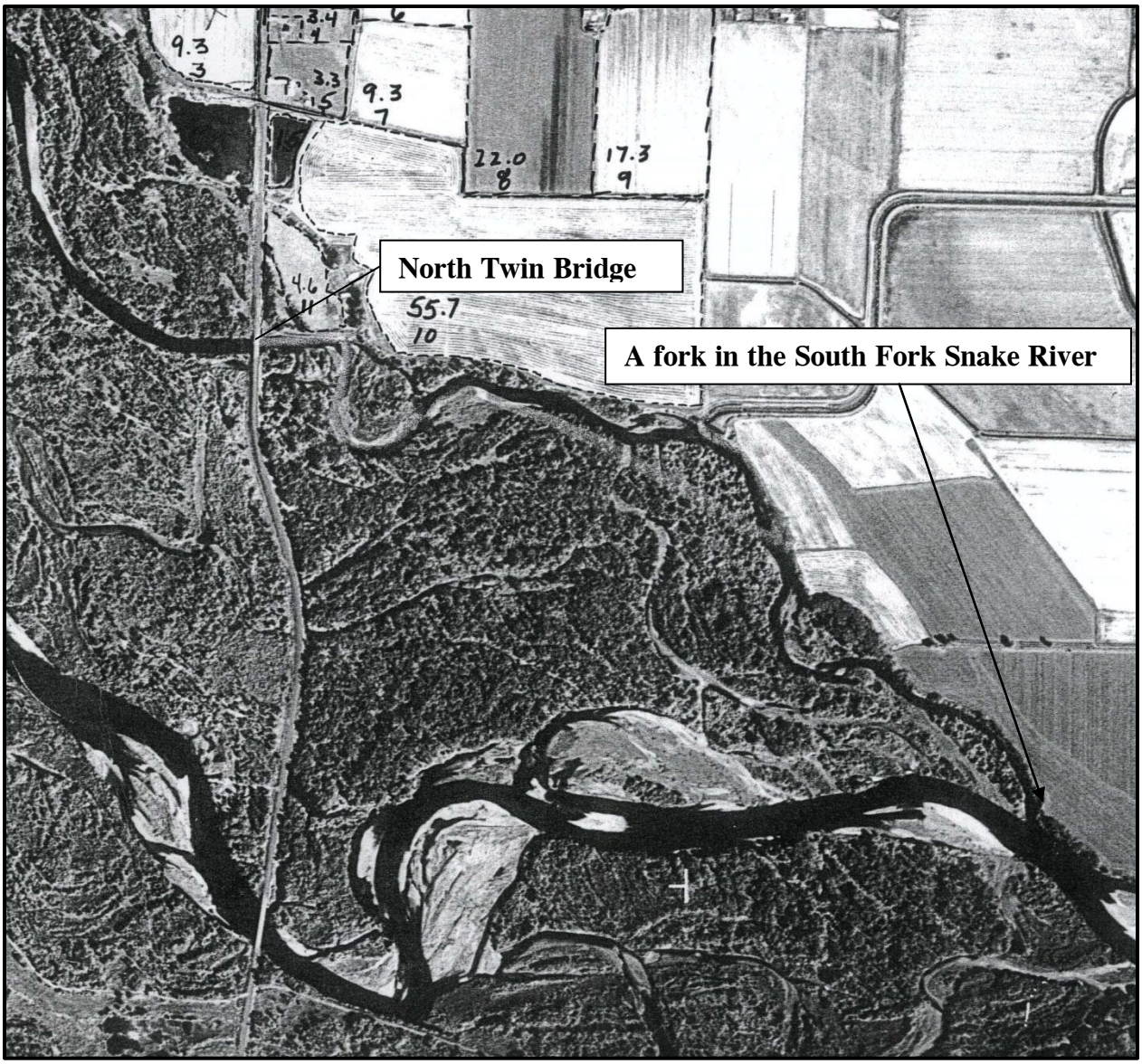
N.D. Aerial Photograph NAPP 1606 S-303 174R H-10.

Walrath, David, P.E.

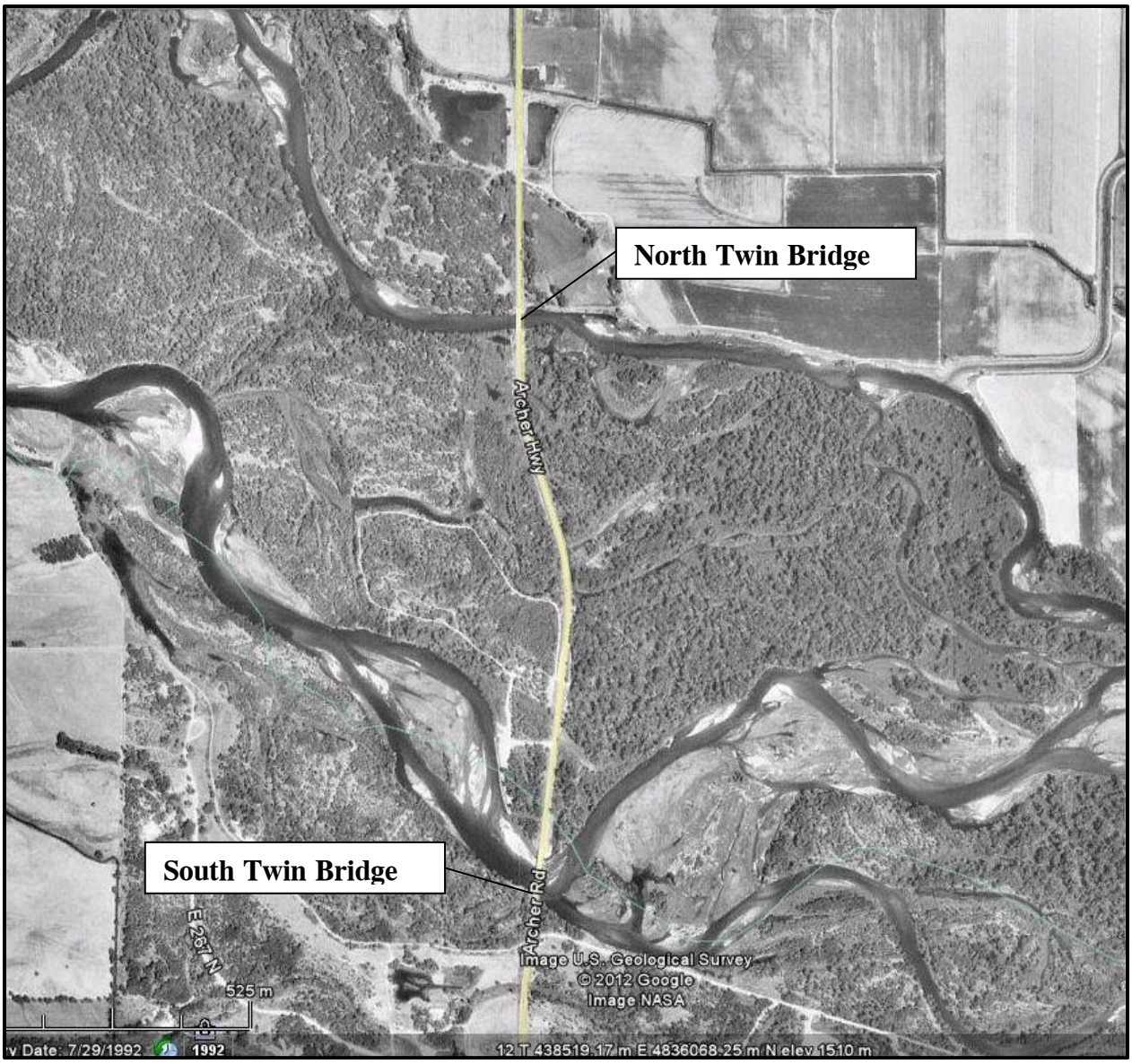
2012 Personal Communication on July 11th, 2012 with the Madison County Public Works Director, dwalrath@co.madison.id.us.

Attachment A

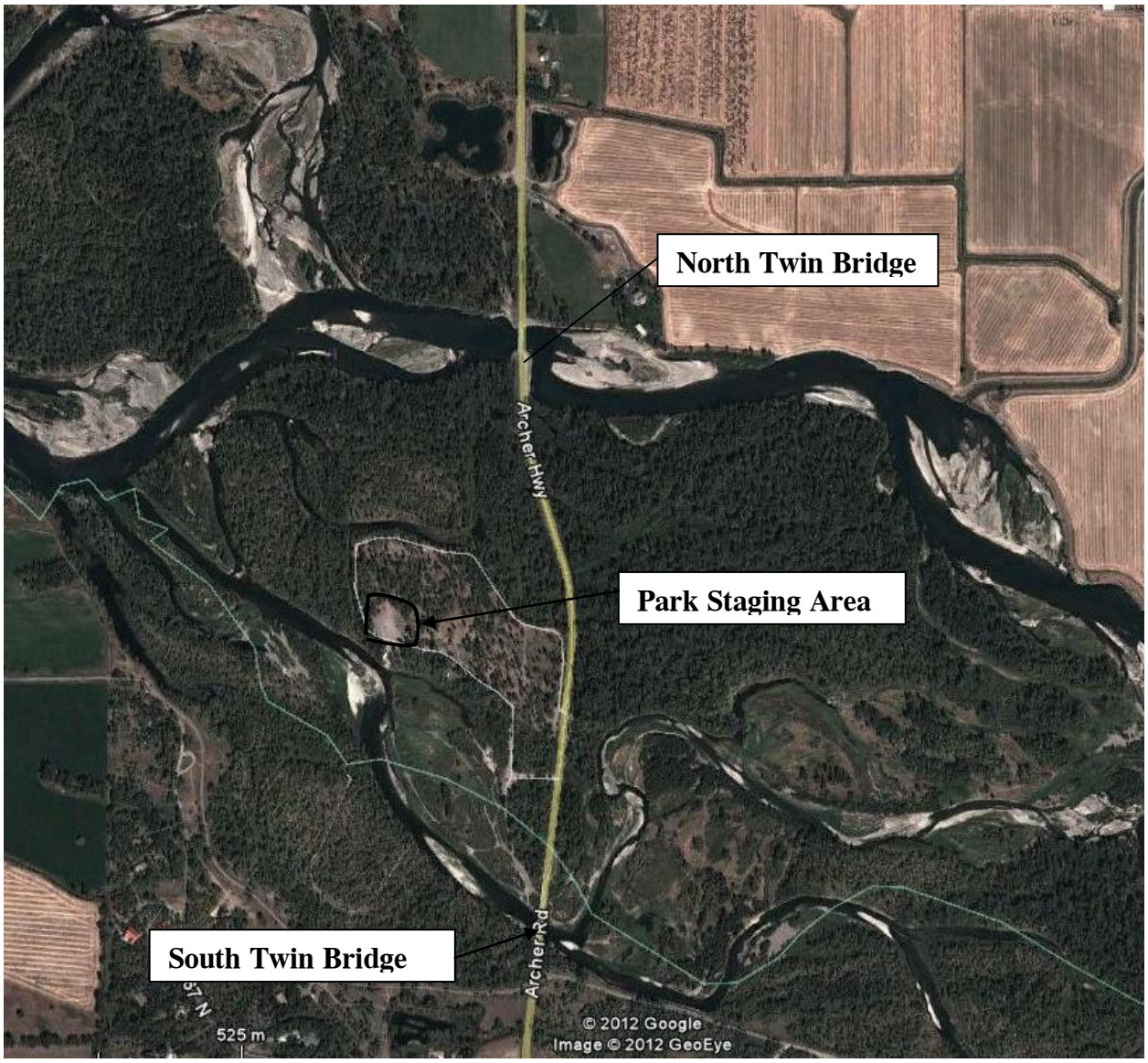
Project Area Aerials and progress photographs




A 1943 aerial view of the Twin Bridges with the south river channel receiving greater flows and the river fork to the east (at right) seen with an upstream river bar.




A 1992 aerial view of the Twin Bridges. A cut off oxbow was developing above the North Twin Bridge, while the river flows straight through the narrow bridge corridor. River flows are still greater at the south river channel.




A 2011 aerial image of Twin Bridges showing the South Snake River preferring its north channel. The cut off oxbow is being removed eroded as a river bar is established blocking the river's straight flow between the North Twin Bridge's abutments. Proposed North Twin Bridge protection will occur at its south abutment and extend south along the upstream and downstream sides of Ririe Highway's embankment.

View southwest at the south end of the North Twin Bridge, photographed by Berggren 2009.

View southwards at exposed bridge abutment and exposed bridge fill overlying the river bed cobble strata with engineering fabric (Berggren 2009).

View northwest at the North Twin Bridge's exposed south abutment (Berggren 2009).

View southeast at the North Twin Bridge's early winter 2010 stabilization structure.

View southeast from the north side of the north the North Twin Bridge during a 10,100cfs flow taken in March of 2011. The rip rap armoring was constructed in 2009.

View northwest the County constructed earthen ramp, just a month old, to protect the south abutment at North Twin Bridges (Keith in April 25, 2011).

View southeast at the County's stabilization structure built to protect the south bridge abutment ahead of the 2011 spring flood season. By fall, the riparian forest seen here was stripped away as the river shifted further south (Keith 2011).

View northeast at North Twin Bridge's east side from Ririe-Archer Highway. Vegetation like red osier dog wood helps to reduce the south shoreline flow velocity (Keith 2011).

View southeast across the South Fork Snake River at the Ririe-Archer Highway and its North Twin Bridge with its earthen support structure (April 25, 2012).

View south at the west side of the North Twin Bridge's south side. The concrete abutment lies buried beneath the 2011rip rap and fill effort applied to protect the bridge.

Northwest from the top of the Ririe-Archer Highway at end of the access road and the south end of the stabilization area on the highway's west side (April 25, 2012).

View north of the Ririe-Archer Highway with the North Twin Bridge in the background (April 25, 2012).

View north of the Ririe-Archer Highway with the west side access road that leads up to the North Twin Bridge (April 25, 2012).

www.history.idaho.gov

Idaho State Historical Society

C.L. "Butch" Otter
Governor of Idaho

Janet Gallimore
Executive Director

Administration
2205 Old Penitentiary Road
Boise, Idaho 83712-8250
Office: (208) 334-2682
Fax: (208) 334-2774

Membership and Fund Development
2205 Old Penitentiary Road
Boise, Idaho 83712-8250
Office: (208) 514-2310
Fax: (208) 334-2774

Historical Museum and Education Programs
610 North Julia Davis Drive
Boise, Idaho 83702-7695
Office: (208) 334-2120
Fax: (208) 334-4059

State Historic Preservation Office and Historic Sites
Archeological Survey of Idaho
210 Main Street
Boise, Idaho 83702-7264
Office: (208) 334-3861
Fax: (208) 334-2775

Statewide Sites:
• Franklin Historic Site
• Pierce Courthouse
• Rock Creek Station and
• Stricker Homesite

Old Penitentiary
2445 Old Penitentiary Road
Boise, Idaho 83712-8254
Office: (208) 334-2844
Fax: (208) 334-3225

Idaho State Archives
2205 Old Penitentiary Road
Boise, Idaho 83712-8250
Office: (208) 334-2620
Fax: (208) 334-2626

North Idaho Office
112 West 4th Street, Suite #7
Moscow, Idaho 83843
Office: (208) 882-1540
Fax: (208) 882-1763

**DATE:** August 17, 2012
**TO:** Alice Roberts, Corps of Engineers
**FEDERAL AGENCY:** CORPS
**PROJECT NAME:** Twin Bridges Streambank Stabilization, Madison County, Idaho; Archaeological Report by Mary Keith, Corps of Engineers, dated April 25, 2012

## Section 106 Evaluation

| | |
|---|---|
| **X** | The field work and documentation presented in this report meet the Secretary of the Interior's Standards. |
| **X** | No additional investigations are recommended. Project can proceed as planned. |
| | Additional information is required to complete the project review. (See comments below.) |
| | Additional investigations are recommended. (See comments below). |

## Identification of Historic Properties (36 CFR 900.4):

| | |
|---|---|
| **X** | No historic properties were identified within the project area. |
| | Property is not eligible. Reason: |
| | Property is eligible for listing in the National Register of Historic Places. |
| | Criterion: _ A _ B _ C _D Context for Evaluation: |
| **X** | *No historic properties* will be affected within the project area. |

## Assessment of Adverse Effects (36 CFR 800.5):

| | |
|---|---|
| | Project will have *no adverse effect* on historic properties. |
| | Property will have an *adverse effect* on historic properties. Additional consultation is required. |

**Comments:**
**Your agency archaeologist should be contacted if archaeological remains are discovered during construction.**

Susan Pengilly

**Susan Pengilly, Deputy SHPO**
**State Historic Preservation Office**

**August 17, 2012**
**Date**

Historical Society is an Equal Opportunity Employer.

**DEPARTMENT OF THE ARMY**
**WALLA WALLA DISTRICT, CORPS OF ENGINEERS**
**201 NORTH THIRD AVENUE**
**WALLA WALLA WA 99362-1876**

REPLY TO
ATTENTION OF:

May 9, 2011

Planning, Programs, and Project
Management Division

Ms. Carolyn Smith
Shoshoni-Bannock Tribes
of the Fort Hall Indian Reservation
PO Box 306
Fort Hall, Idaho 83203

Dear Ms. Smith:

The U.S. Army Corps of Engineers, Walla Walla District (Corps) is planning the Archer Highway Two Bridges Section 14 Emergency Stream Bank Stabilization Federal Undertaking, PM-EC-2010-0001. We are inviting National Historic Preservation Act consultation with your office and request concurrence with our two project areas of potential effect (APE). Madison County, the proponent, has requested that the Corps complete a study of the benefits to the environment and the bridge's integrity under Section 14 of the 1946 Flood Control Act. We are now at a 15 percent design phase for this emergency river bank and shoreline protection project.

The primary project APE lies on the Middle Snake River north of Ririe, Idaho at the North Twin Bridge, River Mile 846. The main project APE extends 800 feet up river and 200 feet down river of the North Bridge's south abutment along the interface of the flood plain and the river channel. A secondary equipment and material staging area lies nearby in Madison County's Twin Bridges Park. A preliminary literature review identified no cultural properties within the APE or the project's vicinity. If you have any questions, please contact Ms. Mary Keith at 609-527-7256.

Sincerely,

Michael S. Francis
Chief, Environmental Compliance Section

Enclosure

Printed on Recycled Paper

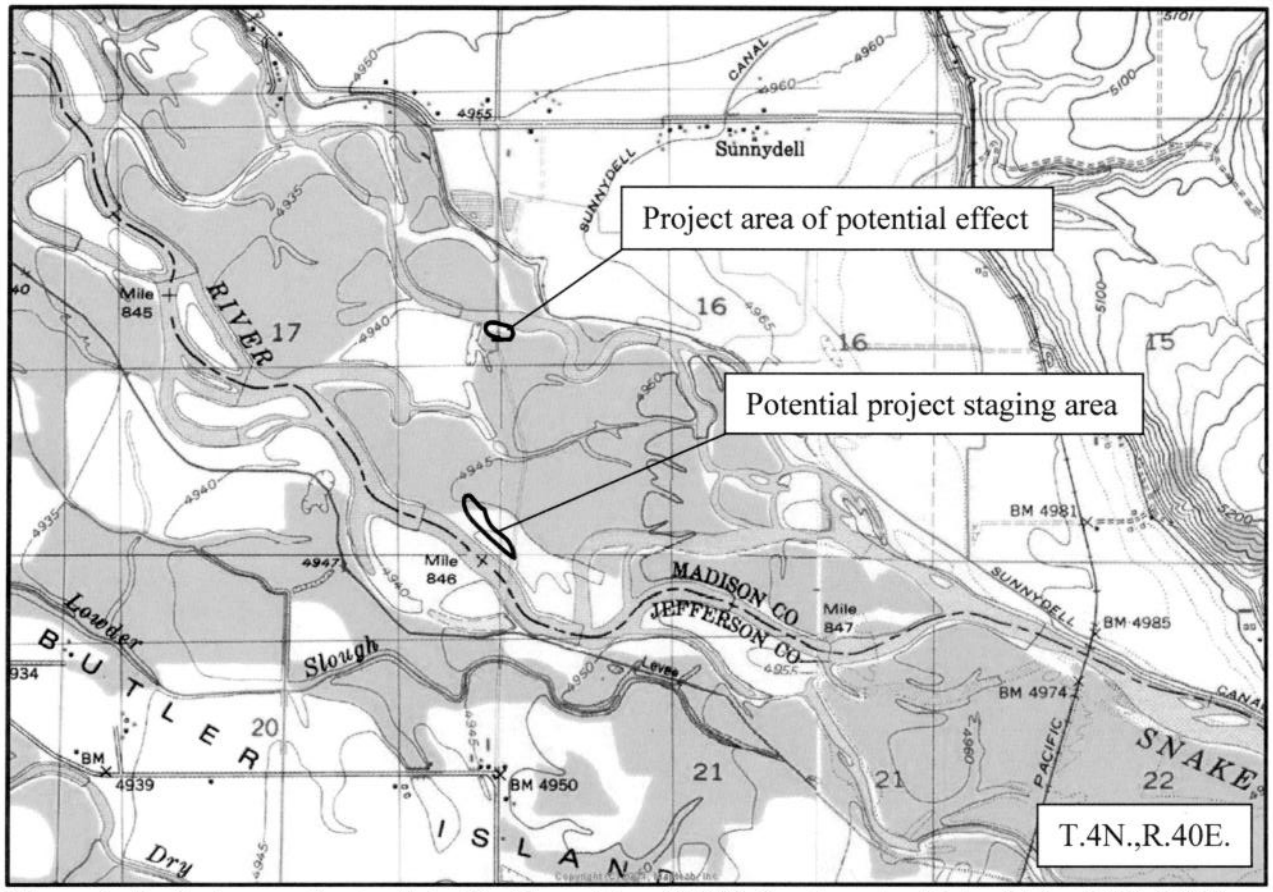


Figure 1. Project area of potential effect based in a USGS Quadrangle: Ririe, Idaho, 7.5', 1950 (photorevised 1980).

**DEPARTMENT OF THE ARMY**
WALLA WALLA DISTRICT, CORPS OF ENGINEERS
201 NORTH THIRD AVENUE
WALLA WALLA WA 99362-1876

REPLY TO
ATTENTION OF:

July 31, 2012

Planning, Programs, and Project
Management Division

Dr. Kenneth Reid
State Archaeologist
Idaho State Historical Society
210 Main Street
Boise, Idaho 83702

Dear Dr. Reid:

The Walla Walla District (Corps) is developing the Twin Bridges Feasibility Study PM-EC-2010-0001, (2011-NWW-021), a federal undertaking in Madison County, Idaho. We request your concurrence with our no historic properties affected determination for this federal undertaking. No cultural properties were identified in the project area of potential effect. We would appreciate your comments by August 15, 2012 to facilitate our project development processes.

Enclosed for your review is a cultural resource survey report for the proposed undertaking. Copies of the consultation packet have been provided to the Shoshone Bannock of the Fort Hall Indian Reservation. If you have comments or questions, please contact me at 509-527-7274.

Sincerely,

Alice K. Roberts
Chief, Cultural Resources Section

Enclosures

**DEPARTMENT OF THE ARMY**
WALLA WALLA DISTRICT, CORPS OF ENGINEERS
201 NORTH THIRD AVENUE
WALLA WALLA WA 99362-1876

REPLY TO
ATTENTION OF:

July 31, 2012

Planning, Programs, and Project
Management Division

Ms. Carolyn Smith
Cultural Resources Coordinator
Shoshone-Bannock Tribes
of the Fort Hall Indian Reservation
P.O. Box 306
Pocatello, Idaho 83203

Dear Ms. Smith:

The Walla Walla District (Corps) is developing the Twin Bridges Feasibility Study PM-EC-2010-0001, (2011-NWW-021), a federal undertaking in Madison County, Idaho. We request your concurrence with our no historic properties affected determination for this federal undertaking. No cultural properties were identified in the project area of potential effect. We would appreciate your comments by August 15, 2012 to facilitate our project development processes.

Enclosed for your review is a cultural resource survey report for the proposed undertaking. Copies of the consultation packet have been provided to the Idaho State Historical Society. If you have comments or questions, please contact me at 509-527-7274.

Sincerely,

Alice K. Roberts
Chief, Cultural Resources Section

Enclosures

# Public Notice

**US Army Corps**
**Of Engineers**
Walla Walla District
201 North Third Avenue
Walla Walla, WA 99362-1876

**CENWW-PM-PD-EC 12-02**

**Corps of Engineers Civil Works Action:**

**TWIN BRIDGES SECTION 14 EMERGENCY STREAMBANK PROTECTION**

**RIRIE, IDAHO, MADISON COUNTY, IDAHO**

**Date: 22 August 2012**

**Expiration Date: 5 September 2012**

Interested parties are hereby notified that the U.S. Army Corps of Engineers, Walla Walla District, (Corps) proposes a project which is subject to the provisions of the National Environmental Policy Act of 1969, Sections 401 and 404 of the Clean Water Act of 1977, and Section 10 of the Rivers and Harbors Act. The Clean Water Act requires that all projects be evaluated as to the effects of discharge of dredged or fill material into waters of the United States prior to making the discharge and that the state certify that the project will not violate water quality standards. The Corps is circulating this public notice in accordance with 33 Code of Federal Regulations (CFR) 337.

PROJECT DESCRIPTION: The project is on the South Fork of the Snake River in Madison County, Idaho. It lies in Sections 16 and 17 in Township 4 North, Range 40 East. The Snake River flows east to west through the proposed project area, and the Archer Highway Twin Bridges have a north-south orientation. The bridges are approximately 7.5 miles due east of Rigby, Idaho; and approximately 3 miles south-southeast of Archer, Idaho. The proposed work would take place on the south bank of the North Twin Bridge (See Figure 1).

The project purpose is to plan and construct emergency streambank protection to protect the Ririe-Archer highway and bridge from high flows where it crosses the Snake River at the Northern Twin Bridge, Madison County, Idaho. The study will consider measures to protect the highway embankment, approach foundation materials, abutment, and other existing structural components of the North Twin Bridge.

This project addresses streambank erosion and abutment instability issues on the south shore of the North Twin Bridge, and the long-term goal of protecting the bridge and highway from damage caused by high flows in the Snake River. The Ririe-Archer Highway crosses a braided reach of the South Fork of the Snake River at two bridges that cross channels approximately 0.5 mile apart. In 1997, the South Fork of the Snake River experienced a significant flow event causing the complete failure of the South Twin Bridge and damaging the North Twin Bridge to the point where it became unusable. Both structures were replaced in 1998.

After 1997, the river began shifting its primary course northward at the Twin Bridges. Historically, the south channel carried 76% of the total flow, but the north channel now carries as much as 90% of high flows and 100% of low flows. As a result, the North Twin Bridge experiences damaging scour during high spring flows. Future spring high flow events will continue to shift to the north. Without additional protection, flows will eventually damage the bridge and embankment to a point where failure is eminent.

To reduce the amount of damage caused by high spring flows, a riprap revetment would be constructed to extend south, approximately 900 feet along the east side of the highway fill and south, approximately 100 feet along the west side of the highway fill. This work could likely be accomplished with minimum intrusion on the river and no dewatering effort. Future toe scour would be mitigated by constructing a thickened toe, using launchable stone placed directly in the river. Launchable stone is stone placed along expected erosion locations, and above the zone of attack. As soil erodes, the stone is undermined, slides down the slope, and halts the erosion. The upstream and downstream riprap would be keyed into a 60 foot long sheet pile structure around the abutment's northern end. Based on an average flow velocity of 9 ft/s, the average stone size ($D_{50}$) would be 18 inches and riprap thickness would be approximately 24 inches. Approximately 5,800 cubic yards of native material would be needed to complete the revetment. The total estimated amount of fill material to be placed below ordinary high water is 3,400 cubic yards. All of this material would be hauled in from a certified commercial rock pit.

COORDINATION WITH ENVIRONMENTAL AGENCIES: This activity is being coordinated with the U.S. Fish and Wildlife Service (USFWS) and the Idaho Department of Environmental Quality.

NATIONAL ENVIRONMENTAL POLICY ACT COMPLIANCE: The Corps' analysis of the environmental impacts associated with the proposed highway embankment and abutment protection is addressed in the August 2012 Environmental Assessment. For additional information on the environmental analysis, please contact Mr. Benjamin Tice at ben.j.tice@usace.army.mil or at 509-527-7267.

WATER QUALITY CERTIFICATION: This serves as public notice that the Corps has requested Idaho Department of Environmental Quality to certify that the discharge of fill material will not violate existing water quality standards. A copy of the Section 404(b)(1) Evaluation is enclosed. Comments concerning certification for this project should be mailed to:

Mr. Troy Saffle
DEQ Idaho Falls Regional Office
900 N. Skyline Drive, Suite B
Idaho Falls, ID 83402
Troy.saffle@deq.idaho.gov

CULTURAL RESOURCES: The Corps has made a determination of "no potential to cause effects on historic properties" because the proposed action will occur on existing non-historic structures and disturbed areas. Accordingly, the Corps has completed a cultural resource review for this project and has no further obligations under Section 106 of the National Historic Preservation Act, as amended.

ENDANGERED SPECIES: Endangered Species Act listed species in Madison and Jefferson counties include Canada lynx and Ute ladies'-tresses. There is no habitat in the area to support Canada lynx. Ute ladies'-tresses can be found within ½ mile of the North Twin Bridge.

The proposed project will not have a direct effect on Ute ladies'-tresses, but continued erosion associated with the shifting Snake River channel could adversely impact individuals of this plant while suitable habitat conditions for other individuals could be formed.

The Corps concludes the proposed project will have no effect on Canada lynx or its designated critical habitat. The Corps also concludes the project may affect, but is not likely to adversely affect Ute ladies'-tresses. There is no critical habitat designated for Ute ladies'-tresses.

COMMENT AND REVIEW PERIOD: Interested parties are invited to provide their comments on the proposed activity. Please provide your comments to:

Walla Walla District Corps of Engineers
CENWW-PM-PD-EC, ATTN: Benjamin Tice
201 North Third Avenue
Walla Walla, WA 99362-1876

Comments may also be e-mailed to ben.j.tice@usace.army.mil.

Comments should be postmarked or e-mailed no later than 05 September 2012 to ensure consideration.

FOR ADDITIONAL INFORMATION: Should you need additional information or have any questions, please contact Mr. Benjamin Tice at 509-527-7267.

PUBLIC HEARING: Any person who has an interest that may be affected by the proposed action may request a public hearing. The request must be submitted in writing to the district engineer within the comment period of this notice and must clearly set forth the interest that may be affected and the manner in which the interest may be affected by this activity.

Michael S. Francis
Chief, Environmental Compliance Section

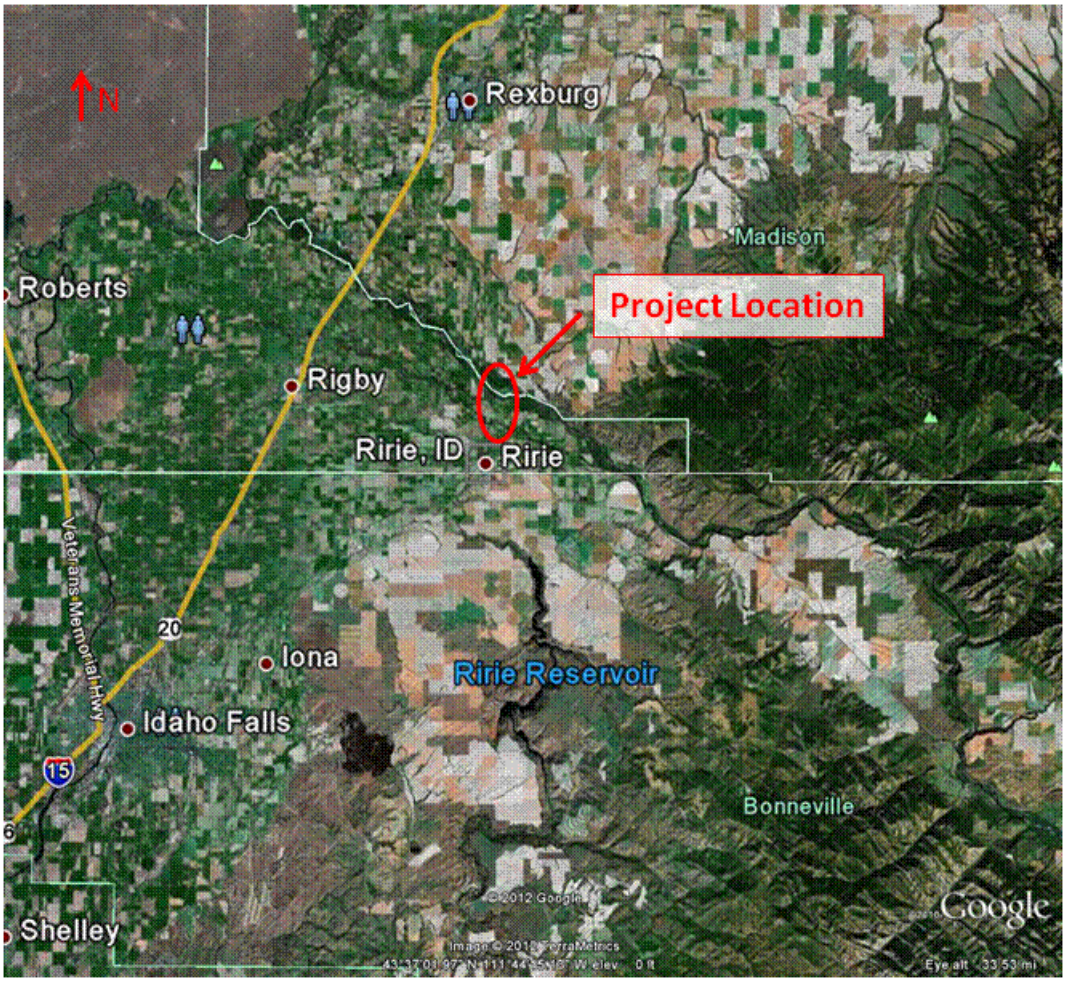


Figure 1: Proposed project location.

# ARCHER HIGHWAY TWIN BRIDGES

# SECTION 14 EMERGENCY STREAMBANK STABILIZATION PROJECT SOUTH FORK SNAKE RIVER MADISON COUNTY, IDAHO

SECTION 404 (b) (1) EVALUATION
(40 CFR 230 - dated 12 APRIL 1980)

## 1. PROJECT DESCRIPTION.

### A. Location

The project is on the South Fork of the Snake River in Madison County, Idaho. It lies in Sections 16 and 17 in Township 4 North, Range 40 East. The Snake River flows east to west through the proposed project area, and the Archer Highway Twin Bridges have a north-south orientation. The bridges are approximately 7.5 miles due east of Rigby, Idaho; and approximately 3 miles south-southeast of Archer, Idaho. The proposed work would take place on the south bank of the North Twin Bridge (Figures 1and 2).

**Figure 1: Project Area Map**

### B. Purpose

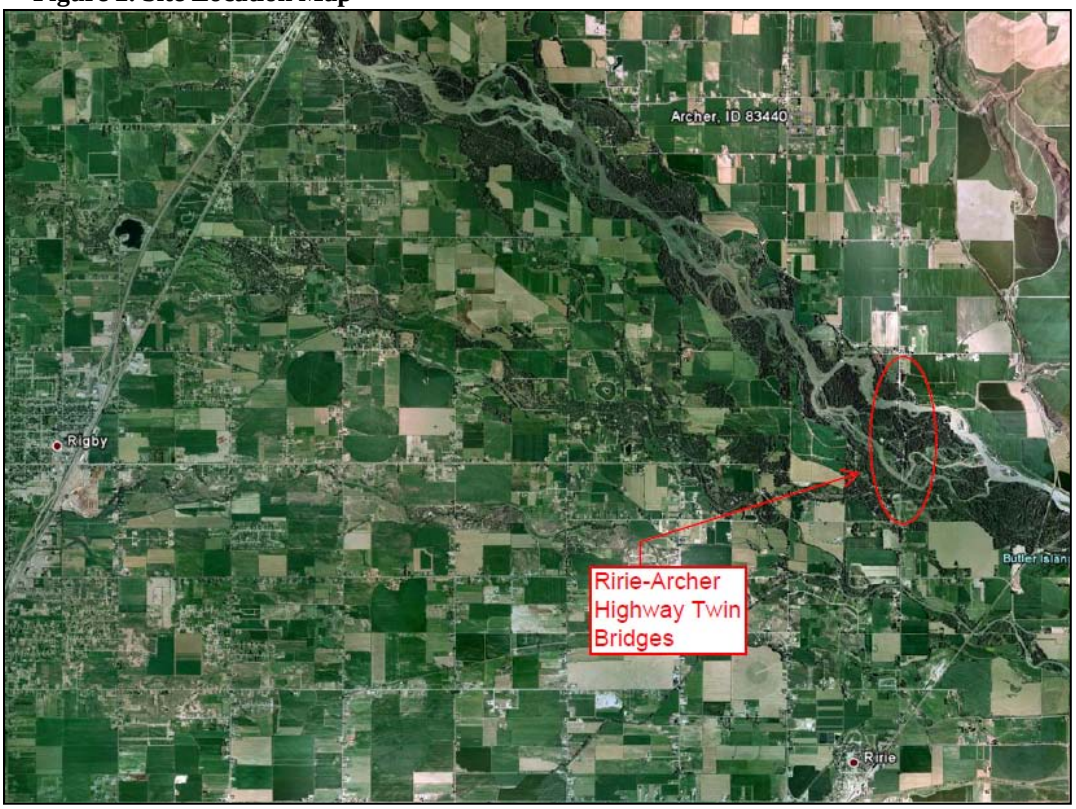
The project purpose is to plan and construct emergency streambank protection to protect the Ririe-Archer highway and bridge from high flows where it crosses the Snake River at the Northern Twin Bridge, Madison County, Idaho. The study will consider measures to protect the highway embankment, approach foundation materials, abutment, and other existing structural components of the North Twin Bridge.

### C. General Description

This project addresses streambank erosion and abutment instability issues on the south shore of the North Twin Bridge, Idaho, and the long-term goal of protecting the bridge and highway from damage caused by high flows in the Snake River. The Ririe-Archer Highway crosses a braided

reach of the South Fork of the Snake River at two bridges that cross channels approximately 0.5 mile apart. In 1997, the South Fork of the Snake River experienced a significant flow event causing the complete failure of the South Twin Bridge and damaging the North Twin Bridge to the point where it became unusable. Both structures were replaced in 1998.

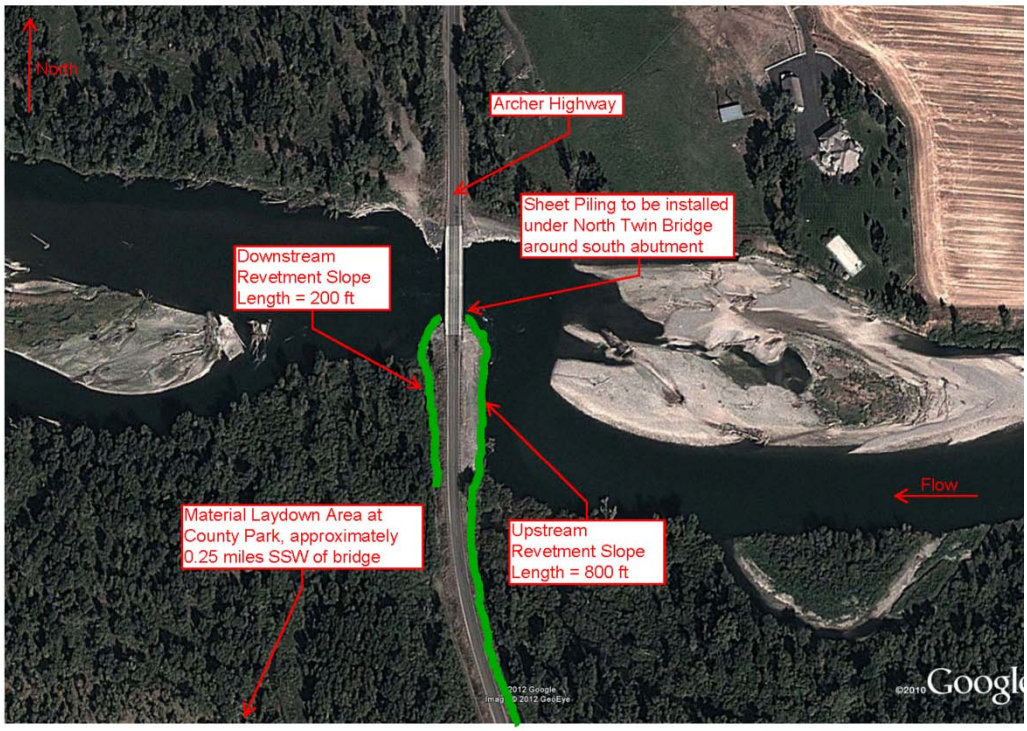
**Figure 2. Site Location Map**




After 1997, the river began shifting its primary course to the north channel upstream of the Twin Bridges. Historically, the south channel carried 76% of the total flow, but the north-channel now carries as much as 90% of high flows and 100% of low flows. As a result, the North Twin Bridge experiences damaging scour during high spring flows. Future spring high flow events will continue to shift to the North. Without additional protection, flows will eventually damage the bridge and embankment to a point where failure is imminent.

To reduce the amount of damage caused by high spring flows, a riprap revetment would be constructed to extend south, approximately 900 feet along the east side of the highway fill and south, approximately 100 ft along the west side of the highway fill(See Figure 3) . This work could likely be accomplished with minimum intrusion on the river and no dewatering effort. Future toe scour would be mitigated by constructing a thickened toe, using launchable stone placed directly in the river. Launchable stone is stone placed along expected erosion locations, and above the zone of attack. As soil erodes, the stone is undermined, slides down the slope, and halts the erosion. The upstream and downstream riprap would be keyed into a 60 foot long sheet pile structure around the abutment's northern end.

**Figure 3. Site Configuration Map**




## D. General Description of Materials

### (1) Description of Materials

Based on an average flow velocity of 9 ft/s, the average stone size ($D_{50}$) would be 18 inches and riprap thickness would be approximately 24 inches.

### (2) Quantity of Material

Approximately 5,800 cubic yards of native material would be needed to complete the revetment.

### (3) Source of Material

Rock would be obtained from a local commercial source, trucked to the bridge site or stockpiled nearby and placed by excavator or like equipment. Sheet Pile would be acquired locally as well.

## E. Description of the Proposed Construction and Staging Site

### (1) Location

Open and previously compacted ground surfaces on the west side of the nearby Madison County owned Twin Bridges Park (Park) will be used to store material and equipment. Gravel surfaced roads in the park will be used to access the staging area (See Figure 4).

### (2) Size

The total project acreage is around 1.5 acres and involves 0.3 linear miles of Park roads. The construction work will extend south of the North Twin Bridge for up to 1000 feet on the highway's east right-of way and 200 feet on its west side.

### (3) Type of Habitat

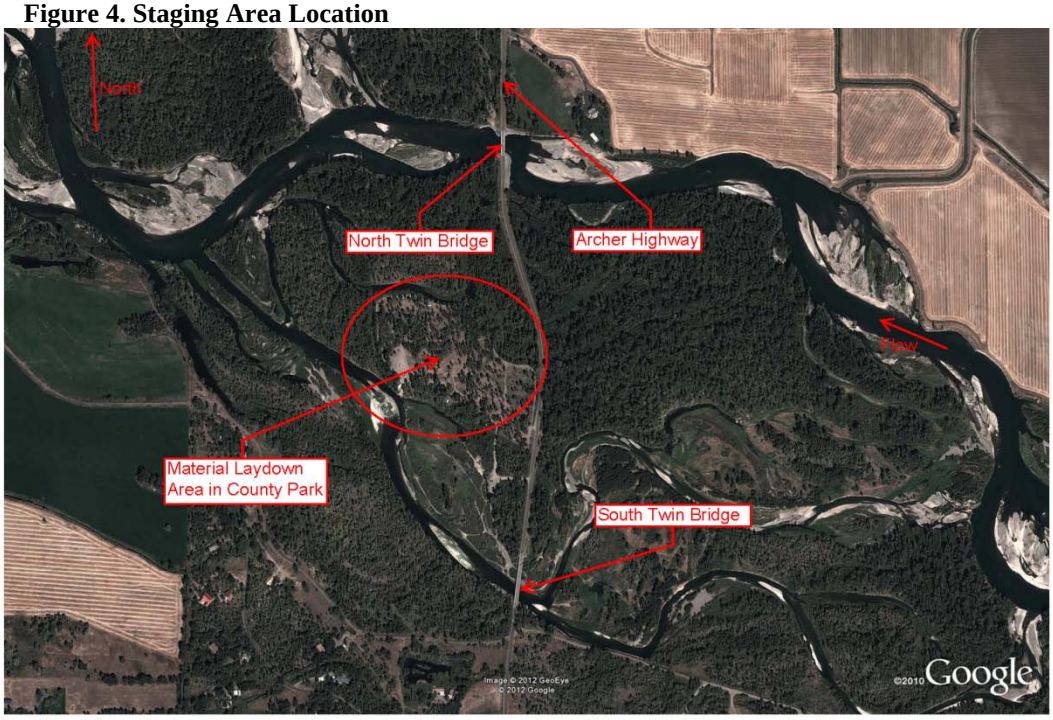
The project area includes a dense riparian cottonwood forest, which is among the most unique and diverse ecosystems in the western United States. However, the primary work area along the banks of the South Fork of the Snake River was previously disturbed, so vegetation is not as dense. The staging area is composed of exposed sandy silt sediment and has an open

cottonwood tree stand with other riparian species including cedar, current, willow, and grasses. The proposed project's staging area, at nearby Twin Bridges Park, has been previously used for staging heavy equipment. The area and its access roads have a thin gravel surface.

**(4) Timing and Schedule**

The Project Design Phase would be completed by December 2013 and implementation of the chosen plan would be constructed in early 2014. The project would be built during low flows to make construction access easier, reduce environmental impacts, and provide protection prior to the onset of the 2014 high flow season.

**Figure 4. Staging Area Location**




## F. Description of Method for Placement of Materials

The rock riprap revetment would be installed on a 2 feet horizontal and 1 foot vertical (2H:1V) slope, requiring slope preparation Geotextile fabric would be installed underneath the riprap to ensure segregation of fine material. An intermediate layer of sand or gravel between the riprap layer and fabric would be installed to help distribute the load and prevent tearing of the geotextile fabric.

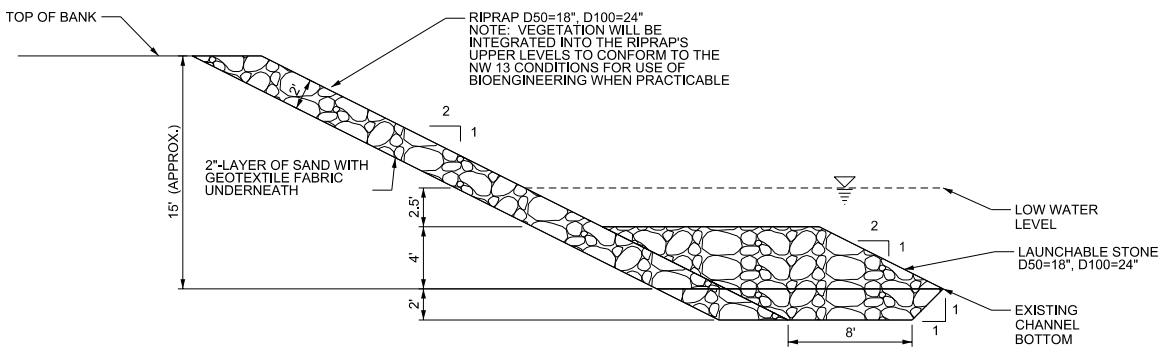
The North Twin Bridge's south abutment will be armored by driving sheet piling around the abutment's northern end and covered with large size class rip rap. The steel sheet piles with its vertical interlocking system will create a continuous vertical wall to efficiently convey river flow and resist damage from floating debris. Multiple sheet piles will be driven into the substrate below the river scour depth, around 10-15 feet below surface. Underneath the bridge sections of the sheet piling would be driven and then welded together. The length of the piling structure will be joined together with an interlock joints. The sheet pile structure would be integrated, or "keyed," into both the upstream and downstream bank revetments by overlapping the revetment structures and covering it with rip rap.

This configuration would provide the maximum cross sectional area between the abutments to pass water. It is technically feasible to install the piling under the bridge with minimum intrusion in the river during the construction process. An access road would likely be

constructed to provide adequate equipment access below the bridge girders. Sheet piles would not require site dewatering, thereby simplifying the overall construction process, likely minimizing costs, and reducing potential environmental impacts. Multiple sheet piles would be required to drive piles below scour depth. Horizontal welding would be used to splice together sheet piles as they are driven down. Sheet piles would provide coverage to the entire abutment. They would be integrated, or "keyed," into both the upstream and downstream bank revetments in such a way that the revetment materials would overlap to protect the joint.

All construction work would occur from the top of the highway, and constructed platforms/earthen ramps off the sides of the highway base slopes. Open and previously compacted ground surfaces on the west side of the nearby Madison County owned Twin Bridges Park (Park) will be used to store material and equipment. Gravel surfaced roads in the park will be used to access the staging area.

**Figure 5: Rip Rap Diagram**




RIPRAP SECTION VIEW, NTS
CROSS SECTIONAL AREA = 154 SQ. FEET

## 2. FACTUAL DETERMINATIONS

### A. Physical Substrate Determinations

#### (1) Substrate Elevation and Slope

According to boring logs on the north abutment of the North Twin Bridge during the reconstruction of the Twin Bridges in 1998, the road embankments are supported on fill described as "gravel with silt, sand and cobbles" from under the pavement at the road finished grade, approximately 1511.2 m, down to an elevation of approximately 1507 m (ITD, 1997). An intermediate layer of "sandy silt with gravel" from elevation 1507 m to 1505.8 m is under the fill (ITD, 1997). Below that, the substrate is "gravel with sand and cobbles" (ITD, 1997).

The original plans called for riprap to be placed from the beginning of the approach slab to the bridge down the finished river slope, from elevation 1509.25 m down to approximately 1 m below the channel bottom around elevation 1504 m (ITD, 1997). Riprap was originally placed on a 1V:1.5H slope (ITD, 1997). Specific riprap gradation was not available in the design plans, but most of the original riprap has now been washed away. Some has been replaced by Madison County during previous flood events.

Materials to be placed in this project will be riprap rock with a $D_{50}$ of 18 inches and a $D_{100}$ of 24 inches. This riprap will be placed on a 2H:1V slope in a layer 24inches thick. The riprap will be from a local commercial source and will be clean.

**(2) Sediment Type**

Sediments present on site include gravels and cobbles in the channel, having a maximum particle size of about 6.7 inches and a $D_{50}$ of approximately 1.8 inches. Riprap to be placed in the project will be rock with a $D_{50}$ of 18 inches and a D100 of 24 inches. This riprap will be placed on a 2H:1V slope in a layer 24inches thick. The riprap will be from a local commercial source and will be clean. Working platforms on the riprap slope will be constructed out of riprap.

**(3) Dredged/Fill Material Movement**

Incidental amounts of soil and rock that are relocated by blading can be expected to roll towards, and perhaps into, the river. The introduced pit rock are not expected to move a noticeable amount after placement and compaction.

**(4) Physical Effects on Benthos**

The proposed action will not have a long-term adverse effect on benthic organisms.

**(5) Other Effects**

There are no other effects anticipated due to the proposed action.

**(6) Actions Taken to Minimize Impacts**

The project would be built during low flows to reduce environmental impacts, and provide protection prior to the onset of the 2013 high flow season.

**B. Water Circulation, Fluctuation, and Salinity Determinations**

**(1) Water**

(a) Salinity – Not applicable

(b) Water Chemistry - No change expected

(c) Clarity – An increase in near-shore turbidity will occur during rip rap and sheet-pile placement. This change in turbidity from this activity would be short-lived and localized, and not greater than the effects that normally occur due to wave action.

(d) Color - No effect

(e) Odor - No effect

(f) Taste – No effect

(g) Dissolved Gas Levels – No effect

(h) Nutrients – The proposed action will not have a detectable effect on the nutrient content of the river.

(i) Eutrophication - No effect

(j) Others - No effect

**(2) Current Patterns and Circulation**

(a) Current Pattern and Flow – No effect

(b) Velocity – No effect

(c) Stratification – No effect

(d) Hydrologic Regime – No effect

(3) Normal Water Fluctuations – No effect

(4) Actions That Will Be Taken to Minimize Impacts - No further actions are necessary.

**C. Suspended Particulate/Turbidity Determinations**

**(1) Expected changes in Suspended Particulates and Turbidity Levels in the Vicinity of the Site**

Slight increases in turbidity can be expected to last for very short periods during riprap and sheetpile placement However, no long-term detrimental effects from suspended particulates or turbidity are expected. In fact, there may be a long-term improvement as a result of less erosion from the road in its current state.

**(2) Effects (Degree and Duration) on Chemical and Physical Properties of the Water Column**

(a) Light Penetration **–** Near-shore light penetration could be reduced for short period of time if material slides down the bank during placement. However, this reduction is not expected to exceed the light inhibition that routinely occurs as a result of wave action.

(b) Dissolved Oxygen – No effect.

(c) Toxic Metals and Organics – No contaminants are expected to be present.

(d) Pathogens – There are no known sources of anthropogenic sources of pathogens at construction or quarry sites.

(e) Aesthetics – Noticeable near-shore turbidity could occur during placement.

(f) Other - No other effects.

**(3) Effects on Biota**

(a) Primary Production, Photosynthesis - No effect.

(b) Suspension/Filter Feeders – No effect.

(c) Sight Feeders – Adequate area exists to allow sight feeders to move out of the work area for feeding purposes. No permanent reductions of fish or other large sight feeders of the aquatic ecosystem are anticipated.

**(4) Actions Taken to Minimize Impacts** – No further actions will be necessary.

**D. Contaminant Determinations**

The riprap will consist of clean quarry material and should not contain any contaminants.

**E. Aquatic Ecosystem and Organism Determinations**

**(1) Plankton Effect** – No effect.

**(2) Benthos Effects –** Removal of grasses and shrubs, along with the placement of riprap and sheet pile may cause a disturbance to, and loss of, invertebrate species. However, benthic organisms should start to become reestablished in the new habitat during the following spring.

**(3) Nekton Effects –** Mobile aquatic organisms will likely move out of the area if the water-sediment interface is disturbed, but would return when that disturbance has passed.

**(4) Aquatic Food Web Effects –** No effects.

**(5) Special Aquatic Sites Effects**

(a) Sanctuaries and Refuges – Not applicable

(b) Wetlands – Not applicable

(c) Mud Flats – Not applicable

(d) Vegetated Shallows – No effect

(e) Riffle and Pool Complexes – Not applicable

**(6) Threatened and Endangered Species –** No threatened or endangered fish species are anticipated to be in the vicinity of the project during the work window.

**(7) Aquatic Life Forms** – Turbidity levels resulting from the proposed action will be temporary. Fish will be able to easily avoid the work area.

**(8) Land Based Life Forms** – No effect

**(9) Actions Taken to Minimize Impacts** – None required

**F. Proposed Disposal Site Determinations**

**(1) Mixing Zone Determination** - See number (2) Compliance with applicable Water Quality Standards and Regulations, below.

**(2) Determination of Compliance with Applicable Water Quality Standards and Regulations**.

(a) Section 401 certification - Section 401 of the Clean Water Act requires that applicants requesting a Federal license or permit to conduct activities which may result in discharge in the navigable waters of the United States, provide to the licensing or remitting agency, a certification from the State that any such discharge complies with the applicable water quality standards. In this case, the State of Idaho certification that the project will not cause a violation of Idaho Administrative Code IDAPA 58.01.02 Water Quality Standards is requested from the Department of Environmental Quality.

(b) Stream Channel Alteration Permit – An Idaho Stream Alteration Permit will be acquired.

**(3) Potential Effects on Human Use Characteristics**

(a) Municipal and Private Water supply - No effect

(b) Recreational and Commercial Fisheries - The proposed action is not intended to increase recreational fishing opportunities.

(c) Water Related Recreation - The proposed action is not intended to increase recreational opportunities for the general public.

(d) Aesthetics – Rip rap and sheet-pile placement may create small turbidity plumes near the work area. However, these plumes should be short-lived and have an almost unnoticeable effect on aesthetics.

(e) Parks, National Historical Monuments, National Seashores, Wilderness Area, Research Sites, and Similar Preserves - No effect

(f) Actions to Minimize Impacts - No actions are needed

**G. Determination of Cumulative Effects on Aquatic Ecosystems**

The proposed action is not expected to have significant adverse cumulative effects on the aquatic ecosystem.

**H. Determinations of Secondary Effects on the Aquatic Ecosystem**

The proposed action is not expected to have any negative secondary effects on the aquatic ecosystem. The reduction in erosion that is a consequence of current conditions is considered a positive long-term effect.

References

Idaho Transportation Department, December 1997. Plan and Profile of Proposed Twin Bridges, Federal Aid Project No. ER-6768(100), Key No. 7078, Jefferson – Madison County. Drawing set.

**DEPARTMENT OF THE ARMY**
WALLA WALLA DISTRICT, CORPS OF ENGINEERS
201 NORTH THIRD AVENUE
WALLA WALLA WA 99362-1876

REPLY TO
ATTENTION OF:

August 21, 2012

Planning, Programs, and Project
Management Division

Mr. Troy Saffle
DEQ Idaho Falls Regional Office
900 N. Skyline Drive, Suite B
Idaho Falls, ID 83402

Dear Mr. Saffle:

The U.S. Army Corps of Engineers, Walla Walla District (Corps) requests Clean Water Act Section 401 Water Quality Certification for a proposed project on the South Fork of the Snake River near the town of Ririe, ID. The proposed action would armor the approach to the Archer Highway North Twin Bridge and abutment where the river channel has migrated south and threatens the structural integrity of the bridge with adverse flow angles.

On July 21, 2009 Madison County requested assistance from the Corps as authorized by Public Law (PL) 79-526, Flood Control Act of 1946, Section 14, as amended. The Corps determined there was an imminent threat to the bridge and that the project would qualify for assistance under the Section 14 authority.

The high flows through the North Twin Bridge now greatly exceed the bridge design flow. The 2008 and 2009 high flow events peaked at 20,500 and 24,500 cfs, respectively. Historically, this would have yielded approximately 4,820 and 5,760 cfs based on the design flow split (24% North Channel, 76% south channel). Assuming approximately 75% of the flow is now going to the North Channel instead of the south channel; the North Twin Bridge may have experienced 14,460 and 17,280 cfs during those events. Comparing these flows to the historical 24% north and 76% south flow split, the North Twin Bridge received the equivalent of 61,530 and 73,530 cfs, respectively. While the overall flow events were on the order of a 20% exceedence flow event (5 year flow), the equivalent values are approximately double the 1% exceedence event (100 year flow).

Because the North Twin Bridge was designed for the historic flow split (24% north, 76% south), the opening is too narrow for the river in its current configuration (75-90% north, 10-25% south). This causes a constriction of the flow, which results in a higher water surface elevation and increased water velocities, leading to localized scour. When combined with the magnitude of equivalent flows the North Twin Bridge is receiving, this scour has been severe.

The North Channel has been migrating south, eroding the river bank both upstream and downstream of the bridge. A riprap revetment would be constructed based on an average flow velocity of 9 ft/s, the average stone size ($D_{50}$) would be 18 inches and riprap thickness would be approximately 24 inches. The revetment would extend south, approximately 900 feet along the east side of the highway fill and south, approximately 100 ft along the west side of the highway fill. Riprap would be installed on a 2H: 1V slope, requiring slope preparation. Geotextile fabric and sand would be installed underneath the riprap. Future toe scour would be mitigated by constructing a thickened toe, using launchable stone placed directly in the river. Launchable stone is stone placed along expected erosion locations, and above the zone of attack. As soil erodes, the stone is undermined, slides down the slope, and halts the erosion.

The riprap would be tied in to a sheet pile structure protecting the south abutment under the bridge. Sheet piles are long structural sections, typically made of steel, with a vertical interlocking system, driven into the earth, side by side, that would create a continuous vertical wall of protection for the abutment. The sheet pile would be anchored to assure stability. Sheet pile dimensions are typically narrow for this installation method, allowing the maximum conveyance area for river flow between the abutments, when compared to sloped alternatives such as riprap and some gabion design configurations.

This work could likely be accomplished with minimum intrusion on the river and no dewatering effort.

The Corps has determined that placement of the riprap material and sheet pile below ordinary high water requires water quality certification from your agency as per Section 401 of the Clean Water Act of 1977. Additional information on the proposed project can be found in the enclosed public notice and Section 404 (b) (1) Evaluation.

The Corps is proposing to construct this project early in 2013.

If you have any questions or need additional information, please contact Mr. Benjamin Tice at Ben.J.Tice@usace.army.mil or 509-527-7267.

Sincerely,

Michael S. Francis
Chief, Environmental Compliance Section

Enclosures
1. Public Notice
2. CWA Section 404(b)(1) Evaluation

US Army Corps of Engineers
Walla Walla District

BUILDING STRONG®

# ARCHER HIGHWAY TWIN BRIDGES

**SECTION 14 EMERGENCY STREAMBANK STABILIZATION PROJECT**

**SOUTH FORK SNAKE RIVER, MADISON, COUNTY, IDAHO**

**PM-EC-2010-0001**

## Biological Assessment

for

Threatened and Endangered Species

Under the Jurisdiction of:

U.S. Fish and Wildlife Service

U.S. Army Corps of Engineers
Walla Walla District
Environmental Compliance Section

2 August 2012

The U.S. Army Corps of Engineers, Walla Walla District, in cooperation with the project sponsor, Madison County, Idaho, proposes to design and construct a streambank stabilization project under the authority of Section 14 of the Flood Control Act of 1946. The proposed design would armor the approach to the Archer Highway North Twin Bridge, where the river channel has migrated south and threatens the bridge with adverse flow angles.

The river has significantly altered its course through the Twin Bridges since a large flood event in 1997. A major portion of the flow has moved away from the south channel and into the north channel. This has caused severe erosion at the North Twin Bridge, at both bridge embankments, both banks downstream, the south bank upstream, and the center pier.

Recent high flows have adjusted the channel further south which is now eroding the south bank and south bridge abutment. The Corps will armor the southern approach of the North Twin Bridge with riprap. The armor will span 900 feet along the upstream side of the highway and 100 along the downstream side of the highway. In addition, sheet piling will be used to protect the south bridge abutment beneath the bridge.

Endangered Species Act listed species in Madison and Jefferson counties include Canada lynx and Ute ladies'-tresses. There is no habitat in the area to support Canada lynx. Ute ladies'-tresses can be found within ½ mile of the North Twin Bridge. The proposed project will not have a direct effect on Ute ladies'-tresses, but continued erosion associated with the shifting Snake River channel could adversely impact individuals of this plant while suitable habitat conditions for other individuals could be formed.

The Corps concludes the proposed project will have no effect on Canada lynx or its designated critical habitat. The Corps also concludes the project may affect, but is not likely to adversely affect Ute ladies'-tresses. There is no critical habitat designated for Ute ladies'-tresses.

If additional information regarding this document is required, please contact Ben Tice, Biologist in the Environmental Compliance Section of the U.S. Army Corps of Engineers, Walla Walla District, at (509) 527-7267, or by email at ben.j.tice@usace.army.mil. Other correspondence can be mailed to:

Benjamin Tice
Biologist
Environmental Compliance Section
U.S. Army Corps of Engineers Walla Walla District
201 North Third Ave.
Walla Walla, WA 99362

_____

Benjamin J. Tice
Biologist/Preparer
U.S. Army Corps of Engineers
Walla Walla District
Environmental Compliance Section

_____

Jason Achziger
Fishery Biologist/Reviewer
U.S. Army Corps of Engineers
Walla Walla District
Environmental Compliance Section

**1. INTRODUCTION ..... - 1 -**

**2. BACKGROUND / HISTORY ..... - 2 -**

2.1. PROJECT HISTORY ..... - 2 -
2.2. DOCUMENTATION OF RELEVANT CORRESPONDENCE ..... - 3 -
2.3. FEDERAL ACTION HISTORY ..... - 3 -

**3. PROJECT DESCRIPTION ..... - 3 -**

3.1. AUTHORITY ..... - 3 -
3.2. PROJECT AREA AND ACTION AREA ..... - 3 -
*3.2.1. Footprint ..... - 3 -*
*3.2.2. HUC, Township, Range, Section ..... - 5 -*
*3.2.3. Quantification of Area Potentially Affected ..... - 5 -*
3.3. PROJECT PURPOSE ..... - 5 -
3.4. PROJECT ACTIVITIES ..... - 5 -
3.5. PROJECT TIMELINE ..... - 7 -
3.6. OPERATIONAL CHARACTERISTICS OF THE PROPOSED ACTION ..... - 7 -
3.7. PROPOSED CONSERVATION MEASURES ..... - 7 -
*3.7.1. Effect Minimization Measures ..... - 7 -*
*3.7.2. Best Management Practices ..... - 7 -*
3.8. MITIGATION ..... - 8 -
3.9. INTERDEPENDENT AND INTERRELATED ACTIONS ..... - 8 -
3.10. ONGOING AND PREVIOUS PROJECTS IN THE ACTION AREA ..... - 8 -

**4. STATUS OF SPECIES AND CRITICAL HABITAT ..... - 8 -**

4.1. SPECIES LISTS FROM USFWS ..... - 8 -
4.2. IDENTIFICATION OF LISTED SPECIES AND CRITICAL HABITAT ..... - 9 -
4.3. IDENTIFICATION OF DESIGNATED CRITICAL HABITAT ..... - 9 -
4.4. STATUS OF SPECIES ..... - 9 -
*4.4.1. Canada Lynx ..... - 9 -*
*4.4.2. Ute ladies'-tresses ..... - 9 -*
4.5. STATUS OF CRITICAL HABITAT ..... - 11 -
*4.5.1. Ute ladies'-tresses ..... - 11 -*

**5. ENVIRONMENTAL BASELINE ..... - 11 -**

5.1. HISTORIC CONDITIONS ..... - 12 -
5.2. CURRENT CONDITIONS ..... - 12 -

**6. EFFECTS OF THE ACTION ..... - 12 -**

6.1. PROJECT EFFECTS ..... - 12 -
6.2. EFFECTS ON LISTED SPECIES ..... - 12 -
*6.2.1. Construction Disturbance ..... - 13 -*
*6.2.2. Riparian Vegetation Reduction ..... - 13 -*
*6.2.3. Chemical Contamination ..... - 13 -*
6.3. INTERRELATED AND INTERDEPENDENT EFFECTS ..... - 13 -
6.4. EFFECTS ON CRITICAL HABITAT ..... - 14 -
*6.4.1 Ute ladies'-tresses ..... - 14 -*
6.5. CUMULATIVE EFFECTS ..... - 14 -
6.6. CONCLUSION ..... - 14 -
*6.6.1. Listed Species ..... - 14 -*
*6.6.2. Critical Habitat ..... - 15 -*
*6.6.3. Summary. ..... - 15 -*

**7. FISH AND WILDLIFE COORDINATION ACT OF 1958, AS AMENDED..... - 15 -**

**8. MIGRATORY BIRD TREATY ACT OF 1918, AS AMENDED ..... - 15 -**

**9. BALD AND GOLDEN EAGLE PROTECTION ACT OF 1940, AS AMENDED..... - 16 -**

**10. REFERENCES..... - 17 -**

**Glossary**

| | |
|---|---|
| cfs | Cubic feet per second |
| Corps | U.S. Army Corps of Engineers |
| DPS | Distinct Population Segment |
| ESA | Endangered Species Act of 1973, as amended |
| HUC | Hydrologic Unit Code |
| RHCA | Riparian Habitat Conservation Area |
| USFWS | U.S. Fish and Wildlife Service |

## 1. Introduction

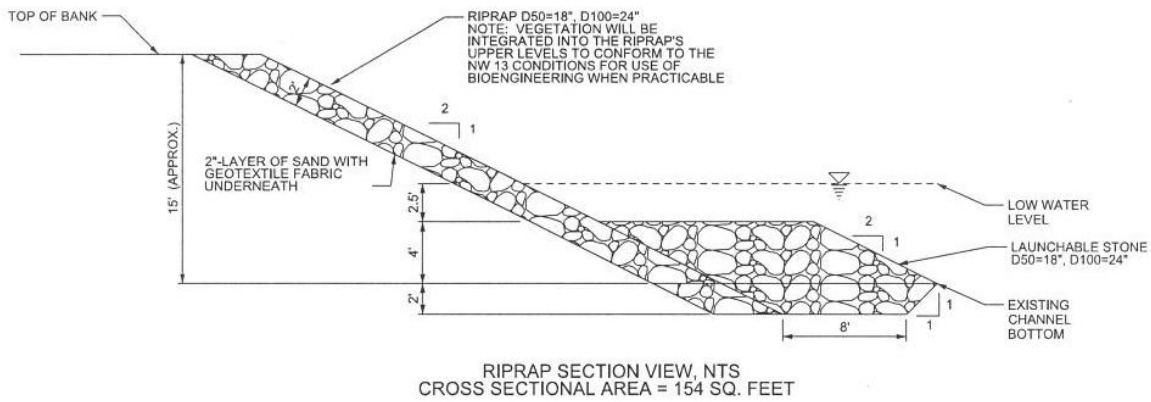
The U.S. Army Corps of Engineers, Walla Walla District, in cooperation with the project sponsor, Madison County, Idaho, proposes to design and construct a streambank stabilization project under the authority of Section 14 of the Flood Control Act of 1946 (Public Law 79-526). The Archer Highway is one of two major north-south links between Madison and Jefferson Counties, Idaho, and serves as a major farm-to-market road. The proposed design would armor the approach to the North Twin Bridge, where the river channel has migrated south and threatens the bridge with adverse flow angles.

A large flood event occurred on the South Fork of the Snake River in 1997, reaching a peak flow of 43,500 cubic feet per second (cfs). This is in excess of the 0.2% exceedance flow in this reach. The flood destroyed both the North and South Twin Bridges. Since the flood event in 1997, the river has significantly altered its course through the Twin Bridges, away from the south channel and into the north channel. This has caused severe erosion at the North Twin Bridge, at both bridge embankments, both banks downstream, the south bank upstream, and the center pier. Scour has also occurred, dropping the channel bed as much as 6 feet under the bridge and creating a scour hole approximately 19 feet deep downstream of the center bridge pier.

During the high flow event of 2009, the north abutment experienced severe scour, exposing two of the steel piles on which the north abutment is founded. A portion of the north abutment was rebuilt, stabilized, and armored in early 2010. Similar protection was applied to the south abutment in March 2011.

Recent high flows have adjusted the channel further south which is now eroding the south bank and south bridge abutment. The newly proposed riprap will span 900 feet along the upstream side of the highway and 100 along the downstream side of the highway. In addition, sheet piling will be used to protect the south bridge abutment. Figure 1 is a depiction of a typical section of armoring.

Figure 1. Depiction of proposed riprap armoring.




Typical section of proposed riprap revetment.

## 2. Background / History

### 2.1. Project History

This project addresses accelerated streambank erosion and bridge abutment instability issues on the south shore of the Archer Highway North Twin Bridge, Idaho, and the long-term goal of protecting the bridge and highway from damage caused by high flows in the Snake River. The Archer Highway crosses a braided reach of the South Fork of the Snake River at two bridges that cross channels approximately 0.5 mile apart. In 1997, the South Fork of the Snake River experienced a significant flow event causing the complete failure of the South Twin Bridge and damaging the North Twin Bridge to the point where it became unusable. Both structures were replaced in 1998. After 1997, the river began shifting its primary course northward upstream of the Twin Bridges.

Historically, the south channel carried 76% of the total flow, but the north channel now carries as much as 90% of high flows and 100% of low flows. As a result, the North Twin Bridge experiences damaging scour and shoreline erosion during high spring flows. Future high flow events are likely to shift the main river flow to the north channel. Without additional protection, flows will eventually damage the bridge and embankment to a point where failure is eminent.

Both the north and south abutments of the North Twin Bridge have received considerable erosion in the past few years. The center pier has also experienced substantial erosion. Madison County has already shored up the north and south bridge abutments, but the south bank and the

center pier are eroding. Madison County also tried to shift some of the flows back to the south channel by excavating gravel from the south channel upstream from the Twin Bridges in order to lower the bed elevation and cause more water to flow south. These efforts had little long term effect on flows.

### 2.2. Documentation of Relevant Correspondence

The Bureau of Land Management provided a map of Ute ladies'-tresses located near the proposed project. This map is available to the Service upon request, but it is not for public distribution.

### 2.3. Federal Action History

The Corps Regulatory office permitted the replacement of the bridges in 1998. Permits were also issued for work at the bridge abutments in 2010 (NWW No. 2010-86 and NWW- 2010-23-102.)

The Corps has been involved with the Section 14 project since 2009, but erosion at the site is occurring so rapidly project designs become obsolete prior to them being implemented. The proposed action now is to directly protect the southern highway approach of the North Twin Bridge and the southern bridge abutment.

## 3. Project Description

### 3.1. Authority

Section 14 of the 1946 Flood Control Act (Public Law 79-526), as amended, provides authority for the U.S. Army Corps of Engineers (Corps) to plan and construct emergency streambank and shoreline protection projects to protect endangered highways, highway bridge approaches, and public facilities (i.e., water and sewer lines, churches, public and private nonprofit schools and hospitals, and other nonprofit public facilities). A Section 14 project may include the construction of new streambank or shoreline protection works; or may repair, restore, or modify existing works. A project is accepted for construction only after investigation verifies engineering feasibility, environmental acceptability, and economic justification.

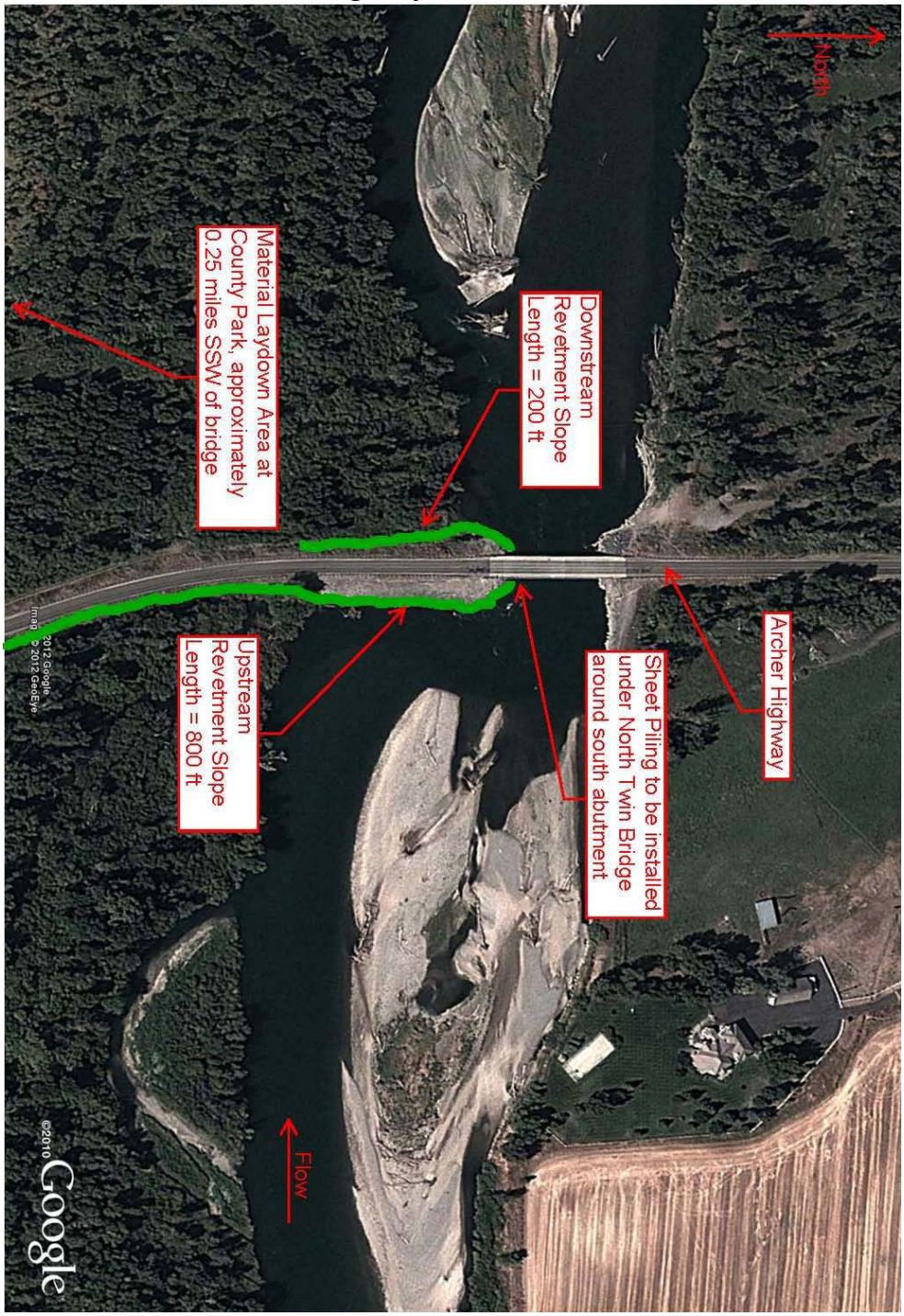
### 3.2. Project Area and Action Area

#### 3.2.1. Footprint

The project is on the South Fork of the Snake River in Madison County, Idaho. It lies in Sections 16 and 17 in Township 4 North, Range 40 East. The Snake River flows east to west through the proposed project area, and the Archer Highway Twin Bridges have a north-south orientation. The bridges are approximately 7.5 miles due east of Rigby, Idaho; and approximately 3 miles south-southeast of Archer, Idaho. The proposed work would take place on the south bank of the North Twin Bridge. The project footprint extends from the North

Twin Bridge's southern abutment, 900 feet south along the east edge of the highway and 100 feet south along the west edge of the highway. Figure 2 shows the extents of the work. The west side of the nearby Madison County-owned Twin Bridges Park (Park) will be used to store material and equipment. Gravel surfaced roads in the park will be used to access the staging area.

Figure 2. Extents of proposed riprap armoring near the North Twin Bridge. Note the lengths of the revetment have been changed by +/- 100 feet.



### 3.2.2. HUC, Township, Range, Section

Hydrological Unit Code (HUC) 17040201, Idaho Falls. The work would take place on the left (south) bank of the river, located in Sections 16 and 17, Township 4 North, Range 40 East, Boise Meridian, Madison County, Idaho. Latitude 43$^{o}$40’09”, Longitude 111$^{o}$45’51”.

### 3.2.3. Quantification of Area Potentially Affected

The work area would cover less than one acre along the Archer Highway. Approximately 1,000 feet along the highway shoulders would be affected. A corridor of about 10 feet will need to be cleared along the bottom of the highway approach to provide construction access. The shoulders of the highway are already cleared. A few trees along the toe of the approach will need to be removed.

## 3.3. Project Purpose

The project purpose is to plan and construct emergency streambank protection to protect the Archer Highway and the North Twin Bridge from high flows where it crosses the South Fork of the Snake River in Madison County, Idaho. The plan will consider measures to protect the highway embankment, bridge approach foundation materials, abutment, and other existing structural components of the North Twin Bridge.

The high flows through the North Twin Bridge now greatly exceed the bridge design flow. The 2008 and 2009 high flow events peaked at 20,500 and 24,500 cfs, respectively. Historically, this would have yielded approximately 4,920 and 5,880 cfs based on the design flow split (24% north channel, 76% south channel). Assuming approximately 75% of the flow is now going to the north channel instead of the south channel, the North Twin Bridge may have experienced 15,375 and 18,375 cfs during those events.

Because the North Twin Bridge was designed for the historic flow split (24% north, 76% south), the bridge opening is now too small for the river in its current configuration (75-90% north, 10-25% south). This causes a constriction of the flow, which results in a higher water surface elevation and increased water velocities, leading to localized scour. This scour has been severe. The north channel has been migrating south, eroding the river bank both upstream and downstream of the bridge. In addition, scour below the center pier of the bridge has reached 19 feet below the natural riverbed.

## 3.4. Project Activities

The riprap revetment will be placed, starting at the upstream side (east side of the bridge) at the abutment, south along the highway embankment approximately 900 feet. Downstream from the abutment (west side of the bridge) the revetment will be placed south along the highway embankment approximately 100 feet. Approximately 5,800 cubic yards of riprap will be

installed on a 2H:1V slope, requiring some slope preparation. Geotextile fabric and sand will be installed underneath the riprap. The riprap revetment would be fitted and keyed into the constructed protection at the abutment. Rock and gravel may need to be used to create temporary working platforms on the embankment slope so an excavator can reach to the bottom of the level to be protected. These temporary platforms will be removed after they are no longer needed.

Rock would be obtained from a local commercial source, trucked to the bridge site or stockpiled at the nearby park. The rock will be placed by excavator or like equipment. This work can be accomplished with minimum intrusion on the river and no dewatering effort. Future erosion along the highway approach would be mitigated by constructing a thickened toe (Figure 1), using launchable stone[1] placed directly in the river or along the toe of the highway approach.

A continuous, steel, interlocking vertical wall (sheet pile structure) will be constructed adjacent the south shore abutment (under the south side of the bridge) to protect the bridge from high flows, high velocities and debris. The upstream and downstream riprap would be keyed into this sheet pile structure. This configuration would provide the maximum cross sectional area between the abutments to pass water.

It is technically feasible to install the sheet piling under the bridge with minimum intrusion in the river during the construction process. A short access road will be constructed from the existing highway surface to an appropriate working level under the bridge to provide adequate equipment access below the bridge girders. Sheet piles would not require site dewatering, thereby simplifying the overall construction process, likely minimizing costs, and reducing potential environmental impacts. Multiple sheet piles will be required to drive piles below scour depth. Horizontal welding will be used to splice together sheet piles as they are driven down. Sheet piles will provide coverage to the entire abutment. They will be integrated, or "keyed," into both the upstream and downstream bank revetments in such a way that the revetment materials will overlap to protect the joint.

The following elements comprise the proposed work:

1. Project activities would start by clearing trees and other vegetation 10 feet from the toe of the highway approach to provide construction access.
2. A ramp will be built to access under the bridge.
3. Steel sheet pile will be driven to form a wall around the south bridge abutment under the North Twin Bridge.
4. An excavator will operate from the top of the highway to excavate the highway approach to a to 2 vertical:1 horizontal slope. Geotextile fabric will be placed on the excavated bank to separate the riprap from the soil beneath.
5. Riprap will be trucked to the work site. Riprap will have an average size ($D_{50}$) of 18 inches. The riprap would be placed in a layer 24 inches thick. The rock will be placed by the excavator, not dumped into place. The bottom of the riprapped bank will be over-constructed so that as the toe erodes, the extra rock fills the scour hole. Rock used for

[1] Launchable stone is stone placed along expected erosion locations, and above the zone of attack. As soil erodes, the stone is undermined, slides down the slope, and halts the erosion.

riprap will consist of sound, dense, durable, angular rock fragments, resistant to weathering and free from large quantities of soil, shale, and organic matter.

### 3.5. Project Timeline

The Project Design Phase is planned to be completed by December 2012 and implementation of the project is planned to be started in October 2013. The project will be built during low flows to make construction access easier, reduce environmental impacts, and provide protection prior to the onset of the 2013 high flow season. Construction will take about two weeks for the highway approach armoring and another week to drive the sheet piles.

### 3.6. Operational Characteristics of the Proposed Action

Once the riprap is in place there will be no operational actions necessary. The over-built toe section would fall into the scour hole if one forms. Like the armored bridge approach, the sheet pile under the bridge will have no operational actions associated with it. Annual inspections and inspections during and following high flow events will be conducted to monitor the condition of the stabilization work.

### 3.7. Proposed Conservation Measures

The Corps proposes the following conservation measures as part of the proposed action.

#### 3.7.1. Effect Minimization Measures

The following effect minimization measures will be implemented by the Corps:

1) Fuel and lubricants will not be stored at the construction site.
2) Refueling will occur away from the river.
3) Equipment will be staged as far away from the river as feasible when not in use.
4) Equipment will be inspected for leaks and cleaned prior to beginning work near the river. Any detected leaks will be repaired before the vehicle enters the work area.
5) A spill prevention and control plan will be developed and discussed with equipment operating personnel prior to instream work.
6) All in-water work will be done during low flows.
7) No material shall be placed that will increase the height of the bank and have the effect of separating the river from its floodplain.
8) Equipment will be pressure washed to remove all weed seeds, dirt and grease.

#### 3.7.2. Best Management Practices

Typical types of best management practices depend on site-specific conditions, but generally include the following:

1. All equipment used within 50 feet of the river will be cleaned prior to entering the work area.

2. Only the excavator bucket will enter the water.
3. Riprap will be placed not dumped into place.
4. Equipment will be checked daily for leakage and any repairs will be made outside of the work area.
5. Vegetable based oil will be used in the hydraulic systems of equipment working near the water.
6. Spill response kits will be available within five minutes of an accidental spill of hydraulic fluid or other oil

### 3.8. Mitigation

No mitigation for this project is proposed.

### 3.9. Interdependent and Interrelated Actions

Interdependent actions are those that have no independent utility apart from the proposed action. One interdependent action is protection of the center pier of the bridge. Armoring the south river bank will do nothing to protect the center pier. In fact, armoring the river bank could increase the erosive forces through the bridge, further threatening the center pier. Madison County may need to protect the pier. When the bridge was constructed, the center pier support was extended very deep below the streambed.

Interrelated actions are part of a larger action and depend on the larger action for their justification. No interrelated actions are identified for this project.

### 3.10. Ongoing and Previous Projects in the Action Area

Madison County placed concrete slabs cabled together around the north bridge abutment in 2010 and around the south bridge abutment in 2011. It is not known if these fixes will stand up to high flows. The concrete slabs placed around the south abutment may have already failed. Madison County also removed gravel from the south channel in an effort to send more flow to the south channel. This action was only minimally effective for a short time.

## 4. Status of Species and Critical Habitat

### 4.1. Species Lists from USFWS

The Corps reviewed the current list of threatened and endangered species under the jurisdiction of the U.S. Fish and Wildlife Service (USFWS) that pertain to the proposed project area for Madison and Jefferson Counties, Idaho (semi-annual species list dated August 17, 2011) on July 31, 2012.

## 4.2. Identification of Listed Species and Critical Habitat

**Table 1. Federal Register notices for final rules that list threatened and endangered species, designate critical habitats, or apply protective regulations to listed species considered in this consultation. Listing status: 'T' means listed as threatened under the ESA.**

| Species | Listing Status | Critical Habitat |
|---|---|---|
| **Canada lynx (*Lynx canadensis*)** | | |
| Contiguous U.S. DPS | T 3/24/00; 63 FR 16051 16086 | 2/25/09; 74 FR 8615 8702 |
| **Ute ladies'-tresses (*Spiranthes diluvialis*)** | | |
| Contiguous U.S. DPS | T 1/17/92; 57 FR 2048 205 | Not applicable |

## 4.3. Identification of Designated Critical Habitat

Critical habitat has been designated for Canada lynx. However, critical habitat is not designated in Madison or Jefferson Counties, Idaho.

## 4.4. Status of Species

### 4.4.1. Canada Lynx

Canada lynx was listed as a threatened species in 2000. In 2003, in response to a court-order to reconsider the listing, USFWS clarified their final listing decision. The Final Rule listing the Canada lynx identified the primary threat to the species was the inadequacy of existing regulatory mechanisms. Lynx are not known to occur along the Snake River corridor. This was verified by the USFWS on 13 April 2011 (personal communication, Doug Lay, USFWS). The Corps determined the proposed project would have no effect on Canada lynx.

### 4.4.2. Ute ladies'-tresses

#### 4.4.2.1. Listing History

Ute ladies'-tresses (*Spiranthes diluvialis*) was listed as threatened in 1992 in its entire range. Within the area covered by this listing, this species is known to occur in Colorado, Idaho, Montana, Nebraska, Utah, Washington, and Wyoming. In 2004, USFWS contracted for a comprehensive status review of this species. A draft of this report became available in February 2005. A final draft of the status review was completed in October 2005. USFWS has determined that a petition to remove the Ute ladies'-tresses orchid from Federal protection under the Endangered Species Act provides substantial biological information to indicate that removal may be warranted.

#### 4.4.2.2. Life History/Biological Requirements

Ute-ladies'-tresses is a perennial, terrestrial orchid with 7 to 32-inch stems arising from tuberously thickened roots. The flowering stalk consists of few to many small white or ivory flowers clustered into a spiraling spike arrangement at the top of the stem. The species is characterized by whitish, stout flowers. It blooms, generally, from late July through August. The orchid occurs along riparian edges, gravel bars, old oxbows, high flow channels, and moist to wet meadows along perennial streams. It typically occurs in stable wetland and seepy areas associated with old landscape features within historical floodplains of major rivers, as well as in wetlands and seeps near freshwater lakes or springs. Ute ladies'-tresses ranges in elevation from 720 to 1,830 ft in Washington to 7,000 feet in northern Utah. Nearly all occupied sites have a high water table (usually within 5 to 18 inches) of the surface augmented by seasonal flooding, snowmelt, runoff, and irrigation.

Since 1992, at least 26 new populations of Ute ladies'-tresses have been documented from perennial stream, river, lakeshore, and spring sites directly associated with human-developed dams, levees, reservoirs, irrigation ditches, reclaimed gravel quarries, roadside barrow pits, and irrigated meadows. In all, 33 of 61 documented populations (54%) occur in sites in which natural hydrology has been influenced by dams, reservoirs, or supplemental irrigation. Even sites with undisturbed hydrology, however, have been influenced by agricultural practices, urban development, or road and dam construction (Fertig et al. 2005).

#### 4.4.2.3. Distribution

Ute ladies'- tresses was first discovered in Idaho in 1996 along the South Fork of the Snake River (Moseley 1997). The species is now known from Bonneville, Fremont, Jefferson, and Madison counties along the Snake River and from wetland sites along the Henry's Fork River (Moseley 1998a, 1998b, 1999a, Murphy 2001). Idaho populations occur in the Idaho Falls, Palisades, and Lower Henrys watersheds within the Columbia Plateau and Utah-Wyoming Rocky Mountains ecoregions (Fertig et al. 2005).

The nearest known Ute ladies'-tresses population occurs at the Twin Bridges area, downstream and upstream of the proposed project site. The population is near the Twin Bridges Campground (downstream) and upstream ½ mile from the project site.

#### 4.4.2.4. Factors for Decline

##### 4.4.2.4.1. Historical Pressures on the Species

Land use practices such as grazing, clearing for agriculture, and construction of flood control levees all have applied pressure to Ute ladies'-tresses.

##### 4.4.2.4.2. Current Pressures on the Species

Human-caused and human-related factors represent the main *S. diluvialis* threats in Idaho. Murphy (2004) discussed six major threat categories: hydrologic and floodplain alteration,

livestock grazing, off-highway vehicle use, noxious weeds and invasive species (non-native plants), recreation, and other landscape-level threats (levee construction and maintenance, water diversions, road and bridge development, bank stabilization riprapping, channel dredging, and housing developments). Palisades Dam operations have changed the seasonal hydrograph in the Snake River, particularly in the river reach from the dam downstream to the river's confluence with the Henry's Fork. These operations have changed the timing of flow discharge and reduced peak spring flows (Merigliano 1996; Moller and Van Kirk 2003; Hauer *et al*. 2004).

Non-native species invasions pose the biggest immediate threat and are increasing at or near all *S. diluvialis* occurrences along the Snake River. The decline and potential loss of two occurrences along the Snake River have been attributed to the invasion of non-native plant species (Murphy 2004).

##### 4.4.2.4.3. Limiting Factors for Recovery

The alteration of suitable habitat and invasion of non-native plant species seem to be limiting factors on the recovery of Ute ladies'-tresses.

#### 4.4.2.5. Local Empirical Information

##### 4.4.2.5.1. Current Local Population Information

Ute ladies'-tresses can be found very near to the proposed riverbank armoring site. This plant is located less than ¼ mile south of the North Twin Bridge.

##### 4.4.2.5.2. Ongoing Monitoring

The Bureau of Land Management (BLM) frequently monitors their lands for the presence of Ute ladies'-tresses. BLM lands surround the project area.

### 4.5. Status of Critical Habitat

#### 4.5.1. Ute ladies'-tresses

No critical habitat rules have been published for Ute ladies'-tresses.

## 5. Environmental Baseline

This section is an analysis of the effects of past and ongoing human and natural factors leading to the current status of the species, its habitat (including designated critical habitat), and ecosystem within the action area. The environmental baseline is a "snapshot" of a species' health at a specified point in time. It does not include the effects of the action under review in the consultation.

The baseline includes State, tribal, local, and private actions already affecting the species or that will occur contemporaneously with the consultation in progress. Unrelated Federal actions

affecting the same species or critical habitat that have completed formal or informal consultation are also part of the environmental baseline, as are Federal and other actions within the action area that may benefit listed species or critical habitat.

### 5.1. Historic Conditions

The Snake River corridor around the action area historically was likely a braided river, much like its current condition. Ute ladies'-tresses was likely present.

### 5.2. Current Conditions

Currently the Snake River corridor is a well vegetated cottonwood forest. Human influences have altered the corridor to some extent. Bridges, levees, and riprapped areas restrict where the river can flow. Campgrounds and other recreation sites can also be found near the action area. Ute ladies'-tresses exists very near the project area, but is not known within it. The land surrounding the project area includes a dense riparian cottonwood forest, which is among the most unique and diverse ecosystems in the western United States. However, the primary work area along the Archer Highway was previously disturbed, so vegetation is not as dense.

## 6. Effects of the Action

This section includes an analysis of general project-related effects of the proposed action. Effects from any interrelated and interdependent activities are also discussed.

### 6.1. Project Effects

Potential project effects must be analyzed carefully for this project based on the proposed project area and the environmental baseline. The proposed project area includes areas both upstream and downstream of the North Twin Bridge. One thousand feet of highway embankment along the river will be affected. The southern approach to the North Twin Bridge will become a hard-armored bank. Factors such as these must be taken into account when analyzing the potential adverse affects on ESA listed species, and ultimately making an effect determination.

Reduced flows during the springtime have led to poor regeneration of cottonwoods and other native plants. Studies on the Snake River suggest that regular river discharges as high as 40,000 to 60,000 cfs may be necessary to obtain river restoration (Hauer 2004). River scientists know that system organization and complexity is maximized on unconfined (i.e., floodplain) reaches compared to confined (i.e., canyon or geomorphically constrained) river reaches (Hauer et al. 2004). The proposed project will not affect river flows.

### 6.2. Effects on Listed Species

Direct effects to Ute ladies'-tresses from the proposed project would not occur because the known populations in the area are not located within the project footprint. Indirectly changes like hard armoring the riverbank can have a negative effect on the plant succession process. In

addition armoring one area can lead to increased bank erosion in another area. Unknown or new populations could be affected. With structures such as the Twin Bridges in place, the river will never be totally natural.

#### 6.2.1. Construction Disturbance

Ute ladies'-tresses is not present within the work site, and construction activities will be confined to the site and material storage area, so none of these plants would be harmed by project construction. Therefore, effects of construction disturbance on listed species as a result of the proposed streambank protection project are not reasonably certain to occur. Potential adverse effects as a result of the proposed action are, therefore, discountable.

#### 6.2.2. Riparian Vegetation Reduction

The Snake River corridor is very well vegetated with a healthy riparian forest. A few trees may need to be removed to facilitate construction access. However, even if these trees weren't removed for the construction effort, it is likely they would erode away in upcoming high flows. Ute ladies'-tresses is not found within the work site, so no direct impacts to this plant would occur. There could be a loss of suitable habitat conditions for the plant caused by armoring the river bank and increased erosion in other areas, but the indirect effects from this would be immeasurable, and are not reasonably certain to occur, and are, therefore, discountable. The Snake River corridor is well vegetated, but excessive erosion as a result of baseline conditions will cause the loss of some vegetation.

#### 6.2.3. Chemical Contamination

Operation of equipment requires the use of fuel and lubricants, which, if spilled into the channel of a waterbody or into the adjacent riparian zone, can injure or kill aquatic organisms. Petroleum-based contaminants contain poly-cyclic aromatic hydrocarbons (PAHs), which can be acutely toxic at high levels of exposure and can cause lethal and sublethal chronic effects to other aquatic organisms (Neff 1985). Vegetable-based hydraulic oil will be utilized in the hydraulic systems of equipment working near the river. Construction equipment will be staged as far away from the river as possible, and all equipment will be cleaned and fueled in these staging areas. Equipment will be inspected and cleaned prior to any instream work. These effect minimization measures will significantly reduce hydrocarbon and other contaminant levels. Because of the low likelihood for a spill and the lack of presence of Ute ladies'-tresses within the project footprint, no impact is expected.

### 6.3. Interrelated and Interdependent Effects

Eventually the North Twin Bridge will need to be replaced with a longer spanning bridge. The existing bridge is now acting as a control point on the river and may be limiting some of the river's natural migration into new areas of the floodplain. Once the bridge is replaced, the river may erode into areas where Ute ladies'-tresses currently exists and some individual plants could be lost. As the river moves, suitable habitat should also be created, resulting in no net loss of the local population.

## 6.4. Effects on Critical Habitat

### 6.4.1 Ute ladies'-tresses

No critical habitat rules have been published for the Ute ladies'-tresses.

## 6.5. Cumulative Effects

Cumulative effects include the effects of future state, tribal, local or private actions that are reasonably certain to occur in the action area considered in this BA. Future federal actions that are unrelated to the proposed action, and have not already undergone consultation under the ESA, are not considered here because they require separate consultation pursuant to Section 7 of the ESA.

Possible relocation of the Lenroot Canal headgate to the north riverbank near the North Twin Bridge has been suggested as a cumulative effects item, but no information could be located on its current status.

Another potential cumulative effects item is removal and construction of a longer spanning north bridge. There are currently no plans for this action, but the way the river is moving, it may be the only long term solution. Reconstruction of the bridge likely wouldn't affect Ute ladies'-tresses directly, but could cause indirect effects if the river is allowed to move more freely throughout the floodplain.

The river will continue to move and erode sections of shoreline. As the river moves it could impact existing Ute ladies'-tresses individuals by either eroding them or by drying out their habitat. The proposed project will armor the south highway approach. This won't have any predictable effect on where the river might move to or where individual Ute ladies'-tresses plants may be affected.

## 6.6.Conclusion

### 6.6.1. Listed Species

The Corps determined that the proposed action may affect, but is not likely to adversely affect Ute ladies'-tresses. This plant is not known to occur within the proposed project area, but is found nearby. There would be no effect on Canada lynx.

Because of the very limited occurrence of Ute ladies'-tresses and the absence of Canada lynx within the project area, combined with the conservation measures reducing the potential for adverse effects from construction disturbance, chemical contamination, and riparian vegetation reduction, effects on ESA-listed species are not reasonably certain to occur, and are, therefore, discountable.

### 6.6.2. Critical Habitat

There is no designated Canada lynx critical habitat in the project area. The project would have no effect on lynx critical habitat. There is no critical habitat designated for Ute ladies'-tresses.

### 6.6.3. Summary.

**Table 2. ESA Effect determinations.**

| Species | Species Determination | Critical Habitat Determination |
|---|---|---|
| **USFWS** | | |
| Canada lynx | No Effect | No Effect |
| Ute ladies'-tresses | May Affect, Not Likely to Adversely Affect | None Designated |

## 7. Fish and Wildlife Coordination Act of 1958, As Amended

The Fish and Wildlife Coordination Act (FWCA) authorizes the USFWS the authority to evaluate the impacts to fish and wildlife species from proposed Federal water resource development projects that could result in the control or modification of a natural stream or body of water that might have effects on the fish and wildlife resources that depend on that body of water or its associated habitats.

The proposed project will armor the highway approach, some of which is now bordered by the South Fork Snake River. The bridge and approach fill currently direct the river flow through the bridge. Adding riprap and sheet pile will not change the flow from the existing condition.

The USFWS was contacted regarding the project, but did not provide any comments pertaining to the FWCA. They reserved their comments for a review under the ESA.

## 8. Migratory Bird Treaty Act of 1918, As Amended

The Migratory Bird Treaty Act (MBTA) (16 U.S.C. §§ 703-712, as amended) prohibits the taking of and commerce in migratory birds (live or dead), any parts of migratory birds, their feathers, or nests. Take is defined in the MBTA to include by any means or in any manner, any attempt at hunting, pursuing, wounding, killing, possessing or transporting any migratory bird, nest, egg, or part thereof.

A wide variety of species listed under the MBTA[2] occur in and around the project footprint. One bird of note, the yellow billed cuckoo, a candidate species under the ESA in the western United States, is known to inhabit the cottonwood corridor along the South Fork of the Snake River.

The proposed construction will be conducted in winter, outside of nesting season and in an area that would eventually erode. Some trees will be removed, but since the work would be done

[2] http://www.fws.gov/migratorybirds/RegulationsPolicies/mbta/mbtandx.html

outside the nesting season there would be no take under the MBTA. Therefore, the proposed action will not result in taking migratory birds, their nests, eggs, or parts thereof.

### 9. Bald and Golden Eagle Protection Act of 1940, As Amended

The Bald and Golden Eagle Protection Act (BGEPA) prohibits the taking or possession of and commerce in bald and golden eagles, with limited exceptions, primarily for Native American Tribes. Take under the BGEPA includes both direct taking of individuals and take due to disturbance. Disturbance is further defined on 50 CFR 22.3.

There are five bald eagle nests located within 5 miles of the project. The proposed work is scheduled for October through December. Table 3 shows that life history timing of bald eagles in the Pacific region does not coincide with the proposed construction period. Therefore, disturbance of nesting bald eagles is unlikely to occur, and there will be no take as a result of the proposed action.

**Table 3 Bald eagle life history timing for the Pacific region (USFWS 2007).**

| **Bald Eagle Life History Timing-Pacific Region** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG |
| | | | | Nest Building | | | | | | | |
| | | | | | Egg Laying/Incubation | | | | | | |
| | | | | | | Hatching/Rearing Young | | | | | |
| | | | | | | | | | Fledgling Young | | |

## 10. References


Hauer, F.R. 2004. Ecologically based systems management for the Upper Snake River. Flathead Lake Biological Station. University of Montana.

Hauer, F.R., M.S. Lorang, D. Whited, and P. Matson. 2004. Ecologically based systems management: the Snake River – Palisades Dam to Henrys Fork. Unpublished report prepared for the U.S. Bureau of Reclamation by the Flathead Lake Biological Station, Polson, Montana. 133 pp.

Fertig, Walter, Rick Black, and Paige Wolken. 2005. *Rangewide Status Review of Ute Ladies'-Tresses (Spiranthes diluvialis).* Prepared for the U.S. Fish and Wildlife Service and the Central Utah Water Conservancy District.

McKelvey, Kevin S., K. B. Aubry, and Y. K. Ortega. 1999. History and Distribution of Lynx in the Contiguous United States. Pp. 207-264. In L.F. Ruggiero, K.B. Aubry, S.W. Buskirk, G.M. Koehler, C.J. Krebs, K.S. McKelvey, and J.R. Squires (eds.) Ecology and conservation of lynx in the United States. RMRS-GTR-30WWW. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station.

Merigliano, M. 1996. Ecology and management of the South Fork Snake River cottonwood forest. Idaho Bureau of Land Management Technical Bulletin 96-9. 66 pp. + appendices.

Moller, S., and R. Van Kirk. 2003. Hydrologic alteration and its effect on trout recruitment in the South Fork Snake River project. Unpublished report prepared for the Idaho Department of Fish and Game by Idaho State University, Pocatello, Idaho. 92 pp.

Moseley, R.K. 1997. Ute ladies' tresses (*Spiranthes diluvialis*): preliminary status in Idaho. Unpublished report prepared by the Idaho Conservation Data Center, Boise, Idaho. 11 pp. + appendices.

Moseley, R.K. 1998a. Ute ladies' tresses (*Spiranthes diluvialis*) in Idaho: 1997 status report. Unpublished report prepared by the Idaho Conservation Data Center, Boise, Idaho. 35 pp. + appendices.

Moseley, R.K. 1998b. Ute ladies' tresses (*Spiranthes diluvialis*) in Idaho: 1998 status report. Unpublished report prepared by the Idaho Conservation Data Center, Boise, Idaho. 23 pp. + appendix.

Murphy, C. 2001. Ute ladies' tresses (*Spiranthes diluvialis*) in Idaho: 2001 status report. Unpublished report prepared for the Upper Snake River District BLM and Caribou-

Targhee National Forest by the Idaho Conservation Data Center, Boise, Idaho. 23 pp.

Murphy, C. 2004. Monitoring Ute ladies'-tresses (*Spiranthes diluvialis*) on the South Fork Snake River, Idaho: conservation status and third year results of habitat monitoring. Unpublished report prepared by the Idaho Conservation Data Center, Boise, Idaho. 28 pp. + appendices.

Neff, J.M. 1985. Polycyclic aromatic hydrocarbons. Pages 416–454 in G.M. Rand and S.R. Petrocelli, editors. Fundamentals of aquatic toxicology. Hemisphere Publishing, Washington, D.C.

Ruggiero, L.F., K.B. Aubry, S.W. Buskirk, G.M. Koehler, C.J. Krebs, K.S. McKelvey, and J.R. Squires. 2000. The scientific basis for lynx conservation: qualified insights. Pages 443-454 *in* L.F. Ruggiero, K.B Aubry, S.W. Buskirk, et al. Ecology and conservation of lynx in the contiguous United States. University Press of Colorado, Boulder.

**DEPARTMENT OF THE ARMY**
WALLA WALLA DISTRICT, CORPS OF ENGINEERS
201 NORTH THIRD AVENUE
WALLA WALLA WA 99362-1876

REPLY TO
ATTENTION OF:

August 2, 2012

Planning, Programs, and Project
Management Division

Mr. Russ Holder
Assistant State Supervisor
Idaho State Office, U.S. Fish and Wildlife Service
1387 S. Vinnell Way, Suite 368
Boise, Idaho 83709

Dear Mr. Holder:

Pursuant to Section 7(c) of the Endangered Species Act, we request your review and informal consultation on our proposed streambank protection project at the North Twin Bridge, on the Archer Highway near Ririe, Idaho (PM-EC-2010-0001). We have determined our proposed project *"may affect, but is not likely to adversely affect"* Ute ladies'-tresses and would have "*no effect*" on Canada lynx. Enclosed for your review is our biological assessment.

If you have any questions or would like additional information about the proposed action, please contact Mr. Ben Tice at 509-527-7267 or at ben.j.tice@usace.army.mil.

Sincerely,

Michael S. Francis
Chief, Environmental Compliance Section

Enclosure

# United States Department of the Interior

## U.S. Fish and Wildlife Service

Idaho Fish and Wildlife Office
1387 S. Vinnell Way, Room 368
Boise, Idaho 83709
Telephone (208) 378-5243
http://www.fws.gov/idaho


Michael S. Francis
Chief, Environmental Compliance Section
Department of the Army
Walla Walla District, Corps of Engineers
201 North Third Avenue
Walla Walla, Washington 99362

AUG 1 7 2012

Subject: North Twin Bridge, on the Archer Highway Project—Madison County, Idaho—Concurrence
In Reply Refer To: 01EIFW00-2012-I-0408 Internal Use: CONS-100a

Dear Mr. Francis:

This letter transmits the U.S. Fish and Wildlife Service's (Service) concurrence on the effects to species listed under the Endangered Species Act (Act) of 1973, as amended, for the proposed North Twin Bridge on the Archer Highway Emergency Stream Bank Stabilization Project (Project) in Madison County, Idaho. In a letter dated August 2, 2012, and received August 6, 2012, the Corps of Engineers (COE) requested concurrence with the determinations, documented in your Biological Assessment (Assessment), that the proposed actions are not likely to adversely affect the Ute ladies'-tresses (*Spiranthes diluvialis*). The COE also determined that the Project will have no effect on Canada lynx (*Lynx canadensis*); we acknowledge these determinations.

The COE, in cooperation with Madison County, proposes to design and construct a stream bank stabilization project under the authority of section 14 of the Flood Control Act of 1946. The proposed design would armor the approach to the Archer Highway North Twin Bridge, where the South Fork of the Snake River channel has migrated south and threaten the bridge with adverse flow angles.

Recent high flows have adjusted the river channel further south which has resulted in erosion of the south bank and south bridge abutment. The COE will armor the southern approach of the North Twin Bridge with riprap. The armor will span 900 feet along the upstream side of the highway and 100 along the downstream side of the highway. In addition, sheet piling will be used to protect the south bridge abutment beneath the bridge.

Service concurrence that the Project is not likely to adversely affect Ute ladies'-tresses is based on the following rationales presented in the Assessment.

1. There are no known populations of Ute ladies'-tresses within the project area and the project area is a previously disturbed habitat. Review of the project location by the BLM concurs with this assessment.

2. The project has been changed slightly to avoid further disturbance by restricting entrance to the site from the paved highway. No new disturbance will be required.

If the proposal addressed in this letter is modified, environmental conditions change, or additional information becomes available regarding potential effects on listed species, you should verify with the Service that your conclusions are still valid. Thank you for your continued interest in the conservation of threatened and endangered species. Please contact Jeri Wood (208) 378-5289 if you have questions concerning this letter.

Sincerely,

Russell R. Holder

for Brian T. Kelly
State Supervisor

cc: COE, Walla Walla (Tice)
FWS, Chubbuck (Kampwerth)