



Environmental Assessment

**U.S. Department of Agriculture
Grazinglands Research Laboratory
El Reno, Oklahoma**

El Reno Bridge Replacement Project

October 2017

USDA



Environmental Assessment

prepared by

**U.S. Department of Agriculture
Grazinglands Research Laboratory
El Reno, Oklahoma
El Reno Bridge Replacement Project**

October 2017

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LIST OF ABBREVIATIONS

<u>Abbreviation</u>	<u>Term/Phrase/Name</u>
ACHP	Advisory Council on Historic Preservation
APE	Area of Potential Effect
ARS	Agricultural Research Service
AQI	Air Quality Index
BMP	Best Management Practices
Burns & McDonnell	Burns & McDonnell Engineering Company, Inc.
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
cmbs	centimeter below surface
CWA	Clean Water Act
EA	Environmental Assessment
ECHO	Enforcement and Compliance History Online
EO	Executive Order
EPA	Environmental Protection Agency
°F	degrees Fahrenheit
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
GLO	General Land Office
GRL	Grazinglands Research Laboratory
km	kilometer
MBTA	Migratory Bird Treaty Act

<u>Abbreviation</u>	<u>Term/Phrase/Name</u>
mi	miles
MM	Mitigation Measure
MPH	mile per Hour
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
OAS	Oklahoma Archaeological Survey
ODEQ	Oklahoma Department of Environmental Quality
ODWC	Oklahoma Department of Wildlife Conservation
OEMA	Oklahoma Environmental Management Authority
OSHA	Occupational Safety and Health Standards
OG&E	Oklahoma Gas & Electric Corporation
OWRB	Oklahoma Water Resources Board
POW	Prisoner of War
SHPO	State Historic Preservation Office
sq	square
SR	State Route
SWPPP	Storm Water Pollution Prevention Plan
THPO	Tribal Historic Preservation Office

<u>Abbreviation</u>	<u>Term/Phrase/Name</u>
USACE	U.S. Army Corps of Engineers
U.S.C.	United States Code
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service

1.0 INTRODUCTION

The mission of the U.S. Department of Agriculture (USDA), Grazinglands Research Laboratory (GRL or research grounds) is to develop and deliver improved technologies, management strategies, and strategic and tactical planning tools that help evaluate and manage economic and environmental risks, opportunities, and tradeoffs, for integrated crop, forage, and livestock systems under variable climate, energy, and market conditions. In accomplishing this, the GRL provides facilities and equipment for a variety of long-term agricultural and livestock research projects and programs. It includes over 6,000 acres of cropland, warm and cool season grasslands, and grazing lands, some of which have never been plowed. Additional facilities include a greenhouse, office building, laboratories, and equipment storage buildings. Historic buildings that remain on the property from past use by the U.S. Army can be found around the facility, some well preserved as part of the Fort Reno and Chisholm Trail historic sites. A road network within the facility provides access among buildings, research facilities, and land areas, and allows for the movement of equipment and livestock that may be required as part of facility operations and maintenance.

The USDA, Agricultural Research Service (USDA-ARS) proposes to replace two bridges located on the USDA-ARS GRL, 7207 W. Cheyenne Street, El Reno, Oklahoma (Figure 1-1) due to deteriorating conditions of these existing bridges (Project). Two bridges (identified as Bridge A and Bridge D) on the research grounds have been deemed structurally deficient. Deficiencies include spalling, corrosion, and long-term deterioration of the main structural members. After assessing alternatives for the potential renovation of the existing bridges, USDA-ARS determined Bridges A and D should be demolished and replaced. In addition, the roadway approach to Bridge D experiences regular flooding. Raising the grade of the road approaching Bridge D slightly, as well as the elevation of the bridge itself, are also proposed as part of the Project. Removal and replacement of both bridges is anticipated to begin in 2018.

The USDA-ARS has prepared this Environmental Assessment (EA) in accordance with 7 Code of Federal Regulations (CFR) Part 1794 and 40 CFR Parts 1500-1508, the regulations promulgated by the Council on Environmental Quality (CEQ) for implementing the National Environmental Policy Act (NEPA). This EA also addresses other laws, regulations, executive orders, and guidelines promulgated to protect and enhance environmental quality including, but not limited to, the Endangered Species Act, the Farmland Protection Policy Act, the Clean Water Act (CWA), and executive orders governing floodplain management, protection of wetlands, and environmental justice.

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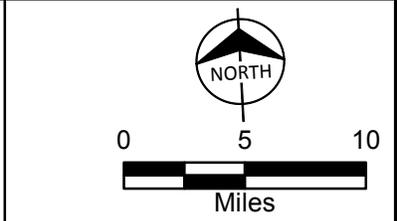
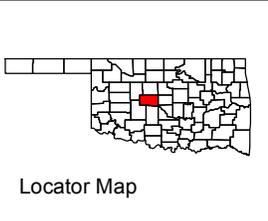


Figure 1-1
Project Location
El Reno Bridge Replacement Project
USDA
Canadian County, Oklahoma

2.0 PROJECT DESCRIPTION

USDA-ARS proposes to replace two bridges located at the USDA-ARS GRL, 7207 W. Cheyenne Street, El Reno, Oklahoma (Figure 2-1 and Figure 2-2) due to deteriorating conditions of the existing bridges. Two bridges (Bridge A - Soap Suds South and Bridge D - Target Creek) on the USDA-ARS property have been deemed structurally deficient as they have experienced a great deal of deterioration, including concrete spalling¹, and corrosion of the reinforcing steel. After assessing alternatives for the potential renovation of the existing bridges, USDA-ARS determined that these two bridges should be demolished and replaced. In addition, the roadway approach to Bridge D experiences regular flooding. Raising the grade of the road approaching Bridge D slightly, as well as the elevation of the bridge itself, are also proposed as part of the Project. Removal and replacement of both bridges is anticipated to begin in 2018.

Bridges A and D were visually inspected on November 2, 2016 (along with an assessment of two other bridges on the GRL, Bridge B and Bridge C) to assess whether the existing bridges should be replaced, repaired, or removed without replacement (if an alternate route was available). The findings and recommendations from this technical inspection are included in the Burns & McDonnell Engineering Company, Inc. (Burns & McDonnell) Technical Recommendations Report (Appendix A). Bridge B was found to be in fair to good condition, and no further analysis is required. Bridge C was recommended for immediate closure due to severe undermining, without replacement, since there is an accessible bypass route. No further action or analysis is required for Bridge C.

Bridge A (Soap Suds South) is a 48 foot-long, three-span, concrete slab bridge founded on concrete abutments and 2- column piers with a roadway width of 17 feet, 9 inches between the curbs and railing. There is a retaining wall in front of the existing south abutment with an embossed impression indicating the structure was built during 1945 by Prisoner of War (POW) labor workers as part of a World War II German and Italian Prisoner of War camp during previous U.S. Army ownership of the facility. It is not known whether this retaining wall was part of the original abutment or not. Its configuration is like the north abutment, but it is structurally not part of the existing bridge. The configuration of the south abutment is different from the north abutment, which implies that the abutment was built at a different time when the bridge was previously rehabilitated and possibly lengthened. At the time of the inspection, the bridge was partially undermined, and any further undermining of the structure will require its closure and create a long detour route and economic impact to the operations of the research grounds.

¹ Concrete spalling is a form of deterioration within a reinforced or prestressed concrete system. This type of deterioration for a concrete structural component occurs at the surface where concrete will decompose, often leaving any steel reinforcement visible and open to additional corrosion.

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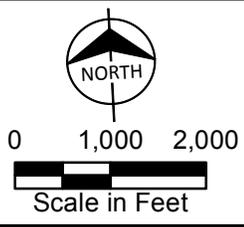
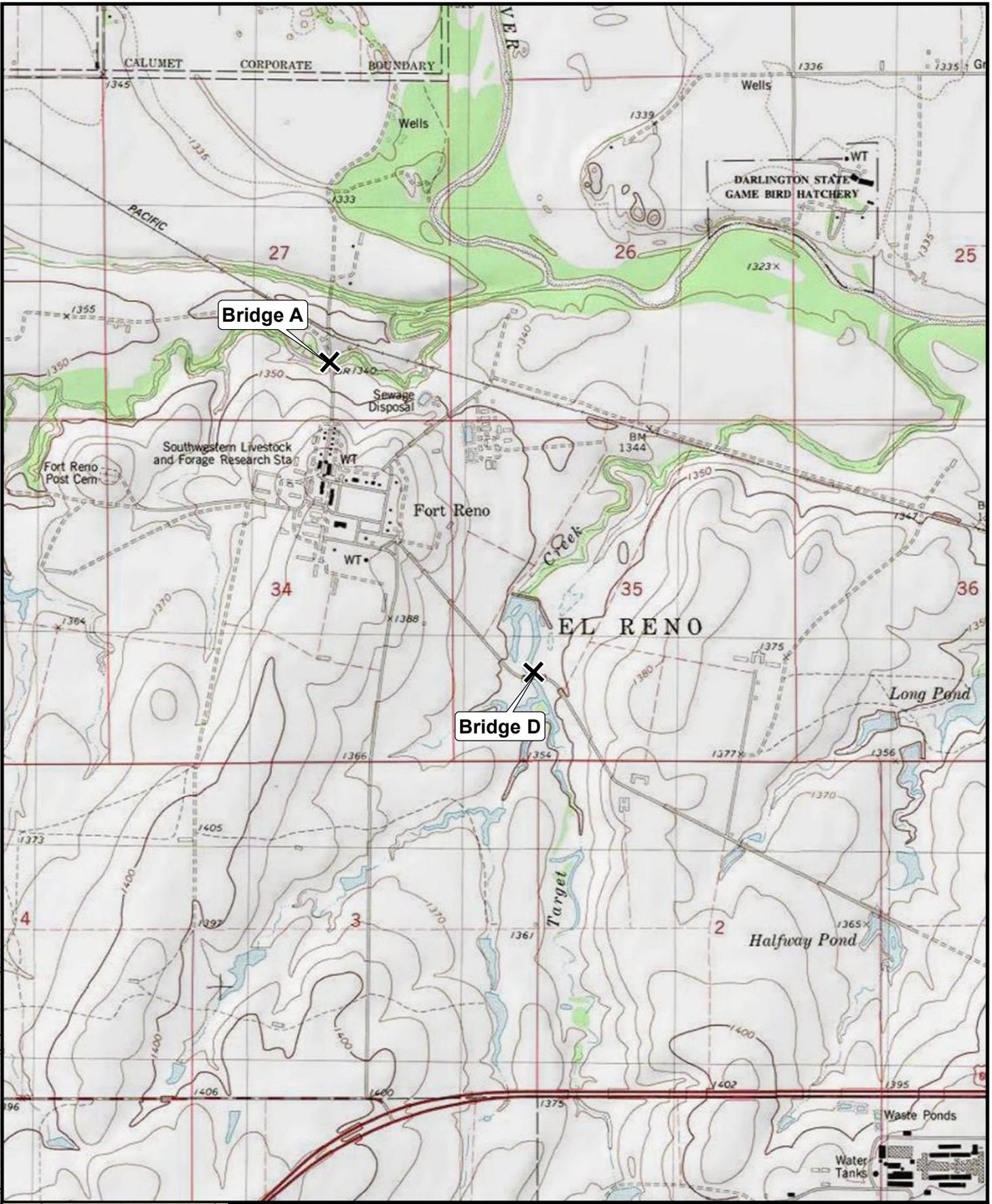


Figure 2-1
 Project Topographic Map
 El Reno Bridge Replacement Project
 USDA
 Canadian County, Oklahoma

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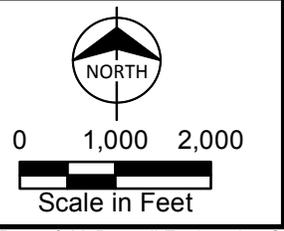


Figure 2-2
Project Vicinity
El Reno Bridge Replacement Project
USDA
Canadian County, Oklahoma

In addition, the current load posting requires all equipment/vehicles over 4 tons in weight to detour around this structure. This detour affects the operations of the research facility. For safety and operational efficiency, the proposed replacement of Bridge A is imperative. The construction area for replacement of Bridge A is shown in Figure 2-3.

Bridge D (Target Creek) is a 60 foot-long, four-span, concrete slab bridge founded on concrete abutments and two-column piers with a roadway width of 14 feet, 9 inches between the curbs and railings. As noted above, there is considerable damage to concrete and deterioration of the reinforcing in the pier columns and caps. Erosion has occurred around the abutments. Roughly 40 to 50 percent of the deck is delaminated, with cracks indicating the bridge has experienced excessive loads. The construction area for Bridge D is shown in Figure 2-4.

Both bridges, A and D, would be replaced by separate single span bridges with a 26-foot roadway width between railings. A general plan drawing is depicted in Figure 2-5. Both Bridge A and Bridge D would be substantially similar in design to the plan depicted in Figure 2-5. Bridge A overall length, fill face to fill face, is approximately 91.5 feet. Bridge D overall length, fill face to fill face, is approximately 106.5 feet. The proposed bridge length would place the abutments behind 2:1 front slopes and at or behind the top of the channel banks to avoid ongoing scour issues, debris problems, and maintenance activities at both locations.

The Project would be constructed using standard bridge construction techniques, sequencing, and associated road work. Overall, a total of approximately 1.36 acres of grassland would be disturbed for construction of both bridges. Bridge A is roughly 0.60 acre, of which 0.16 acre is in the existing roadway. Bridge D is roughly 0.76 acre, of which approximately 0.27 acre is in the existing roadway. The replacement bridges would be installed in the same location as the existing bridges. Anticipated equipment would include a crane, a bulldozer, a backhoe, forklifts, graders, dump trucks, paving equipment, a tamping and vibratory roller for compaction, a concrete pump truck, assorted steel beams associated with the bridge framework, roadbase stone, riprap, and asphalt.

Earthen and asphalt ramps would be constructed leading to the bridges. The design speed of the approaches would match the existing running speed of 30 miles per hour (mph). All work would be conducted within the existing roadways to the extent feasible. By completing multiple project elements in parallel, such as assembly of bridge members, installation of form work and foundations, construction activities will be sequenced to minimize the duration of road closure. The proposed bridge removals and installation of new bridges would occur over two periods.

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New Bridge Footprint	2,674 sq ft
Roadway Transition and Riprap Limits	13,416 sq ft
Old Bridge Floor Deck	909 sq ft

- Existing Bridge Floor Deck
- Proposed Roadway Transition and Riprap Limits
- Proposed New Bridge Footprint



0 25 50



Scale in Feet



Figure 2-3
Bridge "A" Plan Design
EI Reno Bridge Replacement Project
USDA
Canadian County, Oklahoma

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New Bridge Footprint	3,096 sq ft
Roadway Transition and Riprap Limits	17,683 sq ft
Old Bridge Floor Deck	1,085 sq ft

- Existing Bridge Floor Deck
- Proposed Roadway Transition and Riprap Limits
- Proposed New Bridge Footprint



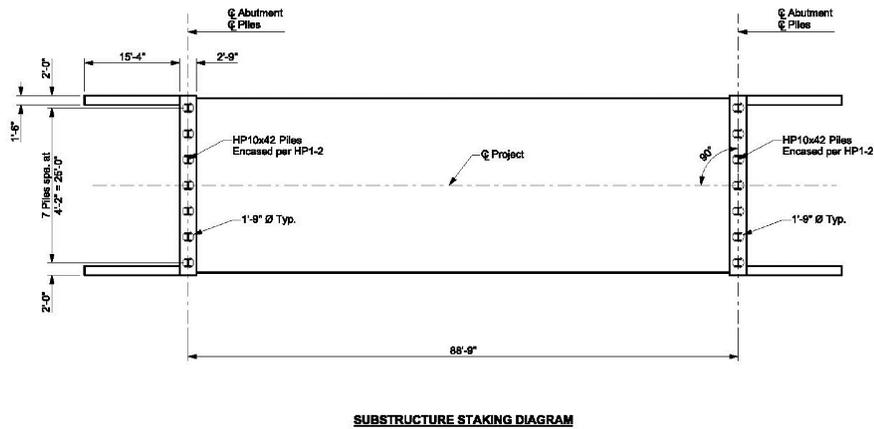
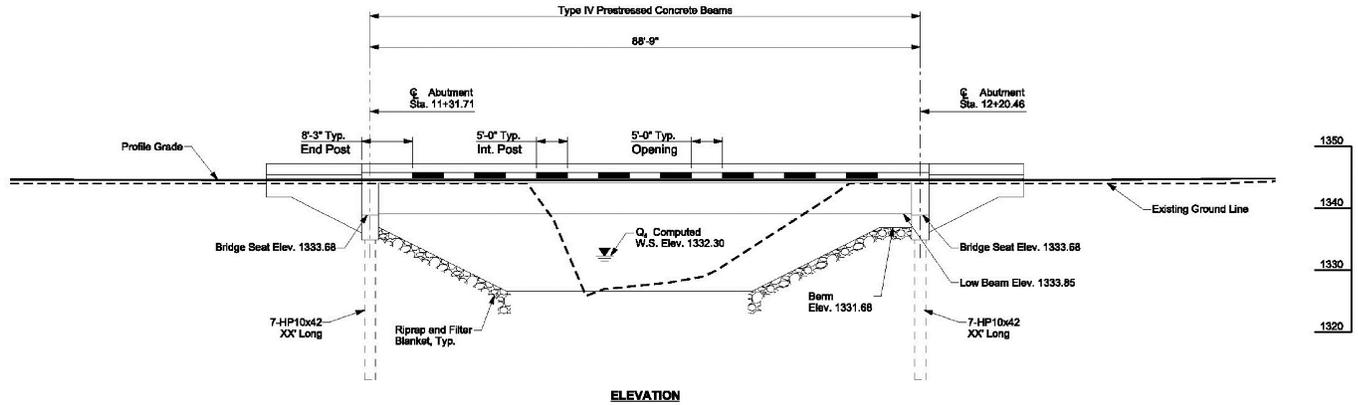
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Scale in Feet



Figure 2-4
Bridge "D" Plan Design
EI Reno Bridge Replacement Project
USDA
Canadian County, Oklahoma



	<p>Figure 2-5 Proposed Bridge Design El Reno Bridge Replacement Project USDA Canadian County, Oklahoma</p>
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Bridge A would be demolished and replaced, including associated road work, in approximately 60 to 90 working days. Bridge D would also be demolished and replaced, including associated roadwork, in approximately 60 to 90 working days.

Minimal tree removal may be required at Bridge A, with four to five small- to medium-sized trees occurring within or adjacent to the bridge construction footprint. No trees would require removal at Bridge D. No landscaping would be performed at either bridge other than seeding and mulching of disturbed areas adjacent to each bridge site.

Preconstruction activities include site surveying and installation of erosion control structures/Best Management Practices (BMPs). Should surface disturbance be determined greater than 1 acre during construction, a project-specific Storm Water Pollution Prevention Plan (SWPPP) would also be required. The Oklahoma Department of Environmental Quality (ODEQ) is authorized by the U.S. Environmental Protection Agency (EPA) to implement the National Pollutant Discharge Elimination System (NPDES) Stormwater Program, which includes construction stormwater regulations such as implementation of a SWPPP. The ODEQ also conducts CWA Section 401 Water Quality Certifications for projects requiring CWA Section 404 permits from the U.S. Army Corps of Engineers (USACE). Pier removal, stream bank grading and stabilization, and any fill or grading in the drainages would require a Section 404 CWA Permit and Section 401 Water Quality Certification. The Nationwide Permit for linear transportation projects would apply to the activities proposed as part of this Project. To qualify for Nationwide Permit authorization, the permittee must comply with the stated general conditions, as applicable, in addition to any regional or case-specific conditions imposed by the division engineer or district engineer (USACE, 2017) and General Nationwide Permit (Number SWT-2017-374) prior to initiating ground disturbing activity within jurisdictional portions of the drainage features.

Existing bridges would be demolished in sections using jackhammers, concrete cutting equipment, backhoes, and cranes. All substructure members of the existing bridges would be removed to minimum depth of 3 feet below the final ground line. To limit the carbon footprint, impact to landfills, and construction cost and time, concrete portions of the existing bridges would be broken up and neatly incorporated into the riprap. All protruding reinforcing steel would be cut off flush with the exposed surfaces and removed.

3.0 PURPOSE AND NEED FOR THE PROJECT

The purpose and need for this Project is to provide for the continuation of historic and ongoing grazing and associated research activities at the USDA-ARS research grounds in support of the mission of the USDA-ARS in El Reno, Oklahoma.

The USDA-ARS is the intramural research agency for the USDA and is one of four agencies that make up the Research, Education, and Economics mission of the USDA. The USDA-ARS budget is allocated to research conducted in 22 national program areas. Research is conducted in 108 laboratories with approximate workforce of 8,000 employees. Their role is to develop and implement solutions to agricultural issues nationwide. As a research agency, the USDA-ARS is not required to, nor does it manage its lands, for multi-purpose public uses. The USDA-ARS established research programs to include climate, water, and bioenergy research, along with livestock, forage, and grazing systems.

In 2016, USDA-ARS conducted an inspection of the existing bridges (Bridges A, B, C, and D), at the USDA Grazinglands Research Laboratory. The goal of this assessment was to identify whether each bridge should be replaced, repaired, or removed and not replaced (if an alternate route is available). Bridges A, C, and D were deemed structurally deficient. Bridges A and D, have experienced a great deal of deterioration, including concrete spalling and corrosion of the reinforcing steel. Bridge C showed severe undermining of both abutments and poor condition of its deck. After assessing alternatives for the potential renovation of the existing bridges, USDA-ARS determined that the two bridges, A and D, should be demolished and replaced. The Technical Recommendation Report (Appendix A) identified undermined conditions and recommendations for these bridges. To continue effective and efficient operations at the GRL facility, the USDA-ARS identified the need to replace Bridges A and D and to close Bridge C from future use (requiring no additional action).

4.0 ALTERNATIVES ANALYSIS

Based on the findings of the Technical Recommendation Report (Appendix A), USDA-ARS considered potential renovation and/or closure alternatives for resolving the deficiencies of the existing bridges onsite. The process for assessing the potential renovation and/or closure alternatives was based on structural deficiencies, the feasibility of engineering/design solutions, availability of alternative access roads, and estimated costs to renovate bridges or drive equipment around a bridge on an alternative access road. The following alternatives were considered.

4.1 No Action/Maintenance of the Existing Bridges.

Under this alternative, USDA-ARS would continue operations without any renovation or replacement of bridges. Trucks and equipment would not access or use structurally deficient bridges (Bridges A and D) and would instead take alternate routes to access various areas of the research grounds.

This alternative would not meet the purpose and need of the Project because the existing site conditions preclude efficient accessibility for ongoing operations throughout the research grounds without the availability of Bridges A and D.

4.2 Repair/No Replacement

At Bridge A, the repair option includes reinforcement with concrete fill. The downstream end of the concrete floor would be reinforced. Holes would be cut through the concrete floor, and the void under the floor filled with a flowable fill (concrete) to restore bearing to any affected columns and the north abutment. At Bridge D, the repair option would address scour and erosion issues around the abutments and potentially apply a new asphalt overlay.

This alternative would not meet the purpose and need of the Project because the bridges would continue to be undermined, requiring eventual closure and replacement. At Bridge D, an asphalt overlay application would not provide any significant benefit due to the age and condition of the structure according to the Technical Recommendations Report (Appendix A). In addition, the current load posting requires all equipment/vehicles over 4 tons in weight to detour around this structure, thereby increasing travel time and/or equipment loads. This would adversely affect the operating cost of the USDA-ARS programs as well as access throughout the facility. Essentially, renovation is a short term option that wouldn't provide for long term efficient operations of the USDA-ARS research grounds. Therefore, this alternative was eliminated from further consideration.

4.3 Replacement Alternative- Proposed Action

The replacement alternative is the Project as described in Section 2.0. Removal and replacement of Bridges A and D was determined the appropriate alternative to provide for continued safe, economical, and long-term access throughout the GRL.

5.0 OTHER PERMITS AND AUTHORIZATIONS

Potential permits, approvals, and authorizing actions required for the Project are listed in Table 5-1.

Table 5-1: Permits and Authorizations

Issuing Agency	Permit/Approval	Authority
Oklahoma Department of Environmental Quality	Oklahoma Pollution Discharge Elimination System (OPDES) Stormwater program, OPDES Construction General Permit, authorized by National Pollutant Discharge System (NPDES) Storm Water Discharges associated with Construction Activities and Storm Water Pollution Prevention Plan should surface disturbance be 1 acre or more (not anticipated).	Title 27A O.S. §2-6-205 of the Oklahoma Statutes and Section 402 of the Federal Clean Water Act
Oklahoma State Office of Historic Preservation	National Historic Preservation Act Consultation	National Historic Preservation Act, Section 106
U.S. Army Corps of Engineers Regulatory Office	Nationwide Permit 14 (NWP-14) for Linear Transportation Projects - Compliance with conditions of General Nationwide Permit (Permit Number SWT-2017-374)	Section 404 of the Federal Clean Water Act
Oklahoma Water Resources Board, Planning and Management Division (Local Floodplain Administrator, Canadian County).	Floodplain Development Permit, National Flood Insurance Program (NFIP)	Oklahoma Floodplain Management Act
Oklahoma Department of Environmental Quality	Solid/Hazardous Waste disposal - Compliance with regulations	Resource Conservation and Recovery Act

6.0 AFFECTED ENVIRONMENT

This section provides a description of the existing natural and human resources present in the vicinity of the Project. The Project is located approximately 5 miles northwest of the City of El Reno, within Canadian County, Oklahoma. The Project is located on USDA research land (USDA-ARS), approximately 2 miles north of Route 66 and 4.5 miles west of Highway 81. The USDA-ARS is used primarily for grazingland research and its mission is to develop and deliver improved technologies, management strategies, and strategic and tactical planning tools that help evaluate and manage economic and environmental risks, opportunities, and tradeoffs, for integrated crop, forage, and livestock systems under variable climate, energy, and market conditions.

The Project is within the Central Redbed Plains geographic province, which is characterized by gently rolling hills and broad, flat, upland plains (Curtis et al., 2008). The Project sites are within the tallgrass prairie, which comprises large swaths of mixed grasses (Hoagland, 2008). Prior to large-scale agricultural practices, these prairie grasses were in abundance, with select areas of oak timber.

6.1 Aesthetics

The Project site is surrounded by rural, mostly undeveloped grazing lands associated with the research grounds. The research grounds are predominantly undeveloped grassland for a variety of research projects related to grazing livestock, forage, and related systems. The Project site is dominated by prairie grasses with no planted landscaping, decorative fencing, or other ornamental elements on the Project site, except for small shrubs and trees planted along the road and entryways to the USDA-ARS buildings. The topography is relatively flat, with riparian areas along the periphery of nearby streams. Bridges A and D cross tributaries of the North Canadian River, which is north of the research grounds. Bridge A crosses a tributary of the North Canadian River, locally referred to as Soap Suds Creek. Bridge D crosses Target Creek, also a tributary of the North Canadian River.

Multiple buildings located on the property are used for research, material/equipment storage (barns), lodging, and corrals, and are accessed via a small network of internal paved roads. A small cemetery is located approximately 0.71-mile southwest of Bridge A. Both Bridges A and D are accessed by two-lane paved roads, both of which are not accessible to the general public.

The Project site (both Bridge A and Bridge D) would not be visible from outside of the research grounds property boundary. There are no sensitive viewers (such as residential areas or public viewpoints).

6.2 Air Quality

The EPA South Region 6 serves Arkansas, Louisiana, New Mexico, Oklahoma, and Texas. According to the EPA's assessment of air quality attainment status, the air quality in the region has been designated as in attainment for all criteria pollutants² (40 CFR Part 81). Primary pollutants in the vicinity of the Project site include particulate matter (dust) generated from farming, traffic on unpaved roads, wind erosion, and smoke from trash burning. These sources of pollution are primarily temporary, intermittent and variable depending on seasonal and atmospheric conditions. The USDA-ARS implements controlled burns each winter on various portions of the land, depending on research objectives. Currently, 200 to 300 acres could be burned on a 2- to 3-year rotation, subject to conditions and research objectives. Previously, most of the USDA-ARS was burned on at least a 5-year rotation, but that has been scaled back considerably. A former seed mixing facility located on the facility has been decommissioned and no longer contributes any air emissions. The facility has no permits for any air emissions, and no other potential sources of emissions are on or in the vicinity of the USDA-ARS. The Air Quality Index (AQI) in El Reno, Oklahoma, is typically "good" (90 percent or greater since 2011), which is less than 50 on the AQI for the five major air pollutants (Homefacts, 2017).

6.3 Biological Resources

The following Section describes the setting for biological resources, including vegetation near the Project sites (Bridge A and D). Average annual temperatures range from 28 degrees Fahrenheit (°F) to 94 °F, with a mean temperature of 64 °F. Precipitation near El Reno averages approximately 14.5 inches annually, with June as the wettest month.

6.3.1 Wildlife

A number of wildlife species common to Oklahoma likely occupy the research grounds. Fox and gray squirrel (*Sciurus niger* and *S. carolinensis*), cottontail rabbit (*Sylvilagus floridanus*), coyote (*Canis latrans*), white-tailed deer (*Odocoileus virginianus*), nine-banded armadillo (*Dasypus novemcinctus*), thirteen-lined ground squirrel (*Ictidomys tredecimlineatus*), raccoon (*Procyon lotor*), and striped skunk (*Mephitis mephitis*) live in the region. Small mammals including short-tailed shrews (*Blarina carolinensis* and *B. hylophaga*), voles (*Microtus ochrogaster* and *M. pinetorum*), mice (*Perognathus favescescens*, *P. flavus*, *P. merriami*), and big and Brazilian free-tailed bats (*Nyctinomops macrotis* and *Tadarida brasiliensis*) also occupy the area. Birds include great blue heron (*Ardea herodias*), crow (*Corvus brachyrhynchos*), robin (*Turdus migratorius*), scissor-tailed flycatcher (*Tyrannus forficatus*), cowbird

² The EPA designates the following six common air pollutants as criteria pollutants: ground-level ozone, particulate matter, carbon monoxide, lead, sulfur dioxide, and nitrogen dioxide.

(*Molothrus ater*), grackle (*Quiscalus quiscula*), red-tailed hawk (*Buteo jamaicensis*), turkey vulture (*Cathartes aura*), and western meadowlark (*Sturnella neglecta*). Blue winged teal (*Anas discors*) and Canada goose (*Branta canadensis*) were observed on wetlands adjacent to Bridge D. Barn and rough-winged swallows (*Hirundo rustica* and *Stelgidopteryx serripennis*) were observed nesting on Bridge A. Reptiles and amphibians, including bull frog (*Lithobates catesbeianus*), American toad (*Bufo americanus*), water snakes (*Nerodia spp.*), box turtle (*Terrapene carolina*, *Terrapene ornate*), snapping turtle (*Chelydra serpentina*), and painted turtle (*Chrysemys dorsalis*) also likely occur in area wetlands.

Based on communications with the Oklahoma Department of Wildlife Conservation (ODWC) during the Project scoping period, no State-listed species are within 1000 feet of either Bridge.

According to the U.S. Fish and Wildlife Service (USFWS), two federally listed endangered species and three federally listed threatened species are known or likely to occur in the Project Area (Table 6-1; Appendix B).

Table 6-1: Federally Protected Species Known or Likely to Occur within the Project Area

Species Common Name	Scientific Name	Federal Status	Designated Critical Habitat in Project Vicinity
Black-capped vireo	<i>Vireo atricapilla</i>	Endangered	No
Least tern	<i>Sterna antillarum</i>	Endangered	No
Piping plover	<i>Charadrius melodus</i>	Threatened	No
Red knot	<i>Calidris canutus rufa</i>	Threatened	No
Whooping crane	<i>Grus americana</i>	Endangered	No

Sources: U.S. Fish and Wildlife Service, Official Species List, 10/05/2017

Suitable habitat for the black-capped vireo, least tern, piping plover, and red knot is not present on the Project site, and no observations of these species have been recorded on the research grounds; therefore, the potential for these species to occur is low. The whooping crane passes through western Oklahoma each spring and fall during migration. Suitable migration stopover habitat (rivers, grain fields, shallow wetlands) for the whooping crane is present in the Project Area.

A record search request from Oklahoma Natural Heritage Inventory, an inventory of federally listed species (Appendix B), identified two species as known to have occurred southeast of the Project, but not directly within the Project site (Figure 6-1):

- Whooping crane: One occurrence was noted in Sec. 12-T12N-R8W, Canadian County.
- Sprague's pipit (*Anthus spragueii*): Two occurrences were noted in Sec. 7-T12N-R7W, Canadian County. Sprague's pipit was formerly a candidate species for Federal listing; however, on April 5, 2016, the USFWS determined that listing was not warranted at this time.

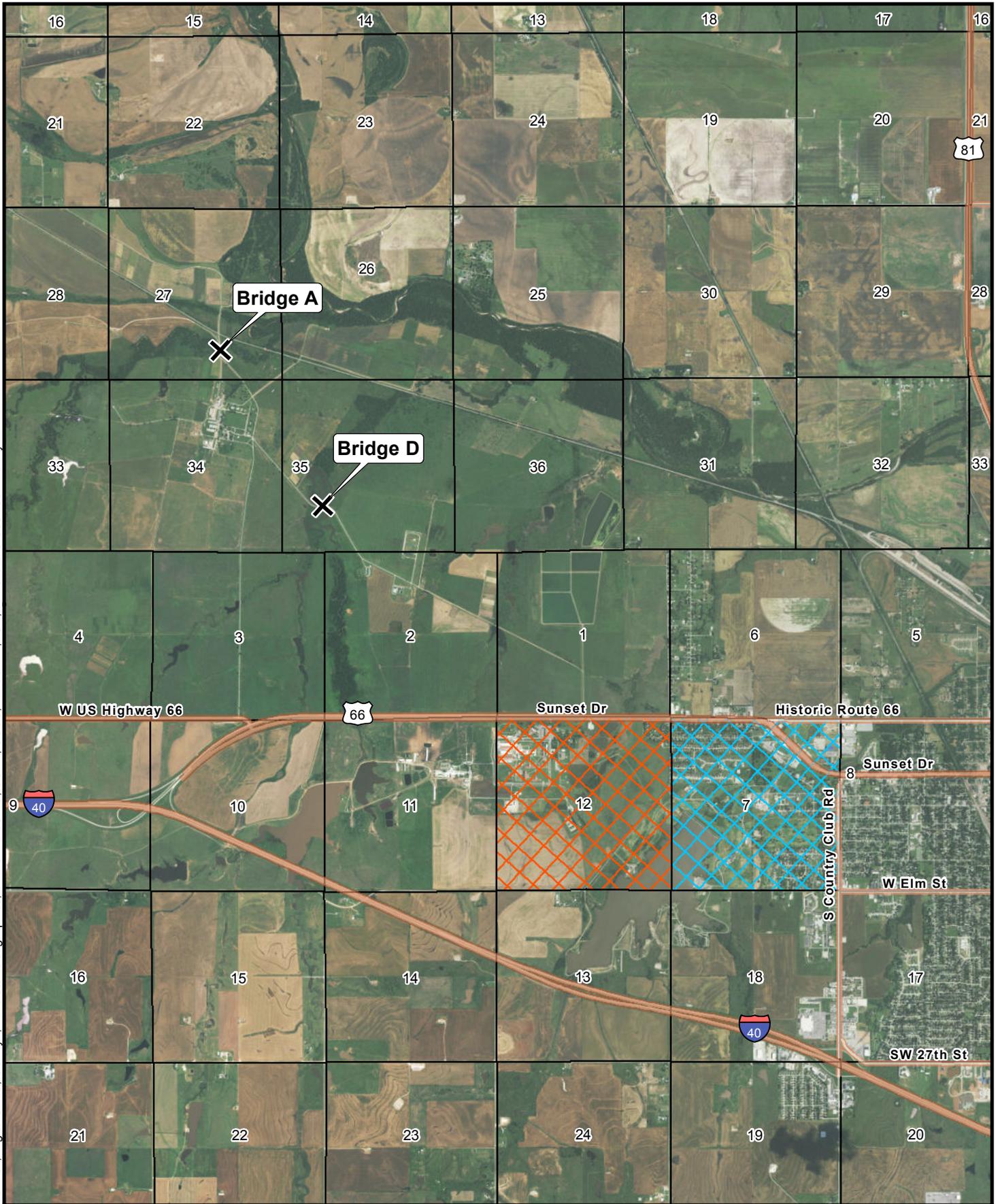
Suitable habitat for these species is not present on the Project site, and no observations of these species have been recorded on the research grounds; therefore, the potential for these species to occur is low. Nesting habitat is present for common avian species at both Bridge A and Bridge D. Cliff swallows were observed nesting extensively under Bridge A. At the time of site investigation, the entire underside of Bridge D was inundated with floodwaters. Under the Migratory Bird Treaty Act (MBTA) (16 United States Code [U.S.C.] §§ 703-712) it is "unlawful to pursue, hunt, take, capture or kill; attempt to take, capture or kill; possess, offer to or sell, barter, purchase, deliver or cause to be shipped, exported, imported, transported, carried or received any migratory bird, part, nest, egg or product..."

A review of the U.S. Fish and Wildlife Service (USFWS) critical habitat survey online indicates the nearest critical habitat is for the Arkansas River shiner, located 10 miles southwest of the Project along portions of the Canadian River.

6.3.2 Vegetation

The Project site is within the Central Great Plains, Prairie Tableland Ecoregion (Woods et al., 2005). Specifically, the Project sites are characterized as tallgrass prairie, which is dominated by large swaths of mixed grasses (Hoagland, 2008). Prior to large-scale agricultural practices, these prairie grasses were in abundance, with select areas of oak timber. Dominant grasses included little bluestem (*Schizachyrium scoparium*), big bluestem (*Andropogon gerardii*), Indiangrass (*Sorghastrum nutans*), and switchgrass (*Panicum virgatum*). Wooded areas are present at Bridge A. These woodland areas include several species of oak (*Quercus*), cottonwoods (*Populus*), ash (*Fraxinus*), red cedar (*Thuja*), elm (*Ulmus*), and sycamore (*Platanus occidentalis*). In the eastern part of Oklahoma, this prairie intergrades with oak-hickory forests, and in the western part of the State, it transitions into mixed grass plains. No special-status plant species have been recorded or observed on the research grounds, and suitable habitat to support special-status plant species is not present at the Project site.

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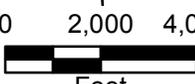
	Bridge	 
	Whooping Crane Occurrence	
	Sprague's Pipit Occurrence	
	Section Boundary	



Figure 6-1
 Federally Listed Species
 in the Project Vicinity
 El Reno Bridge Replacement Project
 USDA
 Canadian County, Oklahoma

The following types of vegetation were identified during the visual assessment of Bridge A:

- *Amorpha fruticosa* (false indigo bush)
- *Ulmus americana* (American elm)
- *Robinia pseudoacacia* (black locust)
- *Maclura pomifera* (Osage orange)
- *Sapindus saponaria* (winged soapberry)
- *Conium maculatum* (poison hemlock)
- *Urtica dioica* (stinging nettle)
- *Rumex altissimus* (pale dock)
- *Bromus tectorum* (cheatgrass)
- *Persicaria amphibia* (water smartweed)
- *Sabatia angularis* (rose gentian)

The following types of vegetation were identified during the visual assessment of Bridge D:

- *Bromus tectorum* (cheatgrass)
- *Persicaria amphibia* (water smartweed)
- *Ambrosia trifida* (giant ragweed)
- *Chenopodium album* (lamb's quarters)
- *Rumex altissimus* (pale dock)

6.4 Cultural Resources and Historic Properties

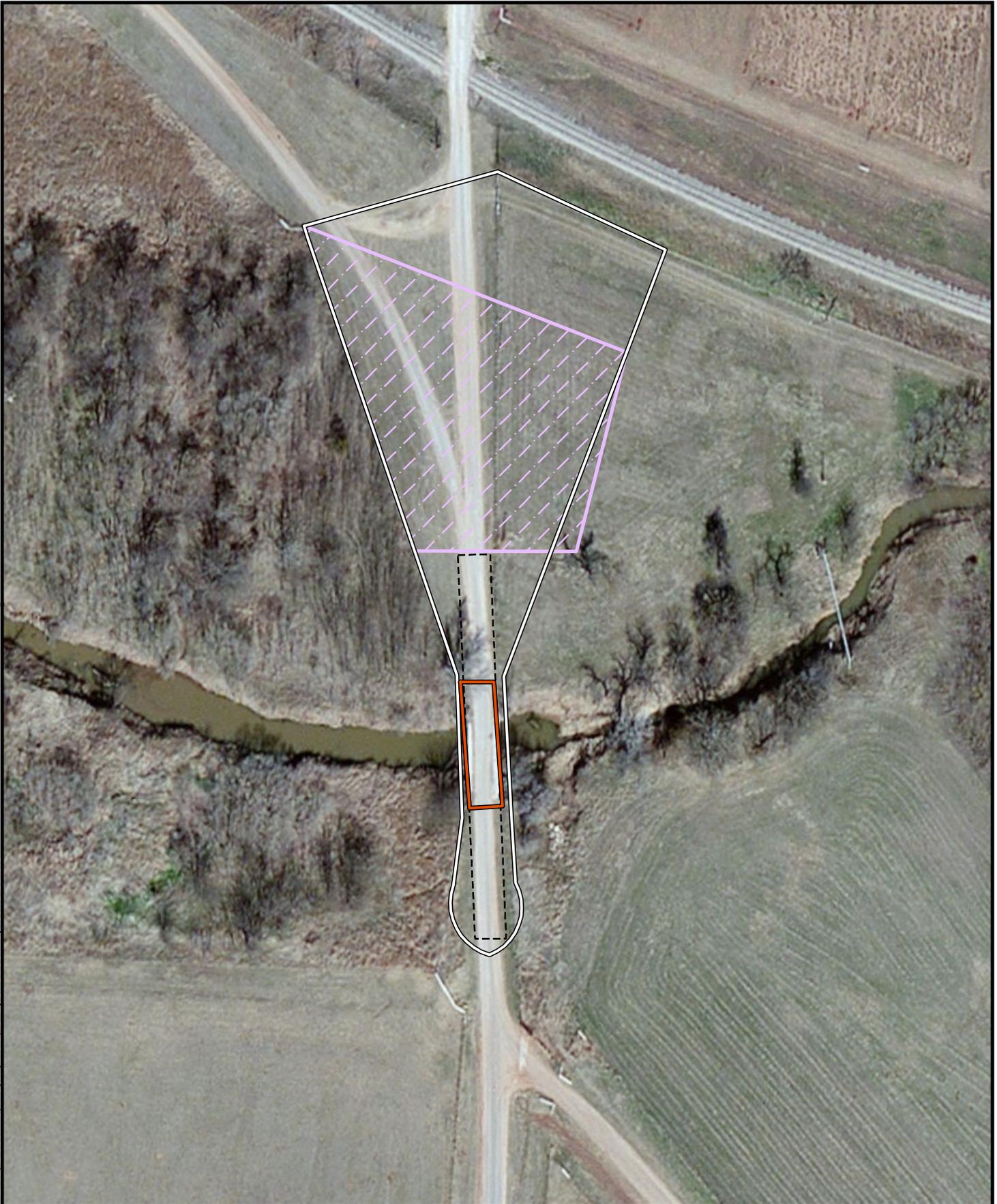
NEPA requires consideration of important historic and cultural, and natural aspects of our national heritage. Important aspects of our national heritage that may be present in the Project area must also be considered under Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, and the implementing regulations, 36 CFR 800. This act requires Federal agencies to consider the effect that an undertaking would have on historic properties. Section 106 defines historic properties as any prehistoric or historic district, site, building, structure, or object included in or eligible for inclusion in the NRHP. The Federal agency must involve the State Historic Preservation Office (SHPO) and other consulting parties in the Section 106 process.

The NHPA mandates that agencies perform the following actions:

- **Initiate the Section 106 process** by first determining whether the agency has an undertaking that is the type of activity that may affect historic properties. If so, the agency must identify the appropriate SHPO/Tribal Historic Preservation Office (THPO) to consult with during the process. It should also plan to involve the public and identify other potential consulting parties. For this project, letters were sent to the appropriate THPO for the Cheyenne and Arapaho Nation. The letter and attachments sent are included in Appendix C.
- **Identify historic properties** that may be affected by a project, including those either listed in the NRHP or determined through a consensus process to be eligible for listing in the NRHP.
- **Assess adverse effects** including the nature and extent of the expected effects on the qualities of the property that resulted in its listing in the NRHP or the determination that it is eligible for listing in the NRHP.
- **Resolve adverse effects** by considering measures to avoid, minimize, or mitigate those effects.

Identification of potential historic properties was conducted at Bridge A to identify archaeological resources within the defined 0.56-acre direct Area of Potential Effect (APE) and a larger area, referred to as Survey Area herein, to account for potential construction-staging areas (approximately 1.5 acres total) (Figure 6-2). Bridge A was determined eligible for listing on the National Register of Historic Places (NRHP) during coordination between USDA and Oklahoma SHPO for its historical associations with a former POW camp located on the property. No survey was required at Bridge D, as per coordination with the SHPO and the Oklahoma Archaeological Survey (OAS) (Appendix C). Cultural resource identification was performed via review of existing background information and an April 24, 2017, site visit.

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-  Direct APE
-  Proposed Bridge
-  Survey Area
-  Recommended Construction Staging Area

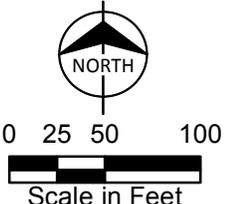


Figure 6-2
Direct APE and Survey Area
El Reno Bridge Replacement Project
USDA
Canadian County, Oklahoma

6.4.1 Cultural Resources Background Review

Prior to the commencement of fieldwork, a background review of the APE and a 1-mile buffer was conducted at the OAS in Norman, Oklahoma, and using online sources. The records review revealed six previously conducted archaeological surveys within a 1-mile radius of the direct APE (Figure 6-3).

Though none of the surveys appear to intersect the APE or the Survey Area, one of the sites extending into the Survey Area (34CN139) was revisited during the 1999 survey referenced in Table 6-2.

Table 6-2: Previous Cultural Resource Surveys within One Mile of the Project

Date	Consultant	Planner^a	Agency^a	Intersects APE?^a
1993	J. Briscoe	N/A; Volunteer	USFWS	No
1996	Briscoe Consulting Services	USDA	USDA	No
1997	Briscoe Consulting Services	USDA	USDA	No
1999	Briscoe Consulting Services	USDA	USDA	No
2002	Cojeen Archaeological Services	USDA	USDA	No
2014	Hicks & Company	USDA	USDA	No

(a) USDA = U.S. Department of Agriculture, USFWS = U.S. Fish and Wildlife Services, APE = Area of Potential Effects

The review also identified four previously recorded archaeological sites (Figure 6-3; Figure 6-2) within the one mile Study Area of the bridge locations as well as two previously designated historic-age resources, including the Fort Reno National Register District and the Fort Reno Cemetery (Figure 6-3). Additionally, Bridge A was determined eligible for NRHP listing in April 2017 (Appendix C). Except for site 34CN139, which was revisited as part of the current survey effort, none of the other previously recorded archaeological or non-archaeological resources are mapped as overlapping with the 1.5-acre Survey Area. However, the boundaries of the Fort Reno NRHP District are unknown. Site 34CN139 and the Fort Reno NRHP District are discussed individually below.

Figure 6-3: Records Review Summary

(Redacted due to sensitive cultural resource site information. Copy available in USDA project record.)

Table 6-3: Previously Recorded Archeological Sites within One Mile of the Project

Trinomial	Site Name	Site Type	NRHP Eligibility ^a	Intersects Project Survey Area?
34CN116	Darlington Agency	Darlington Indian Agency and large Cheyenne-Arapahoe Village Site	Recommended Eligible / Undetermined	No
34CN131	Former Fort Reno Remount Station	Remains of Receiving Station for first Fort Reno Remount Station (1908-1948)	NRHP-listed	No
34CN139	Fort Reno Scouts Camp	Cheyenne and Arapahoe Camp associated with Fort Reno	Recommended Eligible / Undetermined	Yes
34CN146	N/A	Possible Civilian Conservation Corps Camp	Undetermined	No

(a) NRHP = National Register of Historic Places

Table 6-4: Non-Archeological Historic-Age Cultural Resources within One Mile of the Project

Resource Name	Designation ^a	Intersects Project APE? ^a
Fort Reno Historic District	NRHP	Unknown/Possibly
Fort Reno Post Cemetery	NRHP; Cemetery	No

(a) NRHP = National Register of Historic Places, APE = Area of Potential Effects

6.4.1.1 Fort Reno National Register District

The vicinity of the research grounds is known as the Historic Fort Reno. Fort Reno began as a military camp in 1874 in the Indian Wars era. In 1908, Fort Reno became one of three Army Quartermaster Remount Stations for the military, a role which it served through 1947. Specialized horse breeding and training of pack mules became the central focus of activity at Fort Reno. During World War II, 94 acres of eastern Fort Reno lands served as an internment workcamp for German and Italian POWs. While imprisoned here, the POWs were hired as laborers for local farmers and in 1944 built the chapel located north of the parade grounds. The west side of the historic military cemetery is where 70 German and Italian POWs were interred. Shortly after World War II, in 1948, the U.S. Army's Quartermaster Remount Depot at Fort Reno was closed, although animals were shipped out until 1952. The Fort has since been the site of USDA's GRL, which hosts a visitor's center/museum, operated by the non-profit Historic Fort Reno, Inc.

The Fort Reno Historic District was listed on the NRHP in 1970 (Ruth, 1970). Due to the period of its designation, the nomination does not contain a map of the official district boundaries, nor does it specifically identify contributing and non-contributing features of the district. The nomination focuses on

the 19th century history of the fort and does not include more recent buildings associated with its use as a remount station during the early 20th century, its use as a POW camp during World War II, or its current incarnation as a USDA research facility. As a result, the USDA entered into a Programmatic Agreement with the Oklahoma SHPO and the Advisory Council on Historic Preservation (ACHP) in 1992 “regarding the management of the forage and livestock research laboratory” at Fort Reno (Appendix C). This document defined undertakings not requiring coordination under Section 106, inventoried the existing buildings on the property, and provided NRHP determinations for each, thereby identifying the 27 contributing buildings in the Fort Reno Historic District. In the document, the bridge proposed for replacement was not identified as contributing. The fort’s cemetery has been determined individually eligible for the NRHP.

6.4.1.2 Site 34CN139

The Fort Reno Scouts Camp, 34CN139, served as an Army Scout camp occupied by Cheyenne and Arapaho Scouts from approximately 1878 to 1908. The camp was mapped by the General Land Office (GLO) in 1889 and covers approximately 100 acres on the second terrace of the Canadian River north of Fort Reno. The site is bordered on the south by Soap Suds South Creek and is bisected east to west by Sixmile Creek. The site was partially surveyed by Briscoe Consulting Services in 1999 for the proposed construction of the University of Oklahoma Health Science Center Research Facility on a 35-acre tract in the northeast corner of the site (Figure 6-3). Additional disturbance within the site boundary includes two Remount period (1908-1947) structures, a railroad, and several improved gravel roads.

Briscoe Consulting Services conducted a controlled surface collection and identified a number of ephemeral artifact scatters that dated to the period of occupation of Fort Reno and appeared to coincide with teepee locations depicted on the 1889 GLO map. The survey team collected 292 artifacts, 75 of which postdate the Scouts Camp occupation and 2 that may belong to an earlier prehistoric component (Briscoe, 1999:8). Briscoe described the site as an important element of Fort Reno and Cheyenne and Arapaho history and argued it should have been included in the 1970 NRHP district nomination. He recommended the site for NRHP inclusion under Criteria A, C, and D. Development of a management plan to protect the remaining portions of the site was also recommended (Briscoe 1999: 23).

6.4.2 Results of Site Visit

An archaeological survey with shovel testing of approximately 1.5 acres, comprised of the 0.56-acre direct APE and additional acreage for the proposed construction staging area, was conducted on April 24, 2017. During the survey, 20 shovel tests were excavated within the 1.5-acre Survey Area, and previously recorded archeological site 34CN139 was revisited (Figure 6-3). Eighteen of the 20 shovel tests were

excavated within the previously recorded boundary of 34CN139. Two of these shovel tests, SF9 and SF10, contained cultural materials (Figure 6-4).

Shovel Test SF9 contained one glass shard and one prehistoric ceramic sherd from 0 to 10 cm below surface (cmbs). The glass artifact is a solarized body shard from a thin vessel. Solarized glass generally dates from the late 1880s to 1920s, although some use continued through early 1930s (Lockhart, 2006:52, 54). The ceramic artifact is a cordmarked body sherd and appears to be Plains Woodland.

Shovel Test SF10 contained one iron threaded pipe fitting from 10 to 20 cmbs and 21 fragments of bone between 20 and 50 cmbs. The pipe fitting likely dates to the late 19th or early 20th century before galvanization was common. The bones were too fragmentary to identify, but include 18 burned and 3 unburned fragments. The bones may have been intentionally broken for bone grease production. Of the recovered artifacts, the glass shard, pipe fitting, and possibly the bone fragments are contemporaneous with the known occupation of the Fort Reno Scouts Camp.

6.5 Geology and Soils

The Project is within the Central Redbed Plains geographic province (Curtis et al., 2008). The Redbed Plains Province is characterized by gently rolling hills and broad, flat, upland plains. Surface sediments comprise Permian red shales and sandstones, with outcrops of gypsum (Curtis et al., 2008).

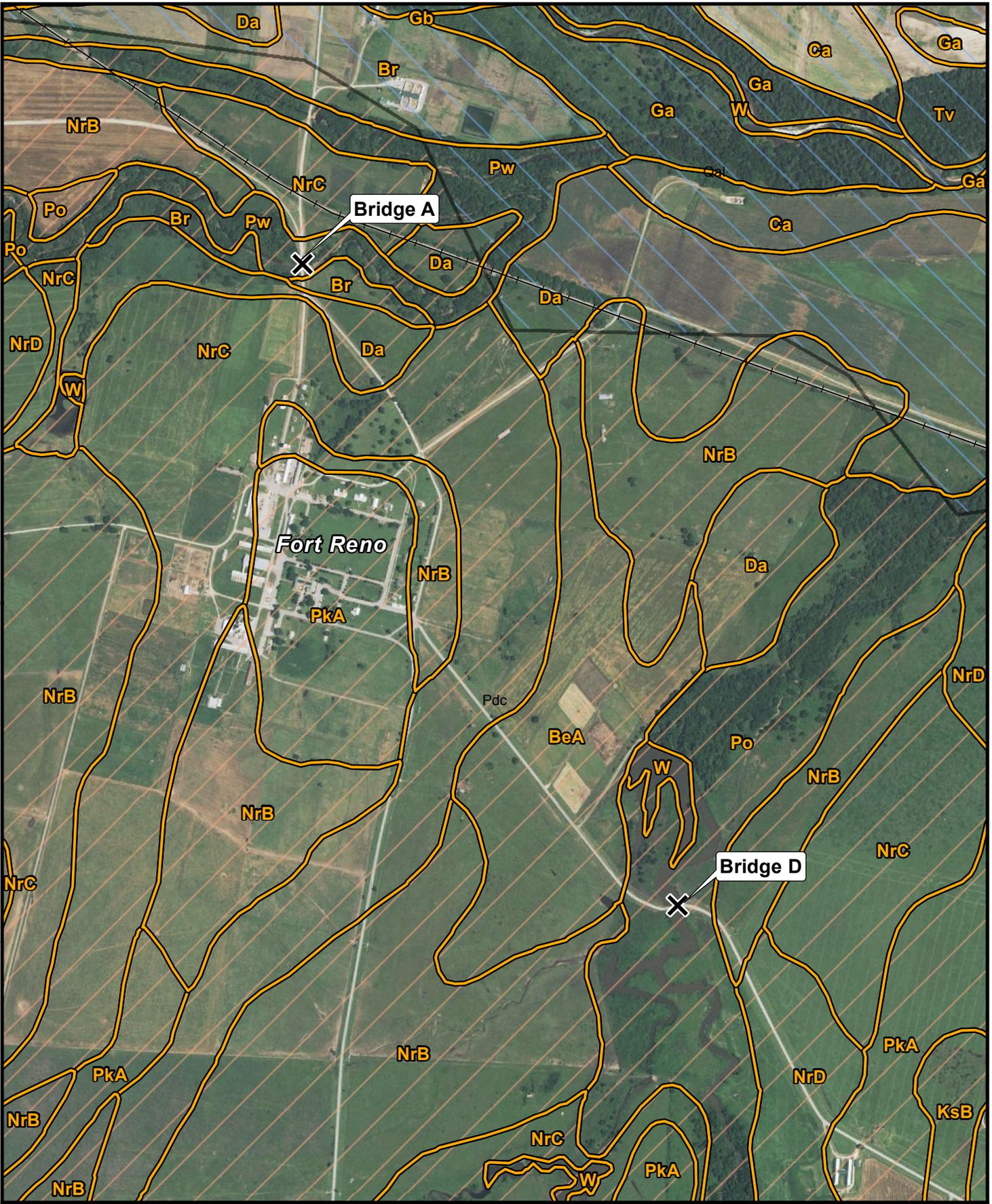
Bridge A contains three soil types: Port silty clay loam (Pw), Norge silt loam (NrC), and Brewer silty clay loam (Br). Bridge D contains only Port silt loam (Figure 6-5).

The Port series consist of very deep, well drained, moderately permeable floodplain soils that formed in calcareous loamy alluvium of Recent age. These nearly level to very gently sloping soils are on narrow floodplains in the Central Rolling Red Prairies (MLRA-80A) and the Central Rolling Red Prairies (MLRA 78C). Slopes range from 0 to 3 percent. Mean annual precipitation is 32 inches. Mean annual temperature is 63 °F. This soil type is not highly erodible. Nearly all Port series soils are cultivated in Oklahoma. The Pw soil type present at Bridge A is not considered prime farmland. However, the Po soil type present at Bridge D is considered prime farmland according to the Soil Survey of Canadian County (NRCS, 2017).

Figure 6-4: Shovel Tests

(Redacted due to sensitive cultural resource site information. Copy available in USDA project record.)

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-  Soil Unit
-  Pdc (Early Permian)
-  Qal (Holocene)

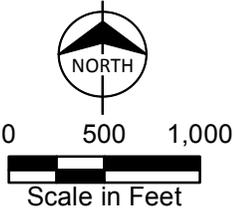


Figure 6-5
 Geology and Soils
 El Reno Bridge Replacement Project
 USDA
 Canadian County, Oklahoma

The Norge series consists of very deep, well drained, moderately slowly permeable, upland soils that formed in loamy alluvium of Pleistocene age. These nearly level to sloping soils are on broad flats and upper side slopes of upland terraces in the Central Rolling Red Prairies and feature slopes ranging from 0 to 8 percent. This soil type is not highly erodible and is primarily used for cultivated cropland. The NrC soils mapped in the vicinity of Bridge A are considered prime farmland according to the Soil Survey of Canadian County (NRCS, 2017).

Finally, the Brewer series consists of very deep, moderately well drained soils that formed in material weathered from loamy and clayey alluvium of Pleistocene age. Brewer soils are on floodplains subject to rare flooding with slopes ranging from 0 to 1 percent. This soil type is not highly erodible and is primarily used for cultivated crops. The Br soil type present at Bridge A is considered prime farmland according to the Soil Survey of Canadian County (NRCS, 2017).

A review of information from the Oklahoma Department of Mines (Appendix D) indicates no coal or non-coal resources are present on the Project site, and there is no record of surface reclamation activities in the vicinity of the Project.

6.6 Hazards and Hazardous Materials

A search of the EPA's National Priority List Superfund Site did not indicate any Superfund sites within Canadian County, or the City of El Reno, Oklahoma.

A review of EPA's Enforcement and Compliance History Online (ECHO) for El Reno, Canadian County, found 82 listed facilities. Of the 82 facilities, only one, the El Reno Municipal Authority, received a notice of violation, on April 6, 2017, for violating terms of its NPDES (Source ID OK0100382) Permit at its discharge to the North Canadian River. No other facilities were noted on the ECHO database (ECHO, 2016).

Figure 2-1 indicates a historic sewage disposal site approximately 1,000 feet southeast of Bridge A. The sewage lagoon indicated on the topographic map was part of the army post. It was abandoned when the U.S. Army transferred the property and has been closed and covered. There is currently a very small treatment pond in that area that has become overgrown with trees.

Approximately 2.8 miles southeast from the USDA facility are six settling ponds used for water treatment. The lagoons are on the facility by permit from USDA to the Federal Bureau of Prisons for the Federal Corrections Institute south of the highway. The treatment ponds are used by the prison.

A record review of Oklahoma's Environmental Institutional Controls, indicated the nearest area of concern is located approximately 16.5 miles northwest of the Project (ODEQ, Institutional Controls Web Viewer, 2017). The Calumet Todd and Fee Grain & Fertilizer Plant located at 509 S. County Line Road, Canadian County, received a risk-based closure report from the ODEQ on June 27, 2002. This facility has contributed nitrogen-containing compounds common to commercial fertilizers (nitrates, nitrites, and ammonia) to groundwater. The owner has acted to eliminate any potential sources and prevent any future contamination by installing permanent monitoring wells, removing an underground storage tank, and reinforcing secondary containments at aboveground tanks. The ODEQ recommends that groundwater beneath the site not be used for drinking water purposes. The ODEQ determined the facility has met the requirements for a risk-based closure, and natural attenuation is an appropriate remedy for this site.

6.7 Land Use

The Project site is within the city limits of El Reno; however, the facility is owned by the USDA and, as a Federal agency, it is therefore not subject to city, county, or State land use zoning or local or State ordinances. The research grounds are primarily used for grazing and pasture lands, though narrow swaths of wooded riparian areas are present throughout. Ancillary uses include administrative office buildings and related structures. Water treatment ponds and small areas of cultivated land are situated throughout the research grounds.

A small cemetery is located approximately 0.5 mile west of the current USDA research facility, and the Harman Airport is located 1.5 miles north. Bridge A is located approximately 500 feet south of a Union Pacific Rail Road line.

6.8 Noise

Due to the distance from large metropolitan areas, noise levels are relatively low at the Project site. Human-generated noise sources would typically include passing trains and sporadic operation of vehicles and agricultural equipment over the GRL. Because the Project is owned by the USDA, the Project is not subject to local ordinances regarding noise control. No sensitive noise receptors are in the vicinity of the bridge sites.

6.9 Water Resources

The Project sits within the Central North Canadian River Watershed. The Central North Canadian Watershed is in the Central Great Plains and Cross Timbers ecoregions in central Oklahoma. The North Canadian River flows east from roughly the Oklahoma, New Mexico, and Texas corner to east-central Oklahoma, where it then flows into Lake Eufaula. In the Oklahoma Panhandle, this river is also known as

Beaver River. The entire basin area covers roughly 15,038 square (sq.) miles (38,948 sq. kilometers [km]). Within Oklahoma only, the basin covers approximately 9,097 sq. miles. Most soils in the watershed are highly erodible sandy, silty, or clay loams. The elevation in the watershed ranges from 1,200 to 1,500 feet. Land use in the watershed is primarily agricultural (Oklahoma Conservation Commission, 2008).

6.9.1 Wetlands and Streams

Wetlands have been identified on Figure 6-6 and surround portions of tributaries beneath Bridges A and D and along the North Canadian River. Wetlands within the GRL and in the vicinity of the bridges are typically narrow bands within riparian corridors adjacent to streams and waterways.

The bridge replacement project for both Bridges A and D will be constructed over tributaries of the North Canadian River. Bridge A is over a tributary to the North Canadian River, locally referred to as Soap Suds Creek, and Bridge D is over Target Creek. Neither of these streams has been identified as part of the National Wild and Scenic Rivers System.

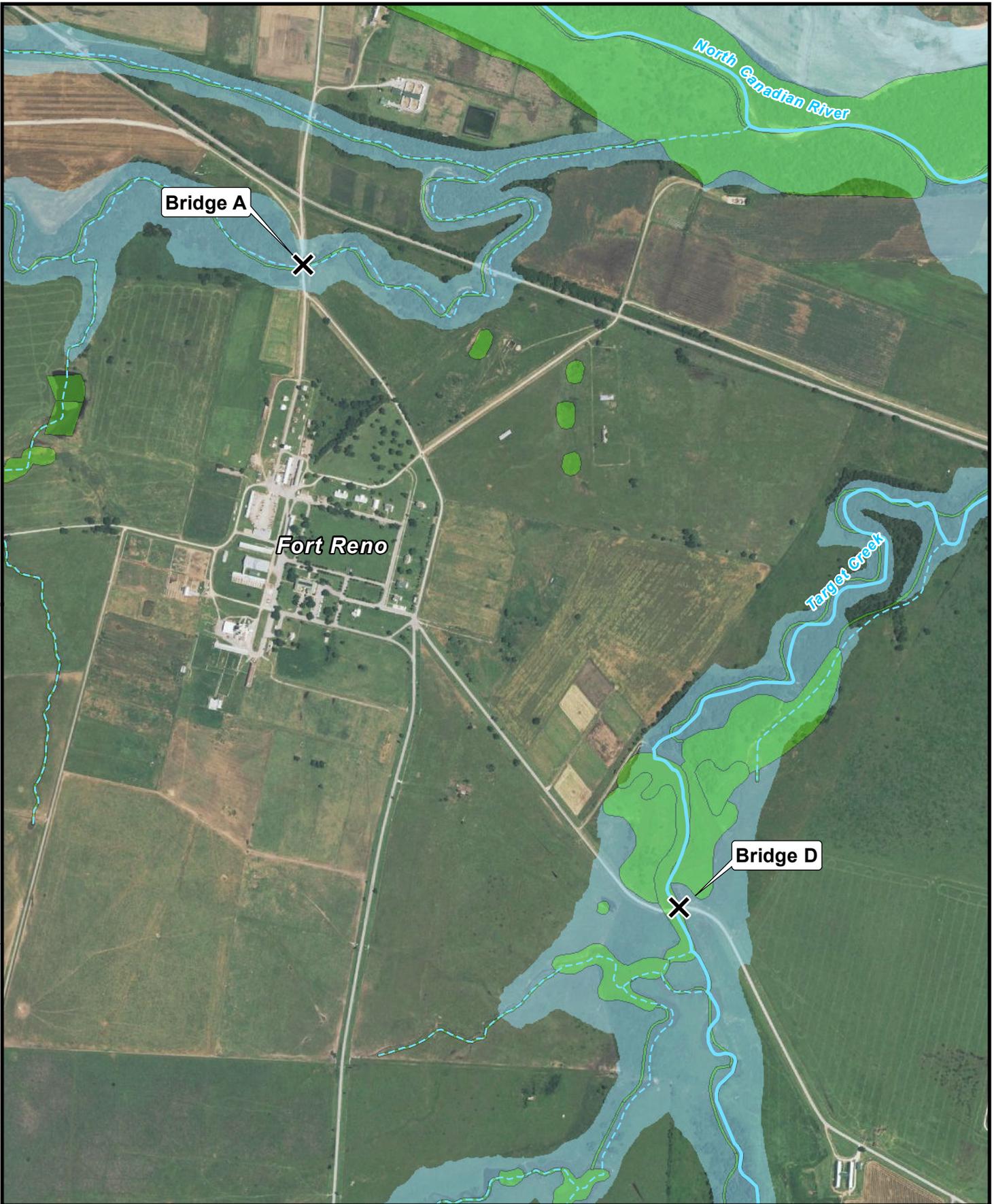
6.9.2 Groundwater

A major groundwater basin (aquifer) is defined as a distinct underground body of water overlain by contiguous land having substantially the same geological and hydrological characteristics, and from which groundwater wells yield an average of at least 50 gallons per minute throughout the basin if from a bedrock aquifer and on average at least 150 gallons per minute throughout the basin if from an alluvial aquifer.

The Project sits atop the El Reno Groundwater Basin (also known as the El Reno minor bedrock aquifer). The El Reno Basin is bounded on the west by formations of the White Horse Group and on the east and south by formations of the Hennessey Group. The northern boundary is formed along the Oklahoma-Kansas State border in Harper and Woods Counties. The total area of the El Reno Basin is approximately 5,650 sq. miles or 3,600,000 acres.

Approximately 75 percent of the basin is comprised of rock units containing calcareous shale and evaporites (gypsum, dolomite, and halite). Groundwater is derived primarily from fine-grained sandstone units whereas the shale units typically yield very limited quantities of water. Groundwater stored in the formations and beds comprising the El Reno Basin exist under both unconfined and confined conditions.

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- Named Stream
- Unnamed Tributary
- Wetland
- 100-Year Floodplain

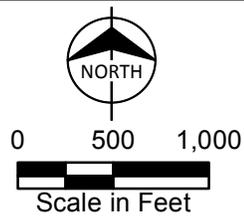


Figure 6-6
Water Resources
El Reno Bridge Replacement Project
USDA
Canadian County, Oklahoma

The average thickness of the formations comprising the El Reno Group is estimated to be 600 feet. The average thickness of the El Reno Basin is determined to be 250 feet because at greater depths the water becomes saline. A review of drillers’ logs indicates the average depth to water in the basin is approximately 40 feet below land surface. The average saturated thickness is therefore estimated to be 210 feet.

Groundwater from the El Reno Basin supplies several small (fewer than 4,000 people) communities and rural water systems in the southern part of the basin, particularly Grady and McClain Counties. Stock and domestic wells are prevalent throughout the El Reno Basin. Many housing additions in outlying areas of Oklahoma City are served by individual wells.

6.9.3 Floodplain

Both Bridges A and D are located within areas that experience flooding. Figure 6-6 depicts 100-year flood zones on the Flood Insurance Rate Map (FIRM) created by the Federal Emergency Management Agency (FEMA). The Oklahoma Water Resources Board (OWRB) regulates floodplain development, including State owned or operated land through the associated Floodplain Manager for Canadian County.

6.10 Socioeconomics

To identify general socioeconomic patterns near the Project site, population growth trends, racial and ethnic characteristics, economic indicators, and employment data were reviewed. The last formal U.S. Census Bureau data was published in 2010 and is updated every 10 years (U.S. Census Bureau, 2010).

In 2010, population for Canadian County was estimated at 115,541, which was the last formal census conducted for Canadian County. Table 6-5 and Table 6-6 break down population by race/ethnicity, housing information, and percentage of population living in poverty for both Canadian County and the City of El Reno based on the formal 2010 census survey.

Table 6-5: Population by Race and Ethnicity for City of El Reno and Canadian County

	White Alone	African American	American Indian/ Alaska Native	Asian	Hawaiian or Other Pacific Islander	Two or More Races
El Reno	71.8%	7.2%	11.1%	0.5%	0.1%	4.7%
Canadian County	83.1%	2.5%	4.8%	3.0%	0.1%	4.1%

Source: U.S. Census Bureau, 2010

Table 6-6: Population, Housing, and Economy of City of El Reno and Canadian County

	Population	Housing Units	Median Home Value	Civilian Labor Force Age 16 Years +	Median Household Income	Persons in Poverty
El Reno	16,749	6,595	\$89,200	58.9%	\$48,015	14.4%
Canadian County	115,541	45,810	\$144,600	68.7%	\$64,505	9.8%

Source: U.S. Census Bureau, 2010

Environmental justice concerns may arise from human health or environmental effects of a project on either minority or low-income populations. The need to identify environmental justice issues is stated in Executive Order 12898 (EO), entitled “Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations.” The EO states “each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations.” A Presidential Memorandum accompanying the EO directed agencies to incorporate environmental justice concerns into their NEPA processes and practices.

Environmental justice issues are identified by determining whether minority or low-income populations are present in the project area. If so, disproportionate effects on these populations would be considered and analyzed. Council of Environmental Quality (CEQ) guidance states that minority populations should be identified when the percentage of minority residents in the affected area exceeds 50 percent or is meaningfully greater than the percentage of minority residents in the general population. If the percentage of minority residents of the population in a project area census tract exceeds the county level by more than 10 percent, it is “meaningfully greater” for the purposes of this analysis. The CEQ guidance also states that the low-income populations should be identified based on poverty thresholds as reported by the U.S. Census Bureau. If the poverty rate for the population of the project area census tract exceeds the county poverty rate by more than 10 percent, it is an area of environmental justice concern for the purposes of this analysis.

According to the 2010 U.S. Census, El Reno’s minority (those none-White, per 2010 census data) population is approximately 34.3%. The minority population for Canadian County is approximately 20.3%. El Reno’s minority population is approximately 14% higher than the minority population of Canadian County, or “meaningfully greater” for the purposes of this analysis. However, the Project will

not displace or remove any minority residents or housing units and will not impact the minority population of El Reno in any way and is therefore considered less than significant.

El Reno's estimate of poverty rates is approximately 4.5 percent greater than Canadian County and therefore not considered an area of environmental justice concern for the purposes of this analysis.

6.11 Transportation

The Project site is served by an existing network of paved and gravel roads on the USDA-ARS research grounds. Road locations at the USDA-ARS Grazinglands are shown on Figure 2-2. Regional roadways are depicted on Figure 1-1. No public access is available for roadways within the boundary of the research grounds, although the public may use these roads during GRL-sponsored events for the public.

The nearest major public roadways, State Route (SR) 40/Hwy 66/Sunset Drive is located approximately 1.65 miles south of the research grounds headquarters building complex, as depicted on Figure 1-1. Highway 81 is located approximately 4.5 miles east of the Project site. Bridge A is located approximately 500 feet south of the Union Pacific Railroad. Harman Airport is located approximately 1.5 miles north of the Project site.

USDA-ARS is accessed by five paved roads, two from the north and three from the south. Both roads over Bridges A and D are limited to USDA personnel and are not accessible to the general public except during special events. Motorized travel is limited to the existing road network for management activities, with some off-road travel exceptions for maintenance operations that require supplies to be delivered to areas without roadway access and as part of agricultural operations. Primary vehicle use includes employee passenger vehicles, trucks, all-terrain vehicles, earthmoving equipment (i.e., bobcats) and tractors and other related farming equipment.

Road maintenance is performed on the main roads on an as-needed basis. Road segments with ruts or other maintenance needs are bladed or improved for efficient motorized travel.

Bridge A is located on an unnamed, gravel, USDA road that provides access to the primary headquarters of the Grazinglands and crosses the Soap Suds South tributary. Bridge D is located on an unnamed, paved road that provides access to the southeast portion of the Grazinglands and crosses Target Creek. Motorized access is generally limited to USDA-ARS staff vehicles and farming equipment.

6.12 Utilities and Service Systems

The City of El Reno is responsible for water, wastewater, and sanitation services in the vicinity of the Project area. Electric and natural gas services in the Project vicinity are provided by Oklahoma Gas & Electric Corporation (OG&E). OG&E serves more than 830,000 customers in Oklahoma and western Arkansas. Solid waste removal is facilitated through the City of El Reno and under jurisdiction of the Oklahoma Environmental Management Authority (OEMA).

7.0 ENVIRONMENTAL CONSEQUENCES

Based on the alternatives analysis (Section 4.0), two alternatives have been carried forward for assessment; the No Action Alternative and the replacement and reconstruction of Bridges A and D (the Project). The No Action Alternative serves as the benchmark for alternative comparison, under which the Project would not be constructed and the USDA would not replace the bridges. Rather, they would maintain the bridges as possible until they deteriorated to the point of ultimately taking the bridges out of service.

This section of the EA describes the potential impacts of these two alternatives on air quality, land use, soils, surface and groundwater, water quality, vegetation, wildlife, wetlands, floodplains, socioeconomics, aesthetics, transportation, noise, health and safety, and cultural resources. Both short-term and long-term impacts and direct, indirect, and cumulative impacts associated with the Project and the No Action Alternatives have been considered. The CEQ regulations implementing NEPA define cumulative impacts as, “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such action” (40 CFR §1508.7). Cumulative impacts are identified and summarized in Section 8.0.

Where appropriate, mitigation measures are proposed to lessen or avoid potential impacts, and these measures are discussed within each resource area section, below. A summary of the mitigation measures is provided in Section 9.0.

7.1 Aesthetics

This section describes and evaluates the existing environmental and regulatory setting for visual resources as well as potential direct and indirect impacts to visual resources that may result from construction and operation of the Project. Visual resources are the natural and artificial features of the landscape that can be seen and that contribute to the public’s appreciative enjoyment of the environment. Visual resource or aesthetic impacts are generally defined in terms of a project’s physical characteristics and potential visibility, and the extent to which the project’s presence would change the perceived visual character and quality of the environment in which it would be located.

7.1.1 No Action

Under the No Action Alternative, there would be no long-term or short-term impacts to aesthetics because no construction or bridge replacement would occur.

7.1.2 Construction and Operation Impacts of the Project

Under the Project, the aesthetics would be temporarily impacted by the presence of construction equipment and staged materials needed for bridge replacement in the viewshed. Some existing vegetation, potentially including some trees around Bridge A, would be disturbed or cleared. This visual impact would be short-term in nature and primarily during construction. Once bridges are replaced and disturbed areas restored, there would be little discernable changes or impacts to viewsheds, including surface waters, during operation. Only the presence of a newly constructed bridge replacing that of a deteriorated, decades old bridge would be observed. The surrounding landscape would not change and would not be impacted visually by the Project. The new bridges would not be out of visual character with the surrounding areas, the previous bridge, and would not contrast with the adjacent visual landscape. No impacts to any designated scenic areas would occur.

7.2 Air Quality

This section summarizes the air quality analysis for the Project. This analysis is the basis for the environmental setting and the environmental consequences analysis contained below.

7.2.1 No Action

The No Action Alternative would have no short- or long-term impacts to air because no construction would occur.

7.2.2 Construction and Operation Impacts of the Project

The Project must adhere to the applicable provisions set forth in ODEQ Title 252, Chapter 100, Air Pollution Control. The Project does not fall within the six “covered sources” as defined in 252:100-8-3, and therefore is not subject to air permitting from the ODEQ.

During construction of the Project, small amounts of air pollutants would be temporarily generated from construction activities in and around the bridges. These activities, including removing portions of the existing bridges, grading for the new approaches, and final replacement of the bridges, would slightly increase particulate matter and fugitive dust in the short term. However, these short-term and localized increases in particulate matter would end following major construction activities and would not represent a substantial change to the overall air quality of El Reno or Canadian County. Additionally, vegetated areas surrounding the sites could reduce the levels of airborne particulate matter that extend beyond the research facility boundaries. There are no sensitive receptors or nearby public businesses that would be subject to impacts by the temporary increase in particulate matter, including fugitive dust. Fugitive dust

will be managed in accordance with the General Provisions of Subchapter 29, Control of Fugitive Dust. Under the General Provisions of 252:100-29-2:

No person shall cause or allow fugitive dust source to be operated, or any substances to be handled, transported or stored, or any structure constructed, altered, or demolished to the extent that such operation or activity may enable fugitive dust to become airborne and result in air pollution, without taking reasonable precautions to minimize or prevent pollution.

This rule requires BMPs to reduce the amount of airborne fugitive dust including, but not limited to, watering disturbance areas, stockpile management, covering equipment transporting dusty materials, and planting and maintenance of vegetation ground cover as necessary. USDA-ARS would implement Mitigation Measure **MM AIR-1** to comply with these requirements to control fugitive dust.

MM AIR-1: USDA shall implement fugitive dust control measures to reduce the amount of airborne fugitive dust including, but not limited to, watering disturbance areas, stockpile management, covering equipment transporting dusty materials, and planting and maintenance of vegetation ground cover as necessary.

The use of construction equipment near the site would also generate combustive exhaust emissions during the construction period. The level of these emissions would be dependent on the construction phase, level of activity, and prevailing weather conditions. However, all exhaust emissions from construction vehicles would be short term (approximately 60 to 90 working days), periodic, minimal from only a 3- to 5-person crew, and would quickly decrease after the conclusion of major construction activity at the site. Increases from exhaust emission would contribute to greenhouse gas emissions; however, because of the limited duration and extent of construction operations, significant increases to regional greenhouse gas emissions are not anticipated. As with emissions from fugitive dust, exhaust emissions would return to pre-construction levels following the conclusion of construction activities.

The Project would not release toxic levels of substances that could affect human health. Nor would the Project release substances which would result in exceedances to the National Ambient Air Quality Standards (NAAQS) or alter meteorological conditions (including wind patterns). The Clean Air Act, which was last amended in 1990, requires EPA to set NAAQA (40 CFR part 50) for pollutants considered harmful to public health and the environment. Odor from diesel engines may be emitted during construction; however, equipment would not discharge odiferous substances that could adversely impact air quality or affect human health or the environment. Furthermore, no sensitive receptors exist in the vicinity of the Project.

Emissions during construction would be similar in nature to those associated with agricultural activities on the GRL. Following completion of construction and restoration, all Project-related emissions would cease. Because of the temporary nature of these planned actions, minimal emissions, and the lack of sensitive receptors in the vicinity, there would be no adverse effects to air quality.

7.3 Biological Resources

This section describes and evaluates existing conditions as well as potential direct and indirect impacts to biological resources that may result from the construction and operation of the Project.

7.3.1 No Action

Under the No Action Alternative, there will be no adverse impacts to biological resources including wildlife and vegetation.

7.3.2 Construction and Operation Impacts of the Project

The Project is in an undeveloped area within the City of El Reno. Construction of the Project would require temporary ground disturbance at each bridge location. However, the Project would not result in the fragmentation of contiguous habitat or impede the movement of the common wildlife species that may occur within the vicinity of the Project. Noise and human activity that are associated with construction would result in short-term, temporary displacement of wildlife species. The noise and human activity would temporarily deter wildlife species (included aquatic animals) from using habitats within the immediate vicinity of construction; however, once construction is complete and any disturbed areas restored, wildlife species are anticipated to return.

Suitable habitat for the federally listed black-capped vireo, least tern, piping plover, whooping crane, and red knot is not present in the Project Areas around the bridges that would be affected by construction. Therefore, the Project would have *no effect* on these species (Species Conclusions Table, Appendix B).

To avoid impacts to nesting birds, protected by the MBTA, construction activities are recommended to be conducted outside of the nesting bird season, typically March 1 to August 31. However, if construction must commence during nesting season, a preconstruction sweep of the area would be conducted by a qualified biologist to identify and avoid impacts to nesting birds. Mitigation Measure **MM BIO-1**, preconstruction surveys for nesting birds, is listed below and summarized in Section 9.0.

MM BIO-1: If construction will be conducted during nesting season (March 1 through August 31), a preconstruction nesting bird survey will be conducted by a qualified biologist to determine presence of nests or nesting birds in accordance with MBTA. For all nests discovered, a qualified

biologist will determine if construction activities could potentially disturb nesting birds. If so, the Special Provisions for Migratory Bird Nest Prevention for Bridge Structures and Culverts of the Oklahoma Department of Transportation (Appendix E) will be implemented as appropriate avoidance measures (for instance, onsite monitoring, setbacks, timing restrictions) to adequately protect nesting birds.

There is no USFWS critical habitat located within the Project area, and, therefore, no adverse effects to critical habitat or listed species would occur as a result of the Project.

Aquatic species may be temporarily disturbed during construction from noise, equipment, and human activity. However, construction would be short in duration, and there would be no long-term impacts to aquatic species. Nevertheless, Mitigation Measure **MM BIO-2** will be implemented to limit construction activities and disturbance to the streambed, banks, and channel to the extent feasible. Mitigation measures are summarized in Section 9.0 and listed below.

MM BIO-2: During construction, equipment shall be restricted to the areas outside of the streambed, bank, and channel to the extent feasible, to reduce the potential for direct and indirect impacts to biological resources at the Project site and downstream.

In a letter dated, June 5, 2017, the Director of the Oklahoma Water Science Center indicated that given the connection between the affected drainages to the Canadian River, which is habitat for the federally listed Arkansas River shiner, measures should be taken to minimize erosion of disturbed soils during construction. Therefore, USDA would implement Mitigation Measure **MM BIO-3**, to install erosion control measures as part of a SWPPP. This measure is listed below and summarized in Section 9.0. Proper BMPs would be implemented during construction to prevent soil erosion to the waterways and protect aquatic life. BMPs may include, but are not limited to, erecting channel supports, keeping heavy equipment behind top of bank, conducting work when channel volumes are low or dry, and monitoring during construction.

MM BIO-3: USDA will implement erosion control measures to control storm water runoff from the construction areas. If more than 1 acre of surface disturbance occurs, USDA will prepare and implement a SWPPP in accordance with relevant Oklahoma Department of Environmental Quality (ODEQ) guidelines. The SWPPP must contain BMPs to prevent sediment and other construction-related materials from entering stormwater discharges. The SWPPP shall include the following major components:

- **A comprehensive erosion and sediment control plan, depicting areas to remain undisturbed and providing specifications for revegetation of disturbed areas.**
- **A list of potential pollutants from construction materials and maintenance practices to be used during construction to minimize release and transport of potential pollutants in runoff.**
- **Specifications and designs for the appropriate BMPs for controlling drainage and treating runoff in the construction phase.**
- **A program for monitoring all control measures that includes schedules for inspection and maintenance and identifies the party responsible for monitoring.**
- **A site map that locates all water quality control measures and any (if relevant) restricted areas to be left undisturbed.**

Both bridges would be replaced over tributaries of the North Canadian River. Neither tributary, nor the North Canadian River, are classified as a wild or scenic river (National Wild and Scenic Rivers, 2017). The Project would not result in any changes to the hydrology or flow of the creeks.

Impacts to vegetation from the Project would affect approximately 0.01 acre of grasslands and 0.08 acre of woodlands from replacement and construction of Bridge A, and approximately 0.16 acre of grasslands from replacement and construction of Bridge D. Vegetation would be temporarily disturbed during the construction activities at Bridges A and D. Disturbed areas would be reseeded with native vegetation once construction is complete to help stabilize channel banks and decrease potential erosion. This Mitigation Measure is described below (**MM BIO-4**) and summarized in Section 9.0.

MM BIO-4: Areas disturbed during construction shall be re-seeded with native vegetation to help stabilize soil as soon as practicable after construction.

With implementation of **MM BIO-1 through MM BIO-4**, it is not anticipated that any terrestrial or aquatic species would be adversely affected by the Project.

7.4 Cultural Resources

This section describes and evaluates existing conditions as well as potential direct and indirect impacts to cultural and paleontological resources that may result from the construction and operation of the Project. The basis for this analysis is based on the State Historic Preservation Office correspondence and supporting documentation prepared for the Project (Appendix C).

7.4.1 No Action

No impacts to 34CN139 or other NRHP-listed or eligible sites are anticipated in association with the proposed construction at Bridge A.

7.4.2 Construction and Operation Impacts of the Project

The archaeological survey of the proposed Bridge A Replacement Project at the USDA Agricultural Research Service did not identify any archaeological resources within the direct APE of the Project (Fischbeck and Harris, 2017). The survey included a revisit to NRHP-eligible archaeological site 34CN139. No artifacts associated with 34CN139 were found within the direct APE of the proposed Bridge A replacement. As such, the archaeological site does not appear to extend into the proposed bridge footprint. However, artifacts were recovered within the proposed construction staging area north of the bridge. Of the recovered artifacts, the solarized glass shard, pipe fitting, and possibly bone fragments are contemporaneous with the known occupation of the Fort Reno Scouts Camp. As a result, Mitigation Measure **MM CUL-1** will be implemented to limit the location of construction staging to at least 150 feet south of the Union Pacific railroad tracks to avoid impacts to the NRHP-eligible site (Figure 6-4). No survey was required at the location of Bridge D pursuant to coordination with the SHPO and OAS (Appendix C).

MM CUL-1: During construction, staging will be limited to approved areas. Specifically, construction staging associated with Bridge A shall not be closer than 150 feet south of the Union Pacific railroad line to avoid impacts to the NRHP-eligible site.

In the unlikely event that any cultural resources are encountered during the construction activities, incorporation of mitigation measure **MM CUL-2** would require the construction contractor cease activity in the area of the find until it can be evaluated by a qualified archaeologist. The archaeologist would complete any requirements for the mitigation of adverse effects on any resources determined to be significant and implement appropriate treatment measures.

MM CUL-2: If an unanticipated cultural resource is uncovered, all work within 50 feet of the find will be halted until a qualified professional archaeologist can evaluate the significance of the find in accordance with NRHP criteria. Work will not resume in the vicinity of the find until any required treatment measures have been completed. Treatment measures may include capping, documentation and research, preparation of a formal treatment plan, construction monitoring, subsurface testing, or data recovery. All activities will be documented and reported to SHPO if warranted.

7.4.2.1 Bridge A

In a letter dated March 13, 2017, the Oklahoma SHPO identified Bridge A, which is proposed for replacement, as eligible for NRHP inclusion. The USDA concurred with this assessment on April 14, 2017 (Appendix C). Replacement of the bridge would therefore constitute an adverse effect to a historic resource under Section 106 of the NHPA. The USDA is in the process of developing a Memorandum of Agreement to outline mitigation measures for this Project. Such measures will be instituted before Project initiation. Mitigation Measure **MM CUL-3** would require the USDA to obtain and comply with a Memorandum of Agreement with the SHPO in advance of construction. This measure is listed below and summarized in Section 9.0.

MM CUL-3: USDA will develop a Memorandum of Agreement signed by and subject to approval by SHPO. The Memorandum of Agreement will include appropriate measures to address the Project's impact to components of the bridge that are considered a historic resource. The measures outlined in the Memorandum of Agreement shall be implemented prior to initiation of construction, or as appropriate.

7.4.2.2 Fort Reno Historic District

Though the Project may fall within the undetermined boundaries of the NRHP-listed Fort Reno Historic District, replacement of the bridge would not directly or otherwise adversely affect any of the district's contributing features. The new structure would not be out of character with what is there at present, and there are no contributing buildings or other features within its viewshed. Additionally, Project plans would avoid potential impacts to site 34CN139. Though not identified as a contributing element in the existing Programmatic Agreement, the site is NRHP-eligible and likely contributes to the district's significance. As no direct, indirect, or otherwise adverse effects would occur to contributing features of the district, no further consideration of impacts to the NRHP-listed district are recommended under Section 106.

A draft cultural resources report was submitted to the SHPO and OAS on May 24, 2017. The OAS deferred opinion to the SHPO on the effect of the Project on site 34CN139. The SHPO requested additional information regarding the report on June 20, 2017 (Appendix C). The report was resubmitted and is currently under review. Determinations of NRHP eligibility and effect for the archaeological component of the Project will be addressed prior to initiation of construction. **MM CUL-3** requires that the Project applicant (USDA) obtain the appropriate Memorandum of Agreement with the SHPO prior to construction. No adverse effects to other historic properties are anticipated from the Project.

7.5 Geology and Soils

This section describes and evaluates existing conditions as well as potential direct and indirect impacts related to geology and soils that may result from the construction and operation of the Project

7.5.1 No Action

The No Action Alternative would have no short- or long-term impacts to geology or soils at or near the Project site because no construction would occur.

7.5.2 Construction and Operation Impacts of the Project

As a result of construction activities at this site, small areas of soil and vegetation would be permanently removed. Some additional grading and contouring of stream banks, bridge approaches, and road shoulder areas would also be likely. Steel piling in bridge abutments would be driven to bedrock, approximately 30 feet, for beam support. However, no significant subsurface excavation would be required or expected, avoiding impacts to geologic resources.

The Bridge locations contain prime farmland soils according to the NRCS Soil Survey for Canadian County (NRCS, 2017). However, in a letter dated June 8, 2017, the State Resource Conservationist of the NRCS indicated that the Project would not result in impact to prime farmland soils as defined by the Farmland Protection Policy Act. USDA concurs with this assessment because the Project would not convert a prime farmland under current agricultural use to a non-farmland use.

The Oklahoma Department of Mines indicated in a letter received June 15, 2017 (Appendix D), that there is no coal or non-coal permits or any other surface reclamation efforts on record that would affect the Project.

Potential impacts to soil resources include soil erosion, loss of soil productivity, and the establishment of noxious weeds on the soil surface. Construction activities, such as vegetation clearing, trenching, grading, topsoil segregation, and back filling, may also increase erosion potential by destabilizing the soil surface. Soil compaction can result from the movement of heavy construction vehicles on the poorly drained soils at the Project site. The degree of compaction would depend on the moisture content and texture of the soil. These impacts would be short-term in nature and minimized as feasible through the use of BMPs.

During construction, soils at the Project site would be exposed to erosional forces. USDA would implement soil erosion control practices (BMPs) during the construction phase that would guard against soils leaving the construction site. BMPs may include silt fencing, fiber rolls or straw bale barriers, hydroseeding, soil binders, mulching, or other approved measures. Disturbed areas would be stabilized

and re-vegetated, as soon as practicable, once construction activities are completed. Reseeding or mulching will stabilize soil surface stability and prevent erosion. If greater than 1 acre is disturbed at each bridge site, a SWPPP will be prepared and all BMP's would comply with the requirements of the SWPPP. As a result, no significant erosion from wind or water would be anticipated from the construction of the proposed facilities.

The bridges will be appropriately designed based on existing soil and geologic conditions identified by surface and subsurface investigations. Including engineering designs to withstand minor ground shaking. Appropriate designs shall result in no impact to soil or geological stability issues.

Following construction and restoration, no additional impacts to geology and soils would be expected.

7.6 Hazards and Hazardous Materials

This section describes potential hazards and hazardous materials that may be transported, encountered, handled, used, stored, or generated during construction and operation of the Project. This section also covers other public health and safety concerns.

7.6.1 No Action

The No Action Alternative would have no short- or long-term impacts to human health and safety at or in the vicinity of the study area because no construction would occur. However, continued deterioration of the bridges could present a safety risk to GRL staff, tenants, and visitors traveling within the facility.

7.6.2 Construction and Operation Impacts of the Project

Potential health and safety hazards associated with the Project exist for construction personnel as related to heavy equipment operation, overhead materials and cranes, and use of construction tools. Construction-related hazards can be effectively mitigated by complying with all applicable Federal and State occupational safety and health standards and would protect construction workers from unacceptable risks.

Work would be performed under the Occupational Safety and Health Administration (OSHA) requirements with emphasis on CFR 1926 – Safety and Health Regulations for Construction. Mitigation Measure **MM HAZ-1** will be implemented during construction and requires that all employees, contractors, and sub-contractors be required to conform to OSHA safety procedures. Adequate training would be mandatory for all construction workers onsite. Heavy equipment would follow OSHA requirements for safety devices such as back-up warnings, seat belts, and rollover protection. Personal safety equipment such as hard hats, ear and eye protection, and safety boots would be required for all workers onsite. Accidents and injuries would be reported to the designated safety officer at each site.

MM HAZ-1: During construction, all employees, contractors, and sub-contractors will be required to conform to OSHA safety procedures. Adequate training will be mandatory for all construction workers onsite. Heavy equipment will follow OSHA requirements for safety devices such as back-up warnings, seat belts, and rollover protection. Personal safety equipment such as hard hats, ear and eye protection, and safety boots will be required for all workers onsite. Accidents and injuries will be reported to the designated safety officer at each site.

Risk of accidental fire during construction could occur from human activities such as refueling, cigarette smoking, and use of vehicles and construction equipment in dry, grassy areas. Daily tailgate meetings will outline construction site rules and safety measures. The construction site would be managed to prevent harm to the public.

The Project will use general construction material and products and will not use special hazards such as radio activity or electromagnetic radiation. Hazardous materials that will be used during construction include but are not limited to, fuel and lubricants for equipment (i.e., motor oil), equipment degreaser, and spray paint. Minor spills or releases of hazardous materials could occur due to improper handling and/or storage practices during construction. Small quantity chemicals would be stored safely and maintained in compliance with OSHA standards. In a letter dated June 5, 2017 (Appendix D), the Director of the Oklahoma Water Science Center indicated that work crews should clean up any spills of solvents or other construction materials as promptly as possible. USDA will implement Mitigation Measure **MM HAZ-2** to limit the potential for construction related substances to enter the drainageways. Any vehicle or equipment maintenance shall be conducted at least 100 feet from waterways, with BMPs implemented to prevent and capture spills reaching the ground or soil. **MM HAZ-2** shall protect water and soil quality during construction of the Project. Any construction hazards would cease following completion of construction.

MM HAZ-2: The Project shall fuel all vehicles greater than 100 feet away from a waterway, pond, or wetland and utilize best management practices to prevent leaks or spills from entering soil or water resources. Small quantities of chemicals will be stored safely and maintained in compliance with OSHA standards.

Bridges would be designed and constructed for the safe operation of equipment at the GRL. No safety or other restrictions during bridge operation are anticipated.

7.7 Land Use

This section describes the existing onsite and surrounding land uses and analyzes the changes or impacts to land uses that would occur with implementation of the Project. This analysis also addresses the Project's effects on land use compatibility.

7.7.1 No Action

The No Action Alternative would have no short- or long-term impacts to land use at or near the Project because no construction or changes in land development patterns would occur.

7.7.2 Construction and Operation Impacts of the Project

Construction of the Project would occur on land owned by USDA and would not conflict with current land uses of the facility but, rather, would enable continuation of current uses. No changes to existing uses are proposed. Construction staging and laydown areas would be located onsite near the bridges to reduce amount of travel and increase construction efficiency. The Project is consistent with the character of the area and would be compatible with current and anticipated future land use.

Construction and operation would take place on property that is currently used for USDA research. The Project would not convert farmland to a non-farmland use; therefore, the Project would not represent an adverse impact to the area's important farmland resources. Replacement of these bridges would not conflict with the land use, degrade the character of the area, or adversely impact access to future resources.

7.8 Noise

This section summarizes the noise and vibration analysis for the Project.

7.8.1 No Action

The No Action Alternative would have no short- or long-term impacts to noise at or near the Project because demolition and construction would not occur.

7.8.2 Construction and Operation Impacts of the Project

Noise and human activity associated with construction activities would result in short-term, minor noise impacts in the immediate vicinity of the bridge replacements. Noise would result from operation of heavy construction equipment, including jackhammers during demolition and pile drivers during construction. These noise sources would be short term during the short period for these specific activities. Typical noise sources would include construction vehicles such as concrete trucks, cranes, and backhoes. All of these noise sources are similar to those of agricultural equipment currently used throughout the GRL. There are

no noise sensitive receptors nearby that would be impacted by the temporary construction noise. Following construction, noise sources would cease and no longer be present.

7.9 Socioeconomics

This section describes the population, housing, and employment data in the City of El Reno and Canadian County. It also describes the regulatory framework concerning these factors and potential impacts from the implementation of the Project.

7.9.1 No Action

The No Action Alternative would have no short- or long-term impacts to environmental justice issues at or in the vicinity of the Project site because no construction would occur. The No Action Alternative would not generate permanent or temporary jobs and would not impact the economies of the local communities.

7.9.2 Construction and Operation Impacts of the Project

The Project would result in temporary impacts, such as additional noise and traffic, during construction. Project construction would last 60 to 90 days for each bridge and typically require a construction crew of 3 to 5 workers. Workers are expected to be from local contractors who would purchase much of the construction materials (steel, concrete, lumber, fuel) locally. However, the scale and duration of construction is not large enough to impact the local economy, population, or put a demand on the current housing supply in El Reno or Canadian County. Because the purpose of the Project is to replace existing bridges, operation of the Project would not be expected to result in significant impacts affecting the local economy or population. Construction and operation of the Project would not displace minority populations or housing units and would therefore have minimal if any impact to the socioeconomics of the El Reno area.

7.10 Transportation

This section evaluates the potential impacts related to the increase in traffic as a result of the Project.

7.10.1 No Action

The No Action Alternative would have no short- or long-term impacts to transportation at or near the Project because no construction or change to operational roadway use would occur.

7.10.2 Construction and Operation Impacts of the Project

Existing roads would be used for construction access to the bridge sites; no upgrades to offsite roads are anticipated. Construction of the Project would have no impact to traffic on public roadways. Travel by

construction workers and transport of equipment and materials would be temporary and minimal compared to existing traffic levels and would not add substantial trips to the current traffic volumes on Hwy 66/SR 40 or Interstate 270.

Primary ingress to the Project site for material delivery and construction equipment would be from Hwy 66/SR 40. Construction equipment and material deliveries could potentially create minor delays to motorists' travel times; however, the potential delays are not anticipated to be significant and would fluctuate depending on the phase of construction occurring at any given time. Delays would be most likely during the delivery of major materials such as support beams and steel piling, which may require oversized loads. However, these deliveries would be few and once onsite would no longer contribute to traffic delays.

Construction is anticipated to begin in 2018. The majority of construction activity would be completed within 2018. No more than 3 to 5 workers are expected to typically access the site for the duration of construction (60 to 90 days). Construction traffic would include construction workers, construction management staff, contractors and contractor equipment, vendors, and material and equipment deliveries. Construction would not affect operations of area airports because workers and equipment would be transported and delivered by truck. Construction activities and equipment for Bridge A would be staged to avoid potential conflicts with operations of Union Pacific Railroad on the rail line through the GRL.

Once the bridges are operational, construction traffic to and from the Project area would cease. Bridges would have no restrictions or further concerns for operation of GRL equipment.

7.11 Water Resources

This section describes the hydrological resources near the Project. It also describes the regulatory framework concerning water resources, potential impacts from the implementation of the Project.

7.11.1 No Action

The No Action Alternative would result in long-term impacts to the channel morphology. This would be a result of ongoing issues with scour and erosion along the current footings of the bridges due to the bridges' age and design. These bridges were designed and installed in the 1940's and are currently limiting the flow of the streams below them.

However, the No Action Alternative would have no short- or long-term impacts to water quality at or in the vicinity of the Project because no construction or changes in water usage would occur.

7.11.2 Construction and Operation Impacts of the Project

Bridge A would be constructed over a tributary of North Canadian River, locally referred to as Soap Suds Creek, within the 100-year floodplain. Bridge D would be constructed over Target Creek, another tributary of the North Canadian River and also within the 100-year floodplain. The bridges have been designed to withstand periodic flooding, including 100-year storm events. The new bridges have been designed to correct issues noted from the current bridges (scour, erosion, and continual need for rip rap maintenance). The new bridge designs will decrease scour and erosion along the footing, allow for less restrictive stream flow, and decrease rip rap maintenance. No permanent adverse effects will result from Project implementation. Coordination with the Oklahoma Water Resources Board during the Project scoping period indicates that a floodplain development permit would not be required for the Project (refer to Responses in Appendix D). Modeling for the bridges indicated neither bridge would result in a rise in flood levels. There will be no adverse impact to upstream or downstream hydrology.

In a letter dated, June 30, 2017 (Appendix D), the Environmental Programs Manager for the ODEQ stated that the Project would require submittal of a Notice of Intent (NOI) and obtain authorization under the General Permit (OKR10) for stormwater discharge from construction activity if over 1 acre of surface disturbance were to occur. During construction, BMPs will be implemented to protect the surface water quality. Mitigation Measure **MM BIO-3**, requires implementation of erosion control measures to control storm water runoff from the construction areas. If more than 1 acre of surface disturbance occurs, a SWPPP to comply with the requirements of OKR10 would be prepared. The SWPPP would minimize potential point and non-point sources of pollutants that could adversely affect stormwater quality during construction. The SWPPP would require erosion control measures to prevent soil erosion along the channel, such as, but not limited to, fiber rolls, geotextile matting, and limiting large equipment within the channel. Construction of the bridges would not result in degradation of surface or groundwater quality.

Construction would not adversely impact the El Reno Groundwater Basin. There will be no deep excavation or groundwater dewatering during construction; therefore, groundwater yields would not be impacted, nor would any groundwater rights be violated. The footprint of impervious surface from the proposed Project would be similar to the footprint of the existing bridges; thus, the Project would not be expected to affect groundwater recharge rates.

Aquatic species may be temporarily disturbed during construction from noise, equipment, and human activity. However, construction would be short in duration, and there would be no long-term impacts to aquatic species.

This Project would require a Section 404 CWA Nationwide Permit 14 (NWP-14), which regulates the discharge of dredged or fill materials to waters of the U.S., including wetlands. For most discharges that have minimal adverse effects, such as discharges associated with this Project, a General Permit is suitable. General Permits are issued when categories of very similar activities are minor in scope, with minimal projected impacts. General Permits are valid only if the conditions applicable to the permits are met. General Permits are issued on a nationwide, regional, or state basis for particular categories of activities. In this case, as mentioned above, a NWP-14 and the associated conditions of approval would apply. A Section 401 Water Quality Certification through the State Water Resources Control Board would also be required since a Section 404 CWA permit is required.

If any work must be done within the federally jurisdictional portion of the channel, USDA shall obtain the appropriate CWA Permits, such as Section 404 and 401 permits. In a letter dated, June 29, 2017 (Appendix D), the regulatory office of the USACE stated that a NWP-14 for Linear Transportation Projects pertains to the Project if dredged or fill material is placed in the jurisdictional areas of the drainages. The Project must comply with the general conditions of the NWP-14 if dredged or fill material is placed in the jurisdiction areas of the drainages. Mitigation Measure **MM BIO-3** and **MM WATER-1** would be implemented to comply with these requirements of the CWA. With implementation of these Mitigation Measures there will not be short or long-term impacts to water quality, aquatic life, or any water use designation for the tributaries of the North Canadian River.

MM WATER-1: If any work is proposed within the federally jurisdictional portion of the channel, USDA shall obtain the appropriate permits to comply with the requirements of the CWA (both Section 401 and 404, as warranted).

7.12 Utilities and Service Systems

This section describes the public services, utilities, and service systems near the Project.

7.12.1 No Action

The No Action Alternative would not result in any demands on existing utilities or services such as solid waste, sewer, or water supplies.

7.12.2 Construction and Operation Impacts of the Project

Construction and operation of the Project would not require the use of utilities or service systems from offsite. Water supply, power, heating or other municipal services would not be required for construction. All such requirements would be provided onsite through portable generators, water tanks, and portable toilet facilities. The Project is a bridge replacement; thus, operation of the Project would not affect

utilities or service systems. The Project would not place any additional demands on the capacity of existing municipal sewer, water, storm drainage, or power service systems.

8.0 CUMULATIVE IMPACTS

This section provides an analysis of overall cumulative impacts of the Project taken together with other past, present, and reasonably foreseeable future projects producing related impacts. The cumulative impact analysis has two goals: (1) to determine whether the overall long-term impacts of all related projects across a broader geographic area would be cumulatively significant, and (2) to determine whether the Project itself would cause a “cumulatively considerable” (and thus significant) incremental contribution to cumulatively significant impacts.

Cumulative impacts are considered within a specified region of influence where the effects of the Project would potentially cause impacts on various resources. The region of influence includes a wider area than the footprint of the Project and varies for each resource assessed.

The region of influence for air resources is within Canadian County.

Water and floodplain resources are assessed according to the watershed. The Project sits within the Central North Canadian River Watershed.

Terrestrial resources are assessed according to the ecoregion where the Project is located. Ecoregions denote areas of general similarity in the type, quality, and quantity of environmental resources. El Reno is situated in the Central Great Plains, Prairie Tableland Ecoregion.

For socioeconomic resources, the area assessed is the commuting distance of approximately 15 to 20 miles, with an emphasis on District 1 in Canadian County. Resources and issues with primarily local impacts (including environmental justice, land use, transportation, aesthetics, noise, hazards and hazardous materials, cultural resources, and waste) are assessed for Canadian County.

Past, present, and reasonably foreseeable future actions that occur in the region of influence are limited, but may include:

- Residential and commercial development with associated utility infrastructure improvements;
- Various infrastructure improvements for the City of El Reno;
- Private agricultural management; and
- Ongoing roadway maintenance.

To determine a list of projects that may affect cumulative impacts, Burns & McDonnell reviewed the Canadian County list of Projects (Canadian County, 2017a) and the City of El Reno list of upcoming

Projects (City of El Reno, 2017b). No large-scale reasonably foreseeable future actions have been identified. No additional construction or other reasonably foreseeable future actions are proposed for the GRL. The District 1 Commissioner for Canadian County did not identify any specific projects that would result in cumulatively considerable adverse effects with implementation of the Project (refer to Appendix D).

8.1 Aesthetics

The Project would not introduce new elements into the visual character of the site or the region. Additionally, the replacement bridges are located on private USDA-ARS land and not visible from public rights-of-way. This limits the potential impact to sensitive visual resources. Overall, this Project, when added to other past, present, and reasonably foreseeable future actions, would not contribute to cumulative effects to aesthetics.

8.2 Air

Air quality in the region is generally considered good, and there are no nearby non-attainment areas in the vicinity of the Project. Construction activities would increase the level of exhaust emissions, fugitive dust, and other construction-related emissions above existing conditions temporarily. However, these increases are not anticipated to appreciably affect the area's overall air quality, and no cumulative impacts to air quality would occur as a result of construction activities. Overall, this Project, when added to other past, present, and reasonably foreseeable future actions, would not contribute to a violation of air quality standards and would not cause adverse cumulative effects to air quality.

8.3 Biological Resources

8.3.1 Wildlife

Existing wildlife in the area that are sensitive to noise would be subject to impacts during temporary construction activities, but, following construction, wildlife is likely to return to the area as the Project would result in minimal, if any, loss of wildlife habitat. The Project, when combined with other past, present, and reasonably foreseeable future actions, would not result in adverse cumulative impacts to wildlife habitat. Therefore, the Project would not contribute to cumulative impacts on wildlife or special-status animal species.

8.3.2 Vegetation

The Project would not replace, disturb, or alter a significant quantity of vegetation because the Project is the replacement of existing bridges in the same location. The replacement bridges would disturb and

remove only a minor amount of existing grassland and a few trees. Grassland areas would be restored, and, as trees were not typical of the area historically, their removal would not be inconsistent with the area's natural landscape. This limited impact would not contribute to cumulative impacts to the ecoregion.

8.4 Cultural Resources

Existing and planned development in the El Reno area has, and is likely to continue to, inadvertently affect some cultural sites; however, no past and present adverse impacts have been identified in the vicinity of the proposed Project. The Project would not impact any NRHP-eligible resources. No reasonable foreseeable future actions have been identified that would have adverse effects on historic and cultural resources. Future impacts from federally funded or permitted actions would be addressed by Section 106 of the NHPA. As a result, there would be no adverse cumulative effects from the proposed Project.

8.5 Geology and Soils

The Project would not affect soil or geological resources; therefore, there are no cumulative geological effects. During construction activities planned for the Project, disturbed areas would be exposed to erosion. However, USDA-ARS would implement soil protection practices during construction activities that would have the potential to impact soils at the site; these activities would help prevent soils from leaving the construction site and limit the potential for erosion. Any disturbed areas would be stabilized and re-vegetated in the earliest timeframe. Overall, the minimal impacts to these resources would not contribute noticeably to the cumulative impacts to the area's geology and soils and they are not anticipated under the proposed Project.

The bridges will be appropriately designed based on existing soil and geologic conditions identified by surface and subsurface investigations. Including engineering designs to withstand minor ground shaking. Appropriate designs shall result in no impact to soil or geological stability issues

8.6 Hazards and Hazardous Materials

Implementation of the Project would not result in increased risk to expose people or structures to hazards or hazardous materials. The bridge replacements will improve safety by replacing weight-restricted bridges with newer bridges capable of adequately handling the traffic needs of the GRL. The Project would not contribute to any cumulative concerns for hazards or hazardous materials within the area.

8.7 Land Use

The Project is consistent with the character of the area, and would not change the existing land uses on the research facility. Therefore, the Project would not contribute to adverse cumulative land use impacts.

8.8 Noise

The Project would not result in operational noise. Construction noise would occur in the vicinity of the Project, and would be minor and temporary. No noise sensitive receptors or other sources of noise occur in the vicinity of the Project construction areas. The Project would not contribute to adverse cumulative noise impacts.

8.9 Socioeconomics

A majority of the construction workforce would be expected to come from within Canadian County. The Project would not result in permanent employment or the need for housing or public services. The Project would not contribute to any negative socioeconomic consequences such as losses of jobs in other industries. No residents are being displaced by the Project, and noise and increased traffic from Project construction would be minor and temporary. Economic activity generated by the Project through the sales of goods, materials, and services and the construction employment required would be insignificant relative to the existing and future economic activity in the El Reno area. Therefore, there would not be disproportionate impacts to minority and low-income communities, and the Project would not contribute to any cumulative impacts to socioeconomic conditions.

8.10 Transportation

The County may periodically perform roadway improvements to the roadway infrastructure in the vicinity of the Project. There are no roadway improvement projects identified for the County at the time of preparation of this NEPA EA. No major reasonably foreseeable future traffic-generating actions have been identified in the County that would cumulatively contribute to increased auto or truck traffic on local or State highways. Traffic generated for Project construction would be insignificant compared to existing traffic levels and would not contribute to any cumulative impacts to the area transportation network.

8.11 Water Resources

8.11.1 Wetlands

Construction and operation of the Project is anticipated to have no long-term impacts to wetlands. Construction activities are subject to USACE approval of a Section 404 CWA Nationwide Permit to be issued for the Project. Compliance with the Nationwide Permit general conditions would also be required

(refer to general Nationwide Permit SWT-2017-374). Compliance with these regulations during construction would offset the Project's potential impacts to wetlands, and, as such, the Project would not contribute to cumulative impacts on wetlands.

8.11.2 Surface Water

The Project is not anticipated to impact the region's surface water features and would not contribute to cumulative effects on surface water.

8.11.3 Groundwater

The Project would have no impact on area groundwater; therefore, it would not contribute to cumulative effects on groundwater.

8.11.4 Floodplains

The Project would take place in the floodplain but would not contribute to floodplain development. Existing bridge support structures within the streams would be removed, reducing volume in the floodway and eliminating potential obstructions to flow and flood debris. Therefore, it would not contribute to cumulative effects on floodplains.

8.12 Utilities and Services Systems

No adverse effects to water, wastewater, storm drain systems, power, or other utilities or service systems are expected with implementation of the Project. Portable, onsite facilities would be used for the Project. There would be no cumulative impacts related to utilities and service systems.

9.0 MITIGATION MEASURES

The following Mitigation Measures shall be implemented to prevent adversely impacting human health or the environment.

Table 9-1: Summary of Mitigation Measures

Mitigation Measure	Responsibility	Phase of Implementation
<p>MM AIR-1: USDA shall implement fugitive dust control measures to reduce the amount of airborne fugitive dust including, but not limited to, watering disturbance areas, stockpile management, covering equipment transporting dusty materials, and planting and maintenance of vegetation ground cover as necessary.</p>	<p>USDA-ARS and contractor</p>	<p>During construction</p>
<p>MM BIO-1: If construction will be conducted during nesting season (March 1 through August 31), a preconstruction nesting bird survey will be conducted by a qualified biologist to determine presence of nesting birds in accordance with MBTA. For all nests discovered, a qualified biologist will determine if construction activities could potentially disturb nesting birds. If so, the Special Provisions for Migratory Bird Nest Prevention for Bridge Structures and Culverts of the Oklahoma Department of Transportation (Appendix E) will be implemented as appropriate avoidance measures (for instance, onsite monitoring, setbacks, timing restrictions) to adequately protect nesting birds.</p>	<p>USDA-ARS</p>	<p>Prior to construction</p>
<p>MM BIO-2: During construction, equipment shall be restricted to the areas outside of the streambed, bank, and channel to the extent feasible, to reduce the potential for direct and indirect impacts to biological resources at the Project site and downstream.</p>	<p>USDA-ARS and contractor</p>	<p>During construction</p>
<p>MM BIO-3: USDA will implement erosion control measures to control storm water runoff from the construction areas. If more than 1 acre of surface disturbance occurs, USDA will prepare and implement a SWPPP in accordance with relevant Oklahoma Department of Environmental Quality (ODEQ) guidelines. The SWPPP must contain BMPs to prevent sediment and other construction-related materials from entering stormwater discharges. The SWPPP shall include the following major components:</p> <ul style="list-style-type: none"> • A comprehensive erosion and sediment control plan, depicting areas to remain undisturbed and providing specifications for revegetation of disturbed areas. • A list of potential pollutants from construction materials and maintenance practices to be used during construction to minimize release and transport of potential pollutants in runoff. • Specifications and designs for the appropriate BMPs for controlling drainage and treating runoff in the construction phase. 	<p>USDA-ARS</p>	<p>Prior to construction</p>

Mitigation Measure	Responsibility	Phase of Implementation
<ul style="list-style-type: none"> • A program for monitoring all control measures that includes schedules for inspection and maintenance and identifies the party responsible for monitoring. • A site map that locates all water quality control measures and any (if relevant) restricted areas to be left undisturbed. 		
MM BIO-4: Areas disturbed during construction shall be re-seeded as soon as practicable after construction with native vegetation to help stabilize soil.	USDA-ARS	After construction
MM CUL-1: During construction, staging will be limited to approved areas. Specifically, construction staging associated with Bridge A shall not be closer than 150 feet south of the Union Pacific railroad line to avoid impacts to NRHP-eligible site.	USDA-ARS and contractor	During construction
MM CUL-2: If an unanticipated cultural resource is uncovered, all work within 50 feet of the find would be halted until a qualified professional archaeologist can evaluate the significance of the find in accordance with NRHP criteria. Work will not resume in the vicinity of the find until any required treatment measures have been completed. Treatment measures may include capping, documentation and research, preparation of a formal treatment plan, construction monitoring, subsurface testing, or data recovery. All activities will be documented and reported to SHPO if warranted.	USDA and contractor	During construction
MM CUL-3: USDA will develop a Memorandum of Agreement (MOA) signed by and subject to approval by SHPO. The MOA will include appropriate measures to address the Project's impact to components of the bridge that are considered to be a historic resource. The measures outlined in the MOA shall be implemented prior to initiation of construction, or as appropriate.	USDA-ARS	Prior to construction
MM HAZ-1: During construction, all employees, contractors, and sub-contractors would be required to conform to OSHA safety procedures. Adequate training would be mandatory for all construction workers on site. Heavy equipment would follow OSHA requirements for safety devices such as back-up warnings, seat belts, and rollover protection. Personal safety equipment such as hard hats, ear and eye protection, and safety boots would be required for all workers on site. Accidents and injuries would be reported to the designated safety officer at each site.	Contractor	During construction
MM HAZ-2: The Project shall fuel all vehicles greater than 100 feet away from a waterway, pond, or wetland and utilize best management practices to prevent leaks or spills from entering soil or water resources. Small quantity chemicals would be stored safely and maintained in compliance with OSHA standards.	USDA-ARS and contractor	During construction
MM WATER-1: If any work is proposed within the federally jurisdictional portion of the Channel, USDA shall obtain the appropriate permits to comply with the requirements of the CWA (both Section 401 and 404, as warranted).	USDA-ARS	Prior to construction

10.0 PUBLIC OUTREACH AND AGENCY COORDINATION

In accordance with NEPA guidelines found in *43 CFR 46.235 – NEPA Scoping Process*, scoping is a process that solicits feedback in the early stages of preparation of an environmental document. Scoping is required for an Environmental Impact Statement. Although not explicitly required for an Environmental Assessment, the USDA elected to engage public agency stakeholders in the environmental process.

Scoping letters notifying relevant agencies were sent on June 1, 2017, and responses were obtained over a 30-day period. Twelve agencies addressed the scoping letter. Their summarized comments are outlined below and have been taken into consideration as part of the analysis herein. For the full text of agency response, refer to Appendix D.

Table 10-1: Scoping Letter Responses

Agency	Response Summary
U.S. Geological Survey, Oklahoma Water Science Center	These bridge-replacement projects appear to pose no notable issues or conflicts with existing land use, aesthetics, socioeconomics, hazardous materials sites, or cultural resources, or pose interference with important transportation corridors. Given the drainage of these sites to the Canadian River, which is habitat of the threatened Arkansas River Shiner, work crews should clean up any spills of solvents or other man-made compounds as quickly as possible and take measures to minimize erosion of disturbed soils during the construction process.
U.S. Army Corps of Engineers, Tulsa District	The two creeks affected by the Project may be jurisdictional waters of the United States. Additionally, the commenter enclosed Nationwide Permit 14 (NWP-14) for Linear Transportation Projects that pertains to the proposed placement of dredged or fill material into aquatic areas. The commenter advised that if the Project would comply with all the terms and conditions therein, the Project may proceed at any time.
USDA, NRCS	The Project will not impact any easements, watersheds or prime farmland soils as defined by the Farmland Protection Policy Act.
Oklahoma Archeological Survey	The Oklahoma Archeological Survey is familiar with the Project through Section 106 consultation with USDA and clarified that the Area of Potential Effects includes the staging areas for the proposed construction.
Oklahoma Water Resources Board	The commenter recommended that the USDA contact the local floodplain administrator. General information pertaining to the OWRB website, floodplain development permit guidance, and directory of floodplain administrators was provided.

Agency	Response Summary
Oklahoma Natural Heritage Inventory	<p>The Oklahoma Natural Heritage Inventory provided results from the database related to Oklahoma’s biodiversity. The report lists the federally or State-listed species (including candidate species) in the Project area.</p> <p>The agency confirmed it has reviewed occurrence information on Federal- and State-threatened, endangered, or candidate species, as well as non-regulatory rare species and ecological systems of importance currently in the Oklahoma Natural Heritage Inventory database for the Project location.</p> <p>Three occurrences of relevant species within the vicinity of the Project location were included.</p> <ul style="list-style-type: none"> • Whooping crane (<i>Grus americana</i>), a federally listed endangered species; one occurrence in Sec. 12- T12N-R8W, Canadian County • Sprague’s pipit (<i>Anthus spragueii</i>), a candidate species for Federal listing; two occurrences in Sec. 7- T12N-R7W, Canadian County.
Oklahoma Department of Mines	ODM found no coal or non-coal permits or any other surface reclamation efforts on record that might affect the Project.
Oklahoma Scenic Rivers Commission	Grand River Dam Authority – Scenic Rivers Operations has no comments on this project.
Oklahoma Department of Wildlife Conservation	There are no known species of State concern (threatened or endangered) at or near this location. The ODWC does ask that all precautions and action be taken to limit the amount of disturbance to any stream corridor, and that caution and best practices are used when working around corridors where riparian zones are present.
Oklahoma Department of Environmental Quality	Prior to beginning any construction activity disturbing more than one acre, the Project must submit an NOI and obtain authorization under General Permit OKR10, construction stormwater.
Board of Canadian County Commissioners	The commentor did not express any opposition or concern related to the Project.
Canadian County Floodplain Management	The commentor expressed support for the Project and a request to avoid disturbance to the upstream and downstream resources of the two affected creeks.

No responses were received from the following agencies:

- U.S. Fish and Wildlife Service, Oklahoma Ecological Services Field Office
- U.S. Environmental Protection Agency, Office of Environmental Justice and Tribal Affairs
- U.S. Environmental Protection Agency, Compliance Assurance & Enforcement Division
- Oklahoma Historical Society, State Historic Preservation Office
- Oklahoma Geological Survey

- Canadian County Emergency Management

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APPENDIX A – TECHNICAL RECOMMENDATION REPORT



United States Department of Agriculture

USDA – EL RENO BRIDGE
REPAIRS OR
REPLACEMENT
EL RENO, OKLAHOMA

*Copy of report
for Steve Thornhill.*

*/Mark Huck
2-7-17*

TECHNICAL
RECOMMENDATION
REPORT

NOVEMBER 17, 2016

PREPARED BY:



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**TECHNICAL RECOMMENDATION REPORT
EL RENO BRIDGE REPAIRS OR REPLACEMENT**

FORT RENO
CANADIAN COUNTY
OKLAHOMA



U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
COLLEGE STATION, TEXAS

INSPECTION DATE: November 02, 2016

**TECHNICAL RECOMMENDATION REPORT
EL RENO BRIDGE REPAIRS OR REPLACEMENT**



Executive Summary

On November 2, 2016 a visual investigation was performed on Bridges A, B, C and D to assess whether each bridge should be replaced, repaired or even removed and not replaced if an alternate route is available.

- Bridge A is considered structurally deficient and for safety and economic reasons the process to replace this bridge should begin immediately. The foundation of the north abutment and the northeast column are partially undermined and a short term repair is recommended. The load posting for the bridge should remain at 4 tons.
- Bridge B is in fair to good condition. No repairs or further action is recommended at this time.
- Bridge C should be closed and removed from service as both abutments are severely undermined. It is understood there is a bypass route and a replacement structure is not required. No further action is required other than its immediate closure and removal.
- Bridge D is considered structurally deficient and for safety and economic reasons the process to replace this bridge should begin immediately. Due to its age and condition it should be posted immediately for 4 tons. Thus, only light traffic such as passenger vehicles and pickups may use it. Continue with the work to build the embankments up around both abutments and the placement of rock blanket to reduce the potential for scour around and behind the abutments.

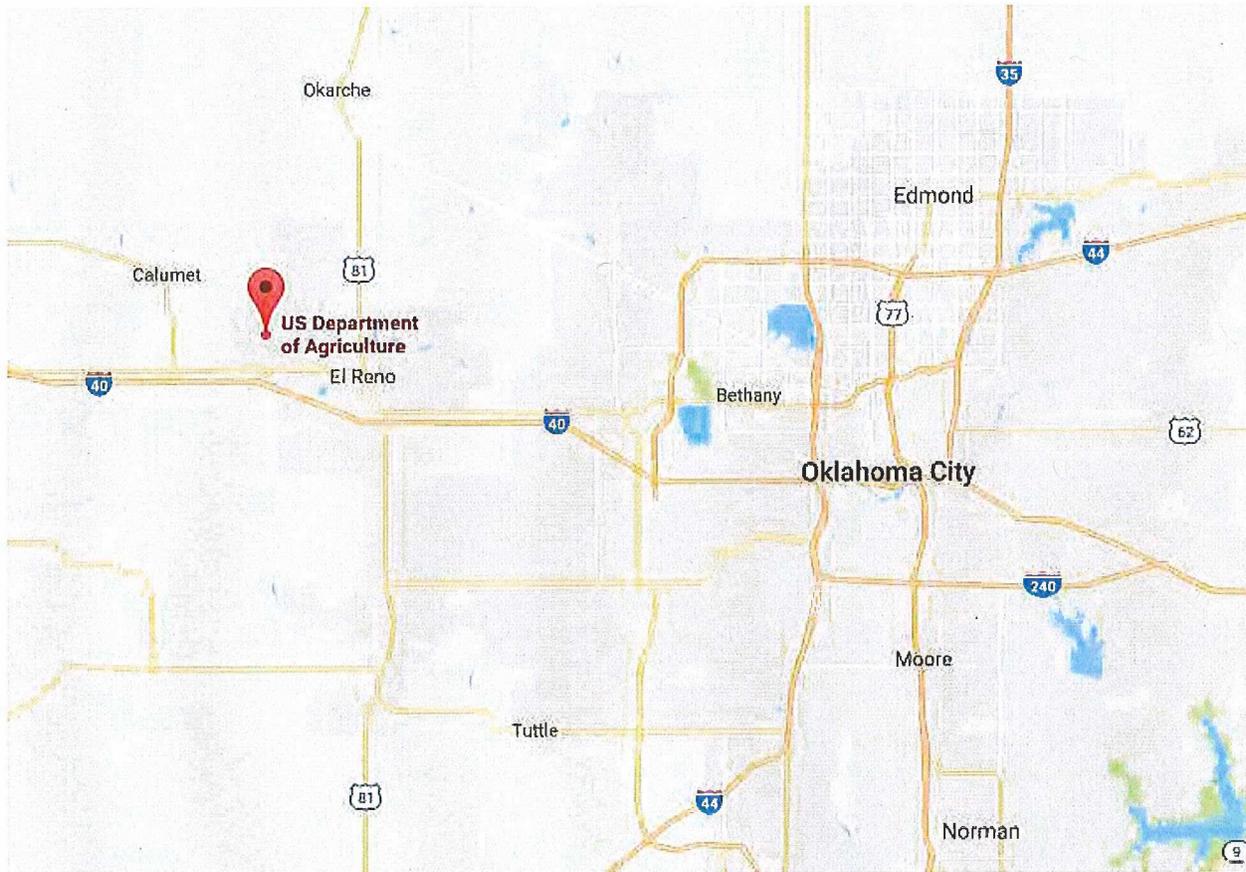
More detailed descriptions of the findings and recommendations are enclosed on the following pages. Opinions of cost for a short term repair of Bridge A and costs for the replacement of Bridges "A" and "D" are included at the end of this report.

The visual investigation was performed by and this report was prepared by:
Mark S. Huck, PE, and Jerry D. Stevenson, PE

FORT RENO
CANADIAN COUNTY
OKLAHOMA

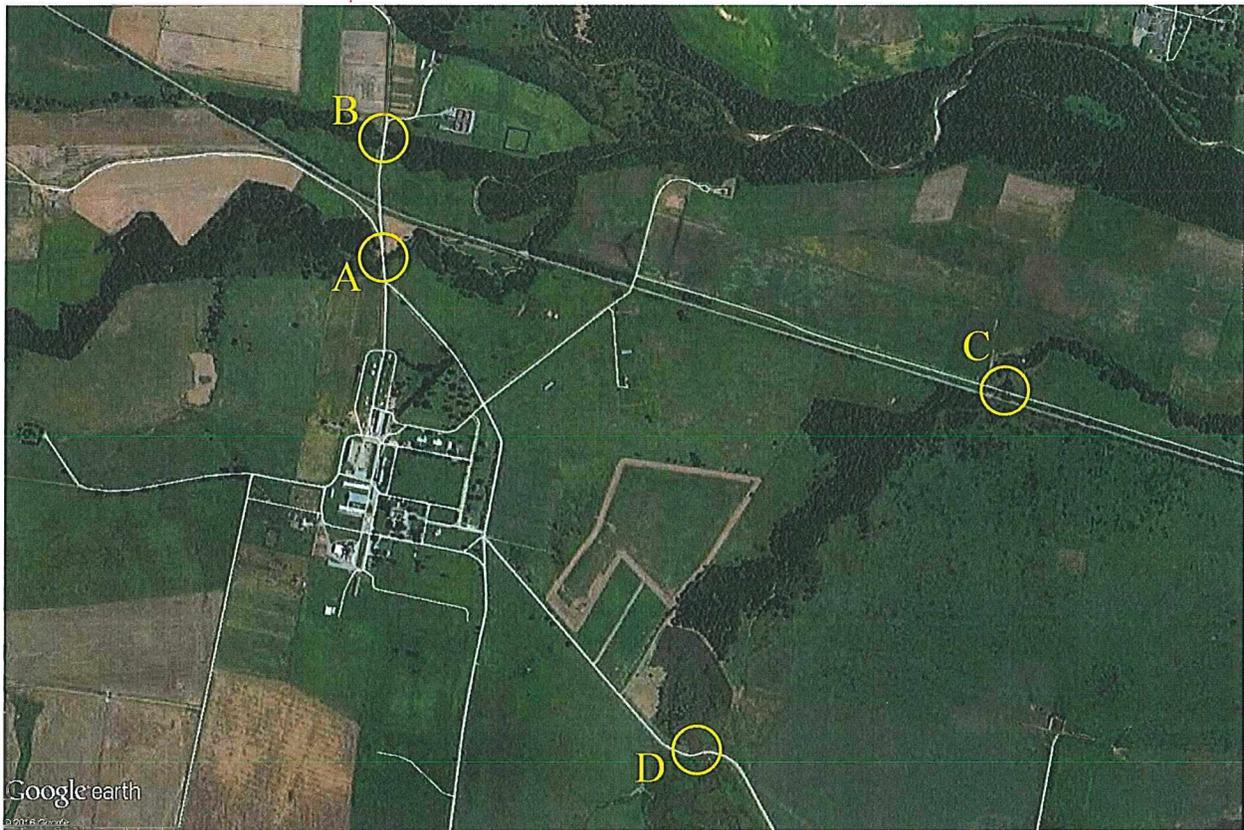
SITE LOCATION

Fort Reno is located west of Oklahoma City in Canadian County near El Reno, Oklahoma.



FORT RENO
CANADIAN COUNTY
OKLAHOMA

BRIDGE LOCATIONS



Bridge A:	Latitude: N 35° 34' 05.12"	Longitude: W 98° 02' 10.70"
Bridge B:	Latitude: N 35° 34' 16.49"	Longitude: W 98° 02' 10.72"
Bridge C:	Latitude: N 35° 33' 52.63"	Longitude: W 98° 00' 58.00"
Bridge D:	Latitude: N 35° 33' 17.60"	Longitude: W 98° 01' 33.26"

A

Bridge "A"

Findings and Recommendations

Date of inspection: 11-2-2016
Existing Plans: None
Location:
Latitude: N 35° 34' 05.12"
Longitude: W 98° 02' 10.70"

Bridge "A" is a 48' long, 3-span, concrete slab bridge founded on concrete abutments and 2-column piers with a roadway width of 17'-9" between the curbs and railings (Figures A1 and A2). It is difficult to tell how much of the original bridge construction remains without any records or plans. There is a retaining wall in front of the existing south abutment with an embossed impression indicating the structure was built during 1945 by POW labor workers. It is unknown if this retaining wall was part of an original abutment or not. Its configuration is similar to the north abutment but structurally it is not part of the existing bridge. The configuration of the south abutment is different from the north abutment which could imply that it was built at a different time when the bridge may have been rehabbed and possibly lengthened. In addition, both columns and cap of the north pier have been widened and added onto sometime since the bridge was initially constructed (Figures A3 thru A6).

As noted in the December 01, 2015 ARS in-house report there is considerable spalling of the concrete and deterioration of the reinforcing in both the deck and pier columns. The pier columns sit on top of a concrete floor placed across the channel bottom. There is considerable undermining of the concrete floor and it is impacting the bearing (foundation) of the northeast column (Figures A7 and A9). In addition, portions of the north abutment are also undermined. During the site visit water was flowing under the concrete floor, further implying the severity of the condition and loss of structural support.

The location of the north abutment out in the channel contributes to its undermining and the erosion of the channel bank around the northeast wingwall (Figure A8).

Our findings support the findings of the ARS in-house report.

- Bridge "A" should be considered structurally deficient.
- The load carrying members are in poor condition due to deterioration and/or damage.
- The bridge should be restricted to the 4-ton load limit recommended in the in-house report.

Summary:

- Due to its age and condition, Bridge "A" is considered structurally deficient and should be replaced.
- The foundation of the north abutment and the northeast column are each partially undermined impacting their bearing capacity and structural integrity.



Short term – Repair recommendation:

- The downstream end of the concrete floor should be formed up. Holes cut through the concrete floor and the void under the floor filled with a flowable fill (concrete) to restore bearing to any affected columns and the north abutment.
- Included at the end of the photos for Bridge “A” is a sketch of the undermined area.
- Included at the end of this report is an opinion of cost for the short term repair.

Long term – Replacement recommendation:

- Further undermining of the structure will require its closure and create a long detour route and economic impact to the operating cost of the research grounds. In addition, the current load posting requires any and all equipment/vehicles over 4 tons in weight to detour around this structure. Thereby, further impacting the operating cost of the research grounds. Therefore, for safety and economic reasons the process to replace Bridge “A” should begin immediately.
- For a replacement structure, we recommend a 100’ long single span bridge with a 24’ roadway width between railings. The proposed bridge length would place the abutments behind 2:1 front slopes and at or behind the top of the channel banks to avoid on-going scour issues, debris problems and maintenance costs.
- Included at the end of this report is an opinion of cost for the replacement of Bridge A.

Bridge A photos

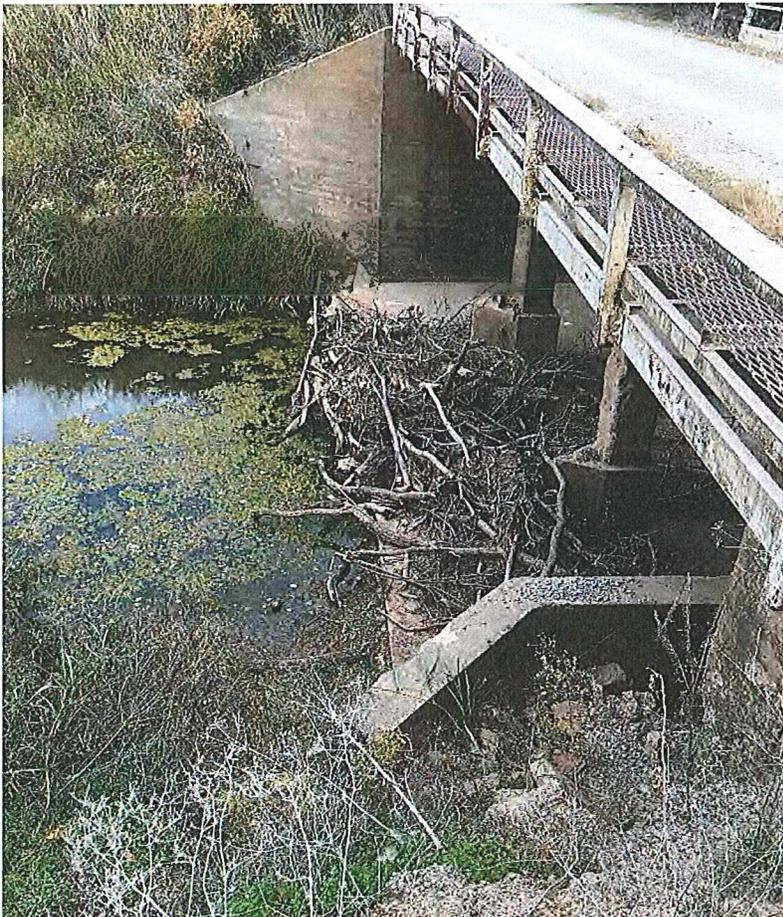


Figure A1 (top photo) is looking south along the bridge.

Figure A2 (side photo) is looking at the upstream / west face of the bridge. Removal of debris built up against the pier columns is a long term maintenance cost item and contributes to the deterioration of the columns and undermining of the structure.

Bridge A photos

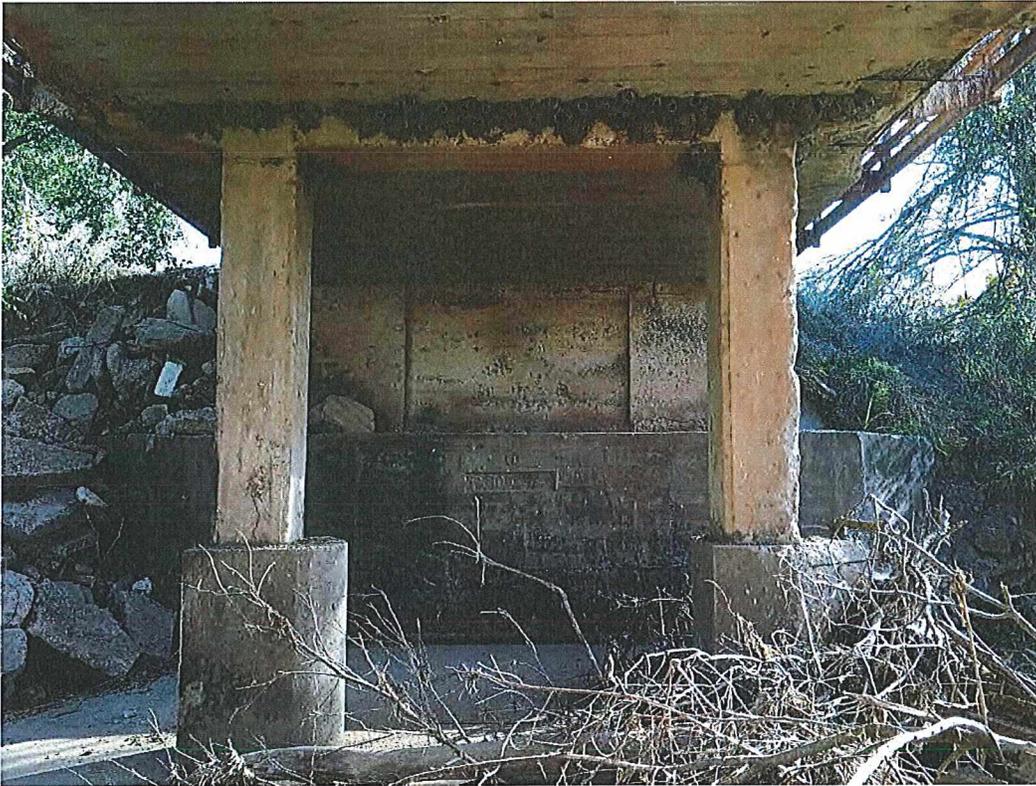


Figure A3 – looking at the south abutment and retaining wall with POW embossed impression.



Figure A4 – POW embossed impression in retaining wall.

Bridge A photos

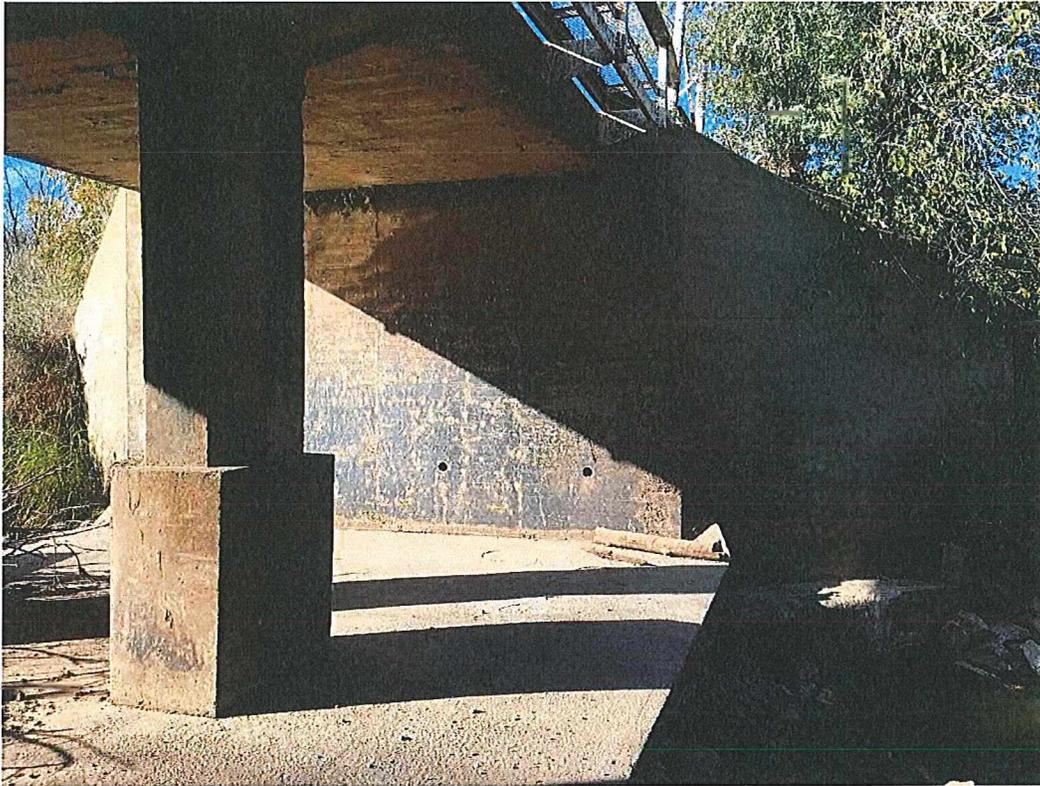


Figure A5 – face of north abutment



Figure A6 – upstream edge of deteriorated deck with exposed reinforcing. Columns at the north pier with exposed / corroded reinforcing and column additions.

Bridge A photos



Figure A7 – downstream face of bridge and undermining.



Figure A8 – undermining and erosion at the downstream wingwall of the north abutment.

Bridge A photos

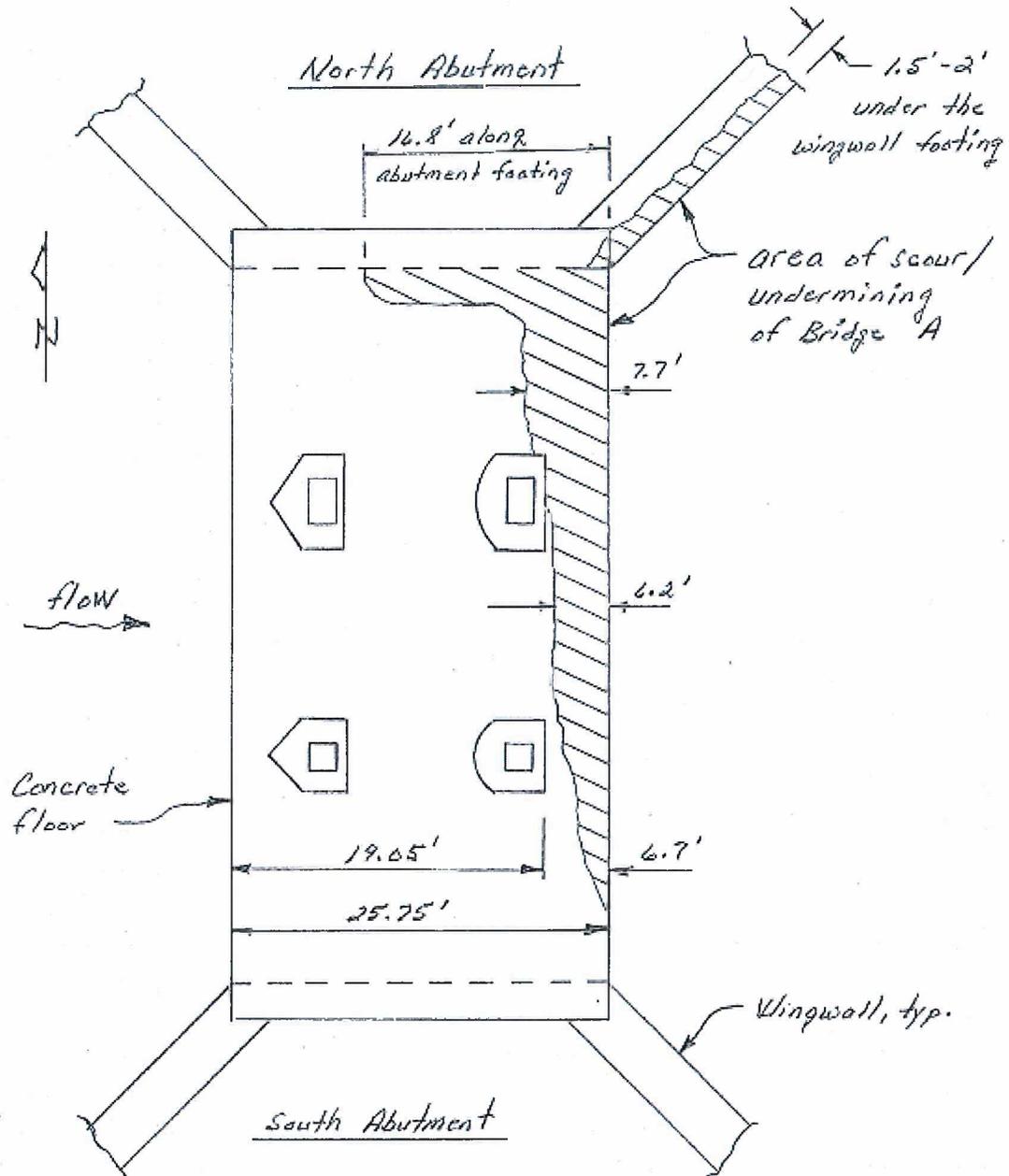


Figure A9

The above sketch shows the area under the concrete floor, northeast pier column and north abutment that has been undermined. The depth (height) of the undermining varies but is 3' +/- along the downstream face of the concrete floor and 12" under the exposed footing of the northeast wingwall.



Bridge "B"

Findings and Recommendations

Date of inspection: 11-2-2016

Existing Plans: None

Location:

Latitude: N 35° 34' 16.49"

Longitude: W 98° 02' 10.72"

Bridge "B" appears to be a 16' long single span concrete slab bridge founded on concrete abutment walls and has a roadway width of 17'-8" between the curbs and railings (Figures B1 and B2). As part of the original construction there appears to be wingwalls that extend almost straight back for some distance. Since its original construction, additional wingwalls have been built and extend out at an angle from the abutment walls. These newer wingwalls and the fill behind them obscure most of the original wings from any kind of visual investigation (Figures B3 and B5). There is also a concrete floor and apron that has been placed across the channel bottom.

At the time of the site visit the structure appeared to be in fair to good condition. There were no signs of distress, scour or erosion noted. The December 01, 2015 ARS in-house report noted previous undermining of the "spillway" concrete floor, scour issues and a sink hole in the road. At the time of the site visit some rip-rap material had been placed at the downstream end of the concrete apron and the downstream channel banks regraded in an effort to mitigate any scour issues. These mediation efforts appeared to be working and no additional scour / erosion problems were noted.

Summary and recommendations:

- The bridge is in fair to good condition and no repairs are recommended at this time.
- The December 01, 2015 ARD in-house report recommended that some preventive maintenance be done on the railings such as the removal of any surface rust and painting. As there is no section loss (corrosion) of the steel members we believe this to be an optional item that can be performed by USDA maintenance forces.
- Wingwalls – the newer wingwalls were cast against the existing abutments. The wingwalls on the east side (downstream side) have pulled away slightly leaving a gap between the wingwall and abutment (Figures B4 and B6). At this time no repairs are recommended. However, the gaps should be periodically monitored for additional movement and any increase in the opening of the gaps.

Bridge B photos



Figure B1 – looking north along the bridge.



Figure B2 – downstream (east) face of the bridge.

Bridge B photos

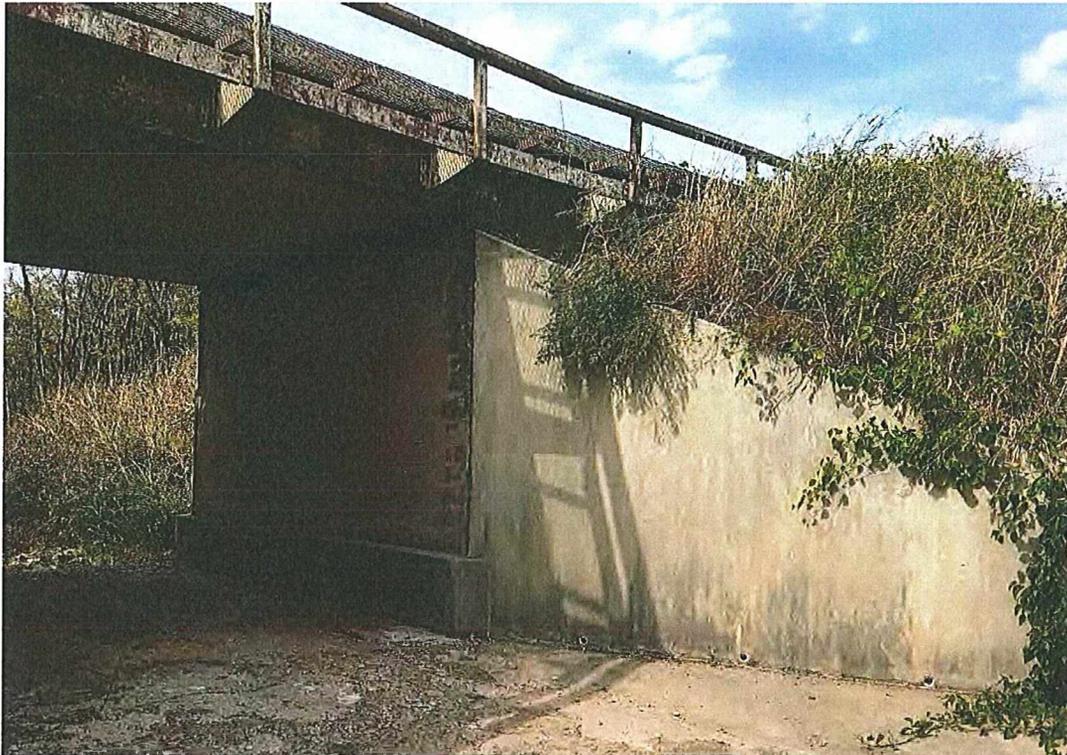


Figure B3 (top photo) is looking at the north abutment wall and the northeast wingwall. The original northeast wingwall is located behind the visible wing and under the bridge railing.

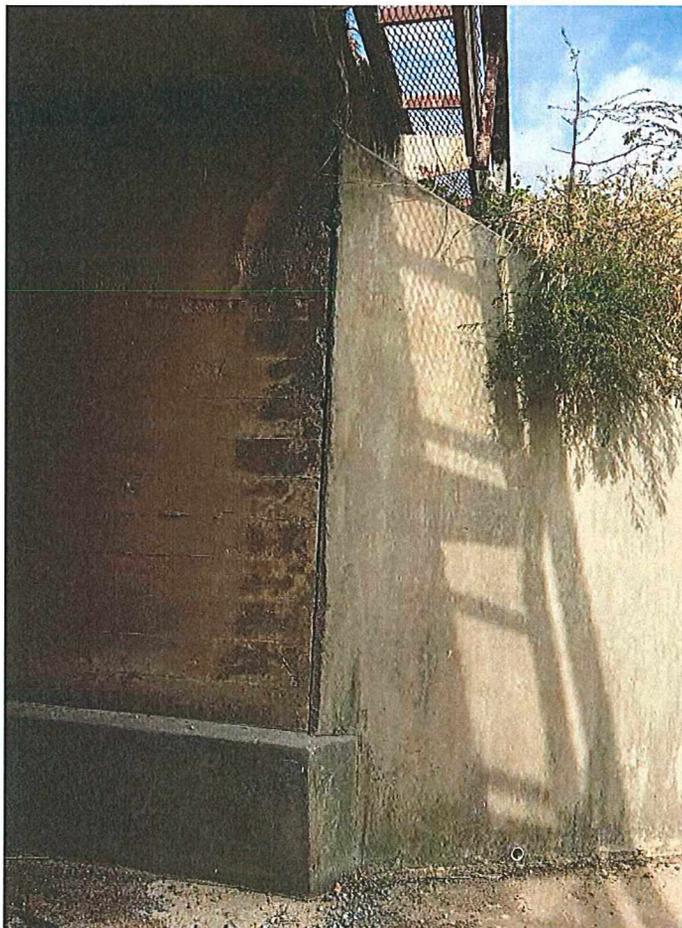


Figure B4 (side photo) is looking at the gap between the north abutment wall and northeast wingwall. The width of the gap opening measured 1.5" at the top and narrowed to 0.25" at the bottom.

Bridge B photos



Figure B5 (top photo) is looking at the south abutment wall and the southeast wingwall. The original southeast wingwall is located behind the visible wing and under the bridge railing.

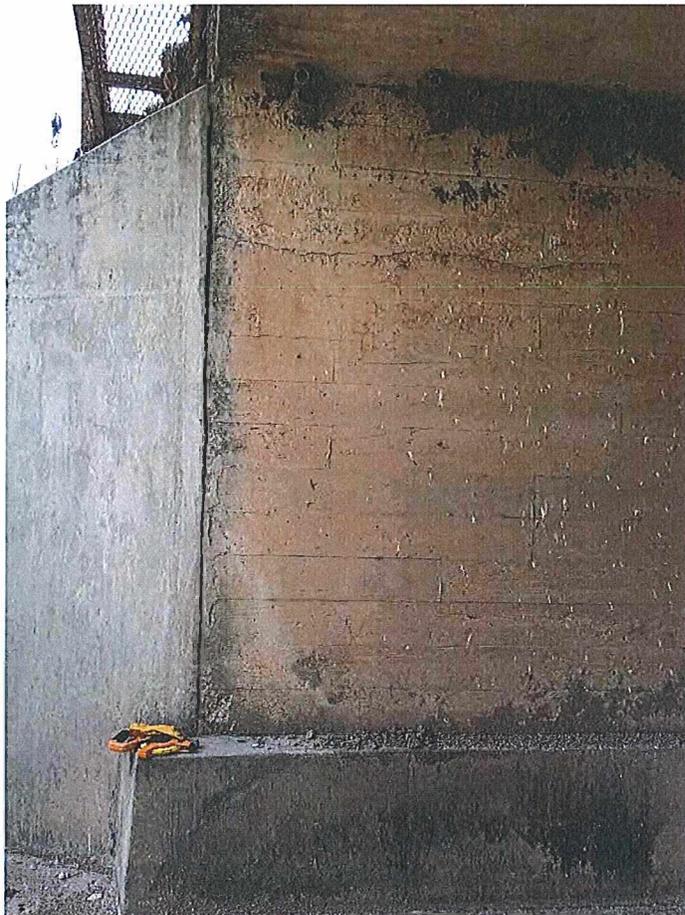


Figure B6 (side photo) is looking at the gap between the south abutment wall and southeast wingwall. The width of the gap opening measured 0.75" at the top and narrowed to 0" at the bottom.

The horizontal line that appears to be a crack is due to spalling of the concrete surface along a form line.

Bridge "C" (Punch Mat Bridge)

Findings and Recommendations

Date of inspection: 11-2-2016
Existing Plans: None
Location:
Latitude: N 35° 33' 52.63"
Longitude: W 98° 00' 58.00"

Bridge "C" is a 40' long, 2-span, steel beam bridge founded on concrete abutments and a pile bent with a roadway width of 10'-2" between the railings (Figures C1 and C2). The deck is constructed out of Pierced Steel Plank or Marston Mat which consists of strips of steel that has rows of holes punched through them. Each strip hooks to the adjacent strip to form a continuous mat, laid on top of the steel beams, the full length of the bridge (Figure C1).

The steel planking is cracked and worn out in various places. Numerous connections between the steel strips are also cracked and broken (Figure C3).

Both abutments are severely undermined. Most of the bearing area for the west abutment is undermined and no piles were found. At some point in time a steel frame was constructed in front of the west abutment to support that end of the bridge. However, not all the steel beams bear upon the frame and continued erosion of the channel bank could cause the west abutment to slide; damaging or taking out the steel frame (Figure C4).

The bearing area under the east abutment is extremely eroded and failure could occur at any time (Figure C5).

Summary and recommendations:

- Both abutments are severely undermined and could fail at any time.
- The decking is in poor condition.
- Erosion of the channel around the center pier and its foundation is also occurring.
- There is an alternate route to crossing the channel located downstream of the existing bridge.

- Therefore, it is recommended that Bridge "C" be closed and removed from service.
- That the alternate route, a low water crossing, be used in lieu of Bridge "C".
- There is no recommendation for repair or replacement. Per discussion with the Stations Operations Manager, the low water crossing is considered an acceptable alternative for crossing the channel to get from one side to the other side.

Bridge C (Punch Mat Bridge) photos



Figure C1 – Looking east along the bridge.



Figure C2 – looking north at the upstream face.

Bridge C (Punch Mat Bridge) photos

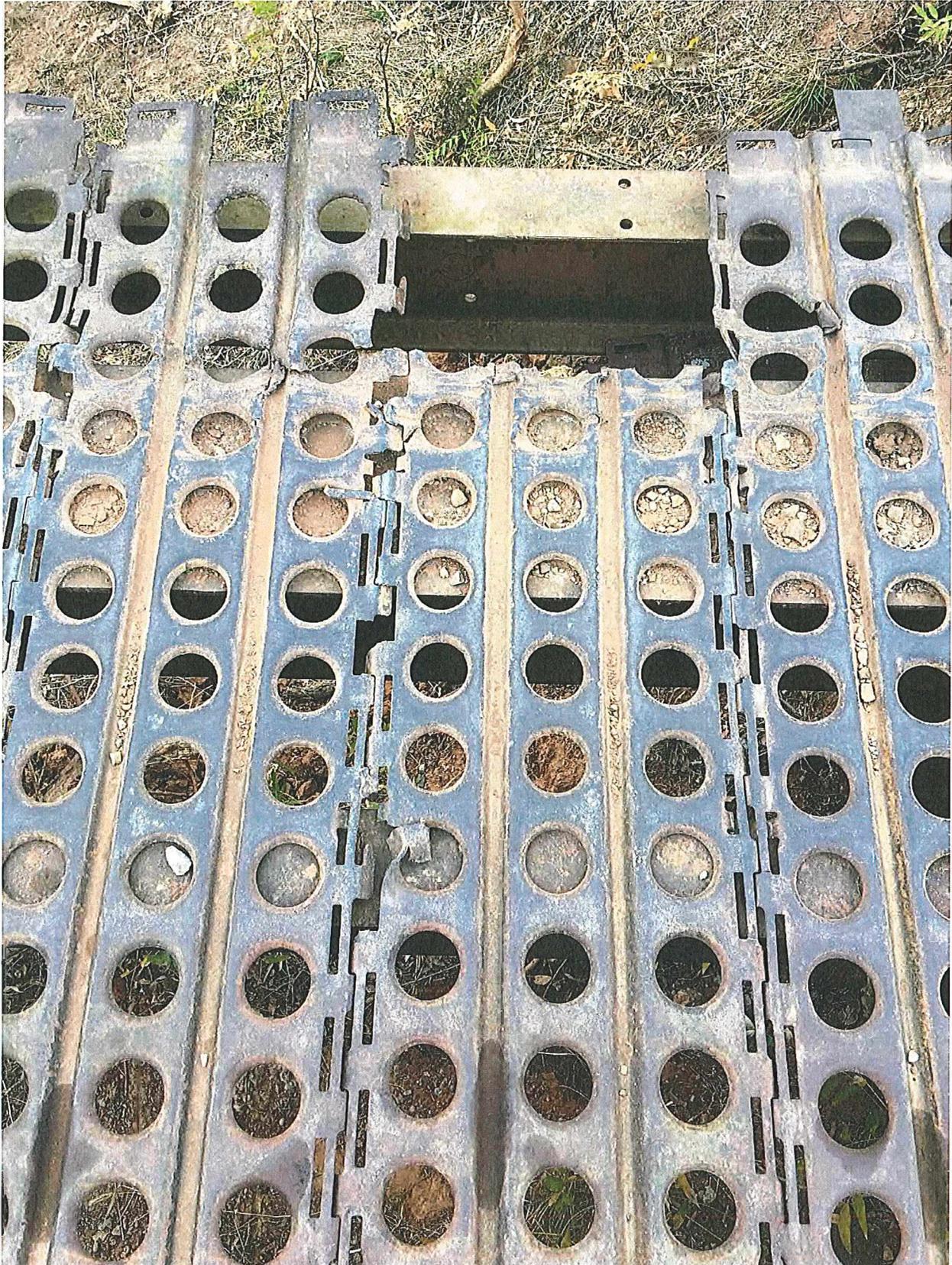


Figure C3 – general condition of the steel decking.

Bridge C (Punch Mat Bridge) photos



Figure C4 – undermining of the west abutment.



Figure C5 – erosion of the east channel bank and undermining of the east abutment.

Bridge "D" (Target Bridge)

Findings and Recommendations

Date of inspection: 11-2-2016
Existing Plans: None
Location:
Latitude: N 35° 33' 17.60"
Longitude: W 98° 01' 33.26"



Bridge "D" is a 60' long, 4-span, concrete slab bridge founded on concrete abutments and 2-column piers with a roadway width of 14'-9" between the curbs and railings (Figures D1 and D2).

As noted in the December 01, 2015 ARS in-house report there is considerable spalling of the concrete and deterioration of the reinforcing in the pier columns and caps. The pier columns are in fair to poor condition. Reinforcement is exposed in some of the columns and the concrete surface of all the columns has deteriorated. In the pier caps, the main reinforcement is exposed in each cap and the concrete is in poor condition. There is a construction joint at the top of each of column where it connects to the pier cap and each joint is in a state of deterioration (Figures D3 and D4).

Both abutments are in fair condition. Erosion has occurred and was noted around both abutments. Wading and probing around the west abutment did not reveal any undermining. Due to the soft conditions of the channel bottom we were unable to inspect around the bottom of the east abutment. At the time of the site visit, Location Personnel had begun re-grading the channel banks to address scour and erosion issues around both abutments. We recommend this work be completed to fill in any areas of erosion and that rip-rap material be placed around both abutments. The rip-rap should be placed along the front face of each abutment as best as possible and extend up to the top of the channel banks along the face of each wingwall (Figures D5 and D6). If possible, geotextile material (filter fabric) should be placed on top of the graded earthwork before placing the rip-rap. The filter fabric will greatly aid in retaining the soil and mitigating erosion of the soil from under the rip-rap.

Roughly 40% to 50% of the deck is delaminated. There are cracks in the deck over each pier and shear cracks in the deck at the face of each abutment indicating the bridge has experienced excessive loads (Figures D7 and D8).

Summary:

- Due to its age and overall poor condition Bridge "D" is considered structurally deficient and should be replaced.
- The load carrying members are in poor condition due to deterioration and/or damage.
- The bridge should be restricted to a 4-ton load limit until it can be replaced.



Short term recommendations:

- Location Personnel should complete their work in addressing scour and erosion issues.
- The ARS in-house report states the bridge surface is in need of an asphalt overlay. In our opinion, due to the age and condition of the structure, the application of an asphalt surface would not provide any significant benefit. The cost thereof would be better used in completing the work to mitigate scour and erosion around the abutments and/or applying the cost towards a new structure.

Long term – Replacement recommendation:

- The load posting of the bridge with a 4-ton weight limit requires any and all equipment/vehicles over 4 tons in weight to detour around this structure. The additional travel time will impact the operating cost of the research grounds. Therefore, for safety and economic reasons the process to replace Bridge “D” should begin immediately.
- For a replacement structure, we recommend a 100’ long single span bridge with a 24’ roadway width between railings. The proposed bridge length would place the abutments behind 2:1 front slopes and at or behind the top of the channel banks to avoid on-going scour issues, debris problems and maintenance costs.
- Included at the end of this report is an opinion of cost for the replacement of Bridge D.

Bridge D (Target Bridge) photos



Figure D1 – looking westerly along the bridge.

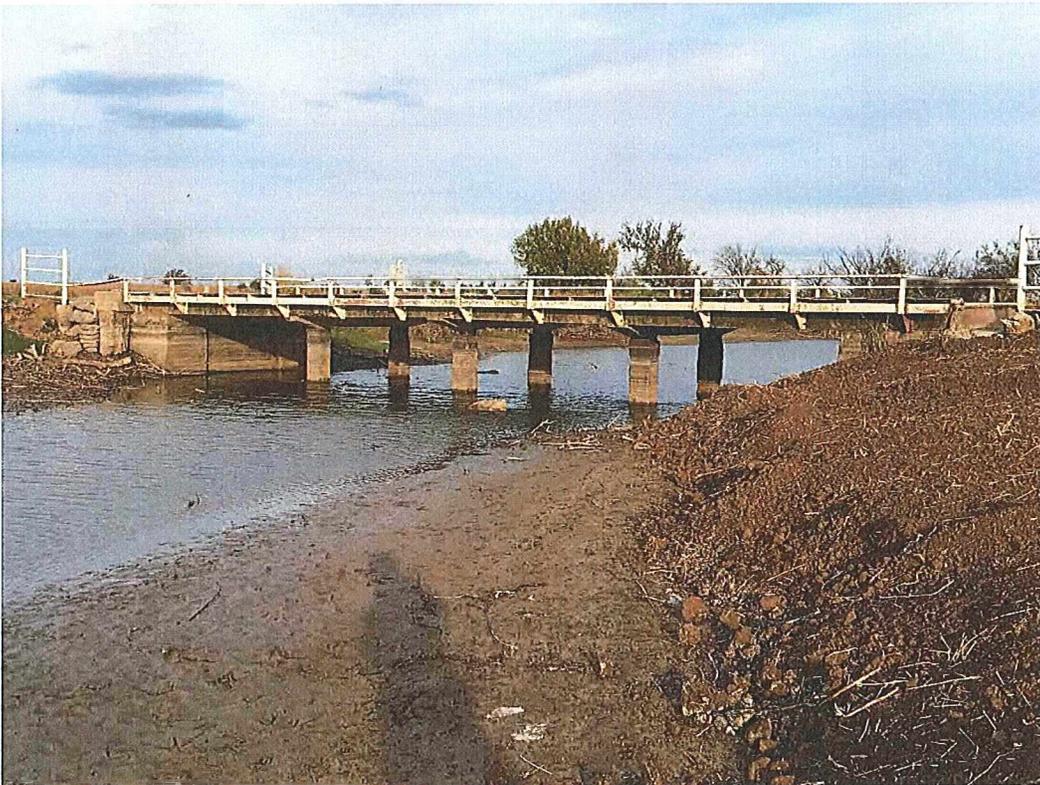


Figure D2 – looking northerly at the upstream face.

Bridge D (Target Bridge) photos



Figure D3 – exposed reinforcing and deteriorated concrete. Typical of all three pier caps.



Figure D4 – exposed reinforcing & deteriorated concrete at all columns & pier cap connections.

Bridge D (Target Bridge) photos



Figure D5 – scour and erosion at the west abutment on the upstream side.



Figure D6 – scour and erosion at the west abutment on the downstream side.

Bridge D (Target Bridge) photos

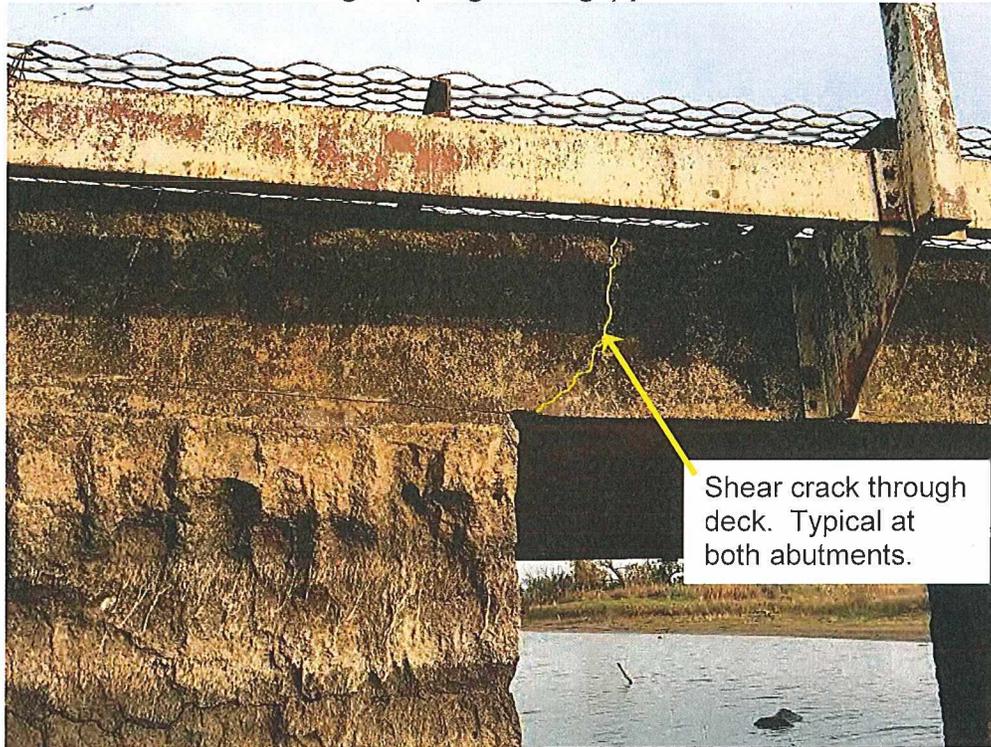


Figure D7 (top photo).

Figure D8 (side photo) cracks in deck. Typical over each pier.

Opinion of probable cost for Bridge "A" short term repair

CONSTRUCTION ITEMS

Description	Quantity	Unit	Unit Price	Item Total
Mobilization	1	L.S.	\$7,500.00	\$7,500.00
Traffic Control	1	L.S.	2,500.00	2,500.00
Fill material	20	C.Y.	10.00	200.00
Flowable fill (concrete)	50	C.Y.	200.00	10,000.00
4-man construction crew for 5 days	40	Hours	150.00	6,000.00
CONSTRUCTION =				\$26,200.00
CONTINGENCY 20% +/-				
Unknowns and miscellaneous items			CONTINGENCY =	\$5,200.00
OPINION OF PROBABLE COST =				\$31,400.00

Assumptions used in the opinion of cost:

- The purpose is to fill the void located under the concrete floor and along the face of the north abutment.
- One or two loads of fill material to be placed along the upstream side of the concrete floor to block water from flowing under the floor.
- Form up a wall on the downstream side of the concrete floor to close off the void under the floor.
- Cut holes through the concrete floor near each column and along the north abutment for injecting flowable fill (concrete) into the void.
- Keep bridge closed during construction and for a minimum of 7 days after placement of the flowable fill to allow it to set up.

Opinion of probable cost for the replacement of Bridge A

CONSTRUCTION ITEMS

Description	Quantity	Unit	Unit Price	Item Total
Mobilization	1	L.S.	\$30,000.00	\$30,000.00
Traffic Control	1	L.S.	2,500.00	2,500.00
Compacted Embankment In-Place	30	C.Y.	10.00	300.00
Road Rock	80	Tons	30.00	2,400.00
Replacement Fences	120	L.F.	10.00	1,200.00
Seeding, Fertilizer & Mulching	0.25	Acres	4,000.00	1,000.00
Erosion Control / Silt Fences	400	L.F.	2.00	800.00
Bridge Removal	1	L.S.	24,000.00	24,000.00
Single Span Bridge (102'x24.5' out-to-out)	2,499	S.F.	110.00	274,890.00
CONSTRUCTION =				\$337,090.00

CONTINGENCY 10% +/-

Unknowns and miscellaneous items **CONTINGENCY = \$33,910.00**

OPINION OF PROBABLE COST = \$371,000.00

Assumptions used in the opinion of cost:

- The height of the existing road profile above the channel will be maintained. Not raised.
- The new bridge will have a wider roadway width (assumed 24') to handle two lanes of traffic and to accommodate wide farm equipment.
- Roughly 60' of the existing road off each end of the bridge will need to be regraded and widened due to construction activities and to match the new bridge width.
- The cost of any rip-rap material was not included. It is assumed the existing bridge can be broken up and used as rip-rap and the quantity is sufficient to meet the needs of the project.



Opinion of probable cost for the replacement of Bridge "D" (Target Bridge)

CONSTRUCTION ITEMS

Description	Quantity	Unit	Unit Price	Item Total
Mobilization	1	L.S.	\$30,000.00	\$30,000.00
Traffic Control	1	L.S.	2,500.00	2,500.00
Compacted Embankment In-Place	160	C.Y.	10.00	1,600.00
Aggregate Base	200	Tons	30.00	6,000.00
4" Asphalt Surface	110	Tons	65.00	7,150.00
Replacement Fences	120	L.F.	10.00	1,200.00
Seeding, Fertilizer & Mulching	0.25	Acres	4,000.00	1,000.00
Erosion Control / Silt Fences	400	L.F.	2.00	800.00
Bridge Removal	1	L.S.	24,000.00	24,000.00
Single Span Bridge (102'x24.5' out-to-out)	2,499	S.F.	110.00	274,890.00

CONSTRUCTION = \$349,140.00

CONTINGENCY 15% +/-

Unknowns, misc. items, over a soft bottom lake

CONTINGENCY = \$52,860.00

OPINION OF PROBABLE COST = \$402,000.00

Assumptions used in the opinion of cost:

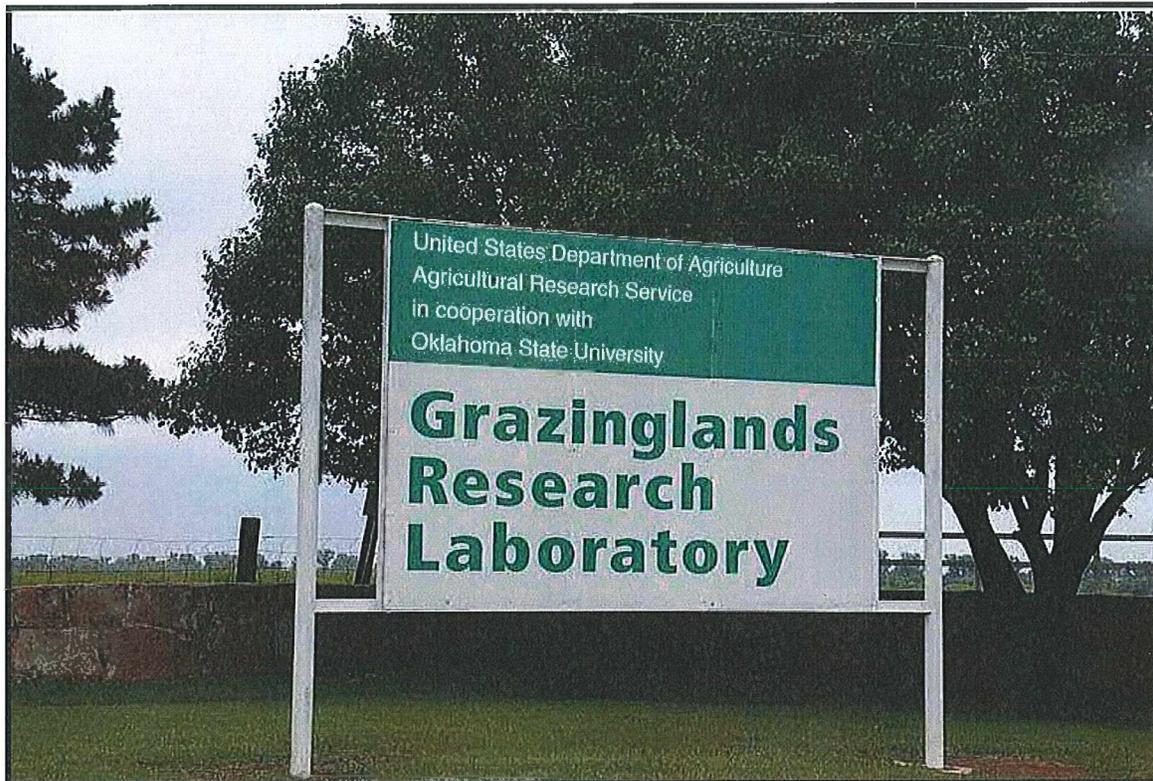
- Both roadway approaches dip down to the existing bridges. It is assumed the bottom elevation of the bridge will be maintained and the road raised roughly 2 feet. This will also reduce overtopping of the bridge during high flows.
- The new bridge will have a wider roadway width (assumed 24') to handle two lanes of traffic and to accommodate wide farm equipment.
- Roughly 100' of the existing road off each end of the bridge will need to be regraded and widened due to construction activities and to match the new bridge width and profile.
- The cost of any rip-rap material was not included. It is assumed the existing bridge can be broken up and used as rip-rap and the quantity is sufficient to meet the needs of the project.

INSPECTION SUMMARY

FORT RENO
CANDIAN COUNTY
OKLAHOMA

BRIDGE INSPECTION

*USDA
inspection report
copy for Steve
Thornhill / Mark Huck
2-7-17*



U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
COLLEGE STATION, TX

DEC 01, 2015

INSPECTION SUMMARY

FORT RENO
CANDIAN COUNTY
OKLAHOMA

BRIDGE INSPECTION

HISTORY

During World War II, an eastern portion, 94 acres, of the Fort Reno lands served as an internment work-camp for German Prisoners of War. Mostly from Gen. Rommel's "Afrikakorp", captured in North Africa, over 1,300 Germans were brought to Fort Reno by rail. While imprisoned here, the German POW's were hired as laborers for local farmers and in 1944 built the Chapel located to the north of the Parade Grounds. The west side of the historic military cemetery is where 70 German and Italian Prisoners of War are interred. Most of these men died at other POW camps in Oklahoma and Texas. Only one Fort Reno German POW died while imprisoned at the Fort Reno internment camp.

In 1948, the Fort Reno property was transferred from the U.S. Army to USDA by Congress to support agricultural research. For the first half of our research history, Oklahoma State University provided substantial leadership to the animal science, forages, and grazing research under a Memorandum of Understanding with USDA. In 1970, the Agricultural Research Service established in-house research programs and over time the mission has broadened to include climate, water, and bioenergy research, along with livestock, forage, and grazing systems.

INSPECTION SUMMARY

FORT RENO CANADIAN COUNTY OKLAHOMA

BRIDGE INSPECTION

LOCATION

Fort Reno is located west of Oklahoma City in Canadian County near El Reno, Oklahoma (Figure 1). During a safety inspection of the Fort Reno Location by the Western Business Service Center the Safety Team performed a visual inspection of the following bridges: A, B, C (Punch Mat), and D (Target) bridges located within the geographical boundaries of the USDA Location of Fort Reno (Figure 2).

Figure 1

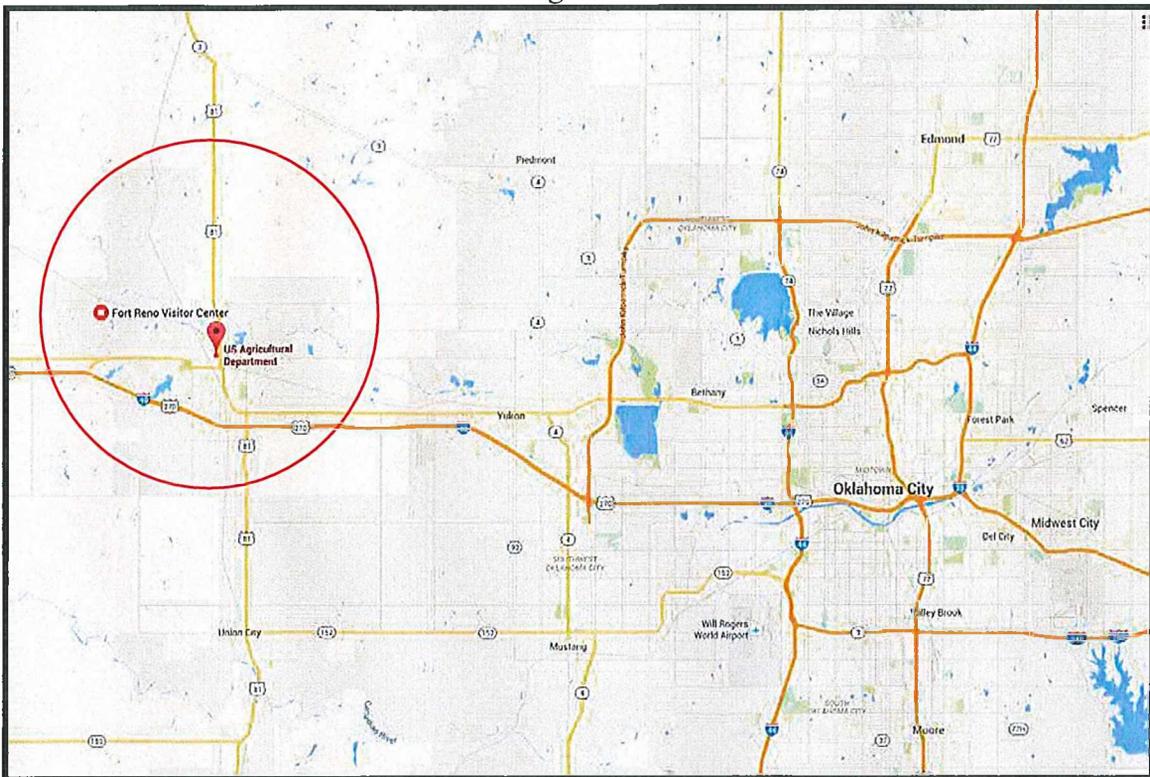


Figure 2



EXISTING STRUCTURES

Figure 3, "A" Bridge

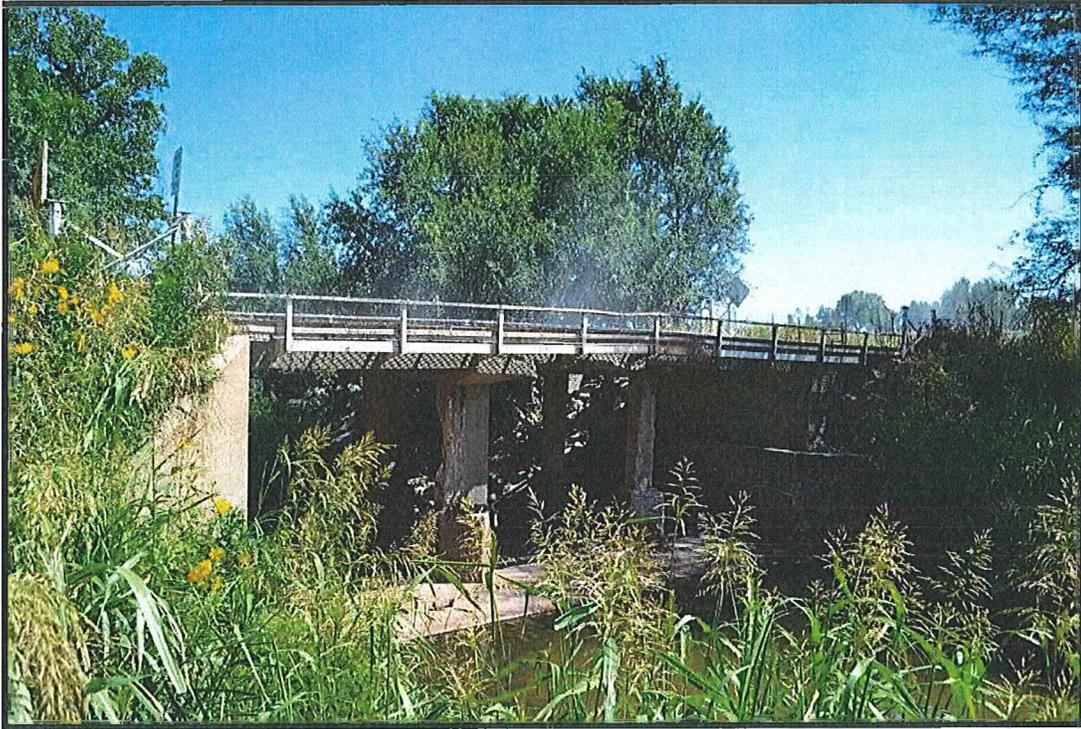
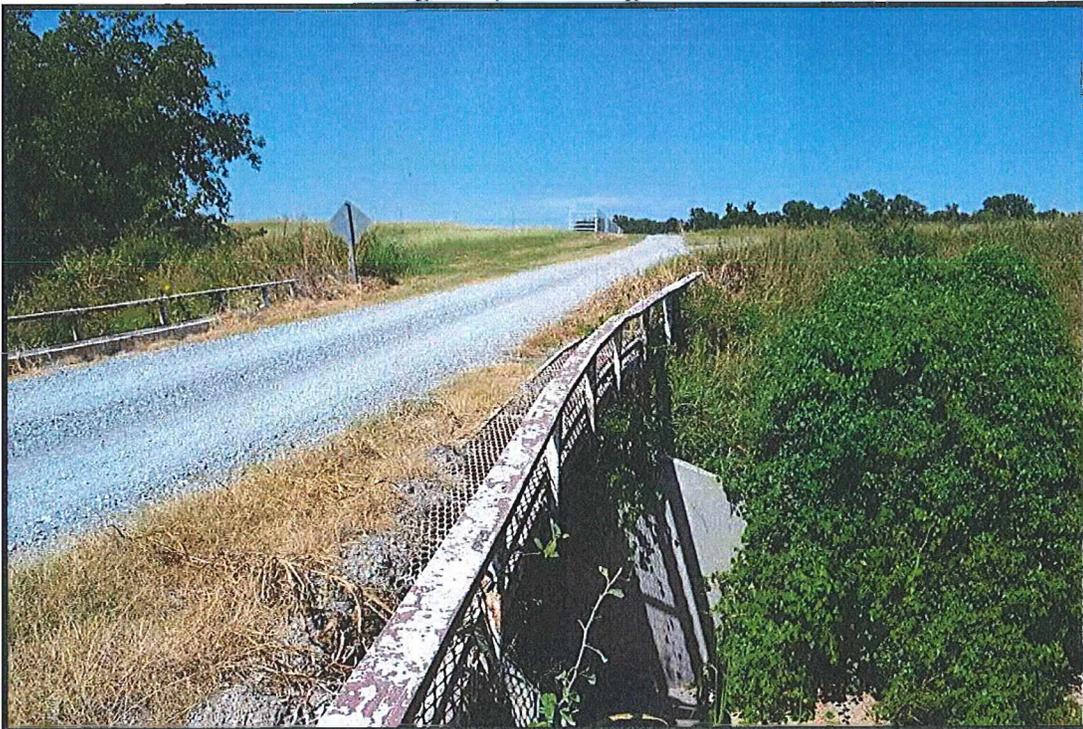


Figure 4, "B" Bridge



EXISTING STRUCTURES

Figure 5, "C" Bridge (Punch Mat Bridge)



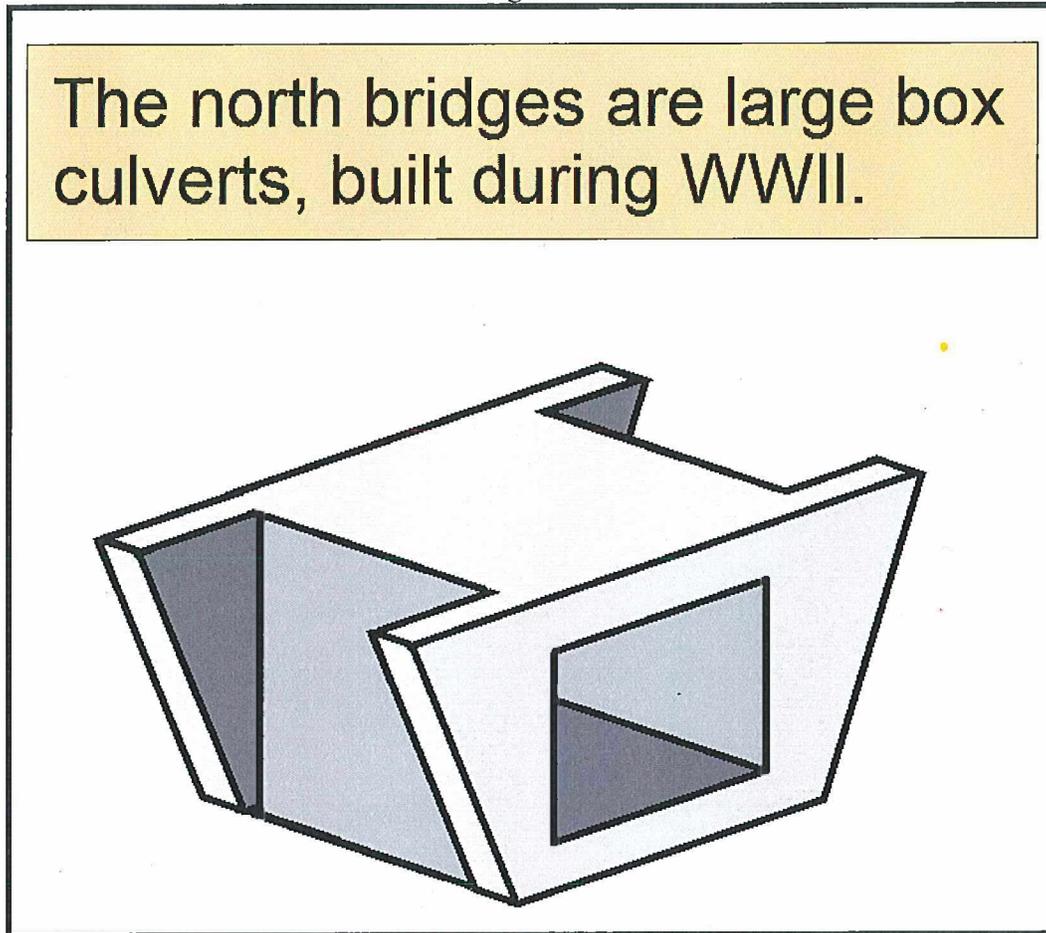
Figure 6, "D" Bridge (Target Bridge)



NEED FOR A PROJECT

Both “A” and “B” bridges are concrete box culvert or concrete span or beam type bridges. They were built in 1945 during the WWII era by German POW labor workers (Figure 7).

Figure 7



BRIDGE “A”

Bridge “A” was the only bridge of the four the Safety Team was able to walk underneath and to perform a visual inspection. The concrete deck slab of Bridge “A” has experienced a great deal of spalling exposing the structural rebar which in turn has corroded (Figure 8). All four of the support piers have extensive spalling and structural cracking. The rebar has been exposed for several years and has corroded completely through. The piers have also experienced a significant amount of damage from scouring and debris damage (Figure 9). Seasonal heavy rains have caused erosion around the back sides of the wing walls compromising structural integrity of the bridge. In the past, Location personnel have attempted to stop or hinder the erosion around the wing walls by backfilling the area with recycled concrete or native fill (Figure 10). This year Location

safety personnel had to use heavy equipment this year to remove a large buildup of debris on the upstream side.

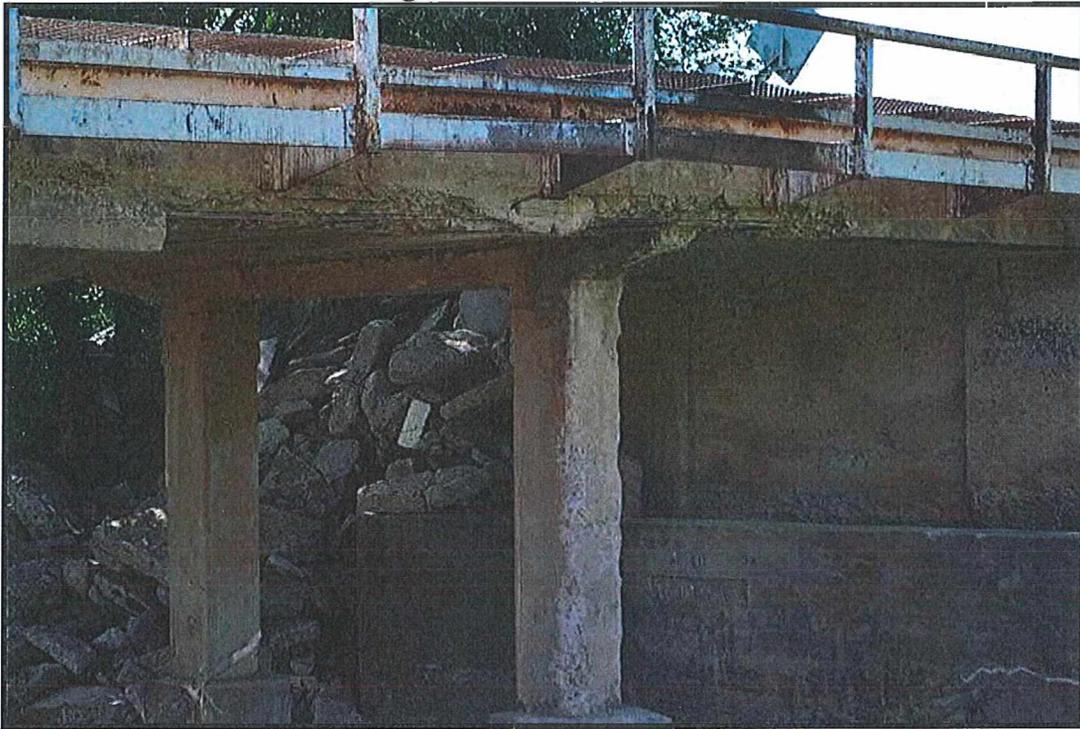
Figure 8, Concrete Decking



Figure 9, Piers



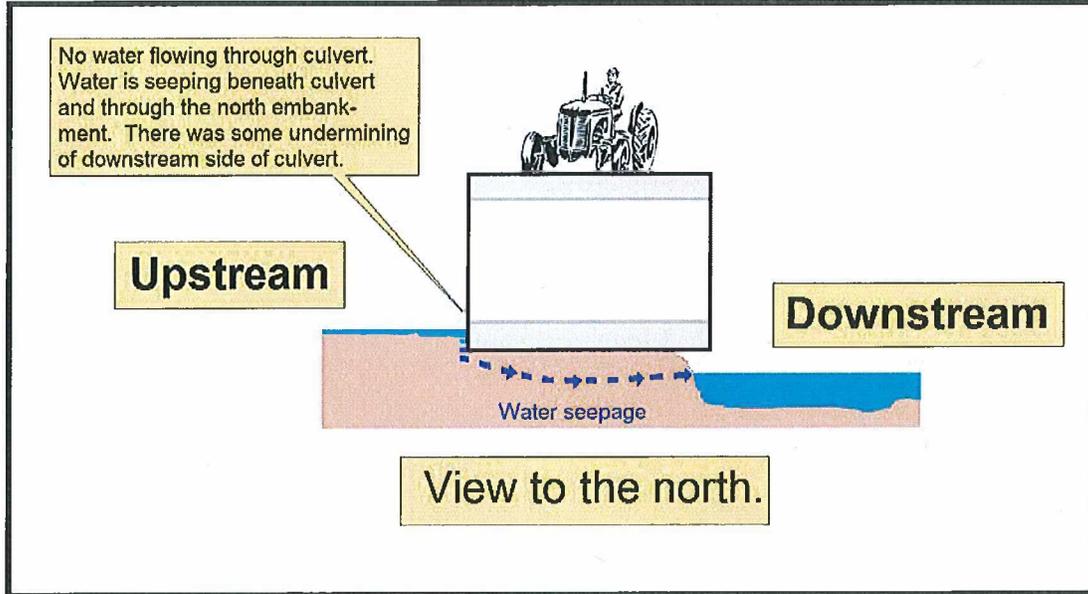
Figure 10, Erosion Control



During our visit the stream was flowing at low-to-regular flow conditions and upon further inspection, it was apparent that the bed of the culvert or spillway was above the water level on the upstream side. This means water is not flowing over the spillway, instead, it is flowing underneath the spillway. This flow has washed away all fine soils, exposing river rock approximate 8 to 10 inches in diameter, thus compromising structural support (Figure 11).

Bridge "A" should be considered **STRUCTURALLY DEFICIENT** in that the significant load-carrying elements were found to be in poor or worse condition due to deterioration and/or damage. The fact that a bridge is structurally deficient does not immediately imply that it is likely to collapse or that it is unsafe. However, it was agreed amongst Location leadership and safety, and the WBSC that the bridge should be restricted to 4-ton weight limit.

Figure 11



BRIDGE "B"

The Safety Team was only able to do a visual inspection of Bridge "B" from the deck of the bridge. The deck, railings, piers and abutments all appear to be structurally stable. It is recommended that some preventive maintenance be done on the railings such as the removal of any surface rust and painting. It appeared that new wing walls on the downstream side, had been constructed within recent years (Figure 12). There was some concern from Location safety personnel that flowing water had undermined the bottom of the spillway approximated 1 foot, but we were unable to verify this due to water level and thick brush. The bottom of the spillway is approximately 30 feet from the deck edge therefore this small amount undermining should not cause pose any imminent structural concerns (Figure 13).

In the late 1990s, a sink hole had appeared in the road surface on the northern approach to "B" Bridge. The sinkhole was the result of water flowing underneath the spillway and around wing walls, eroding existing soils to such a point a void developed in the north embankment causing a sink hole. This may have been the reason new wing walls were constructed. There was also undermining on the downstream edge of the culvert from water passing beneath it (Figure 14).

Figure 12

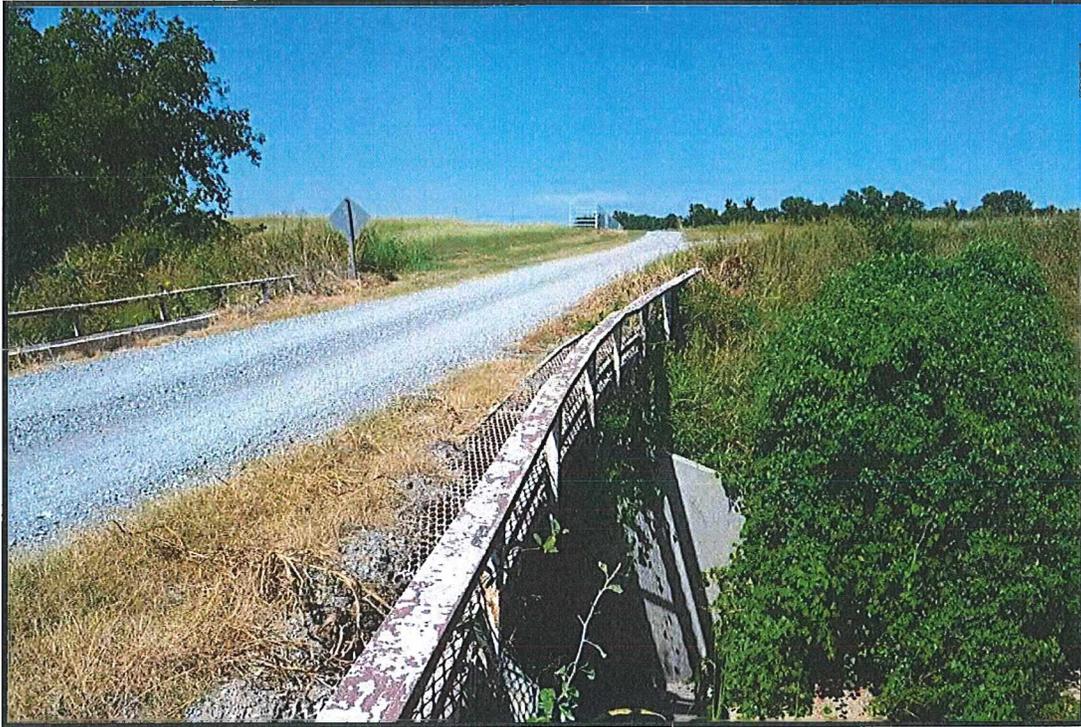


Figure 13, Aerial View Bridge "B"

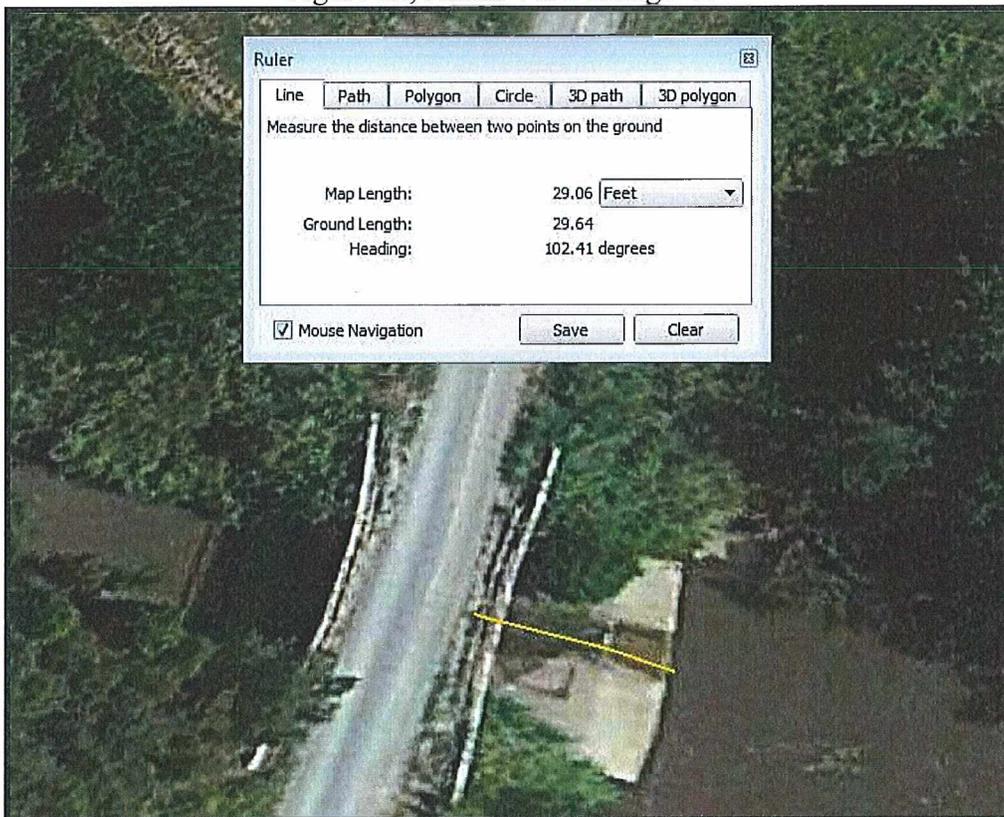
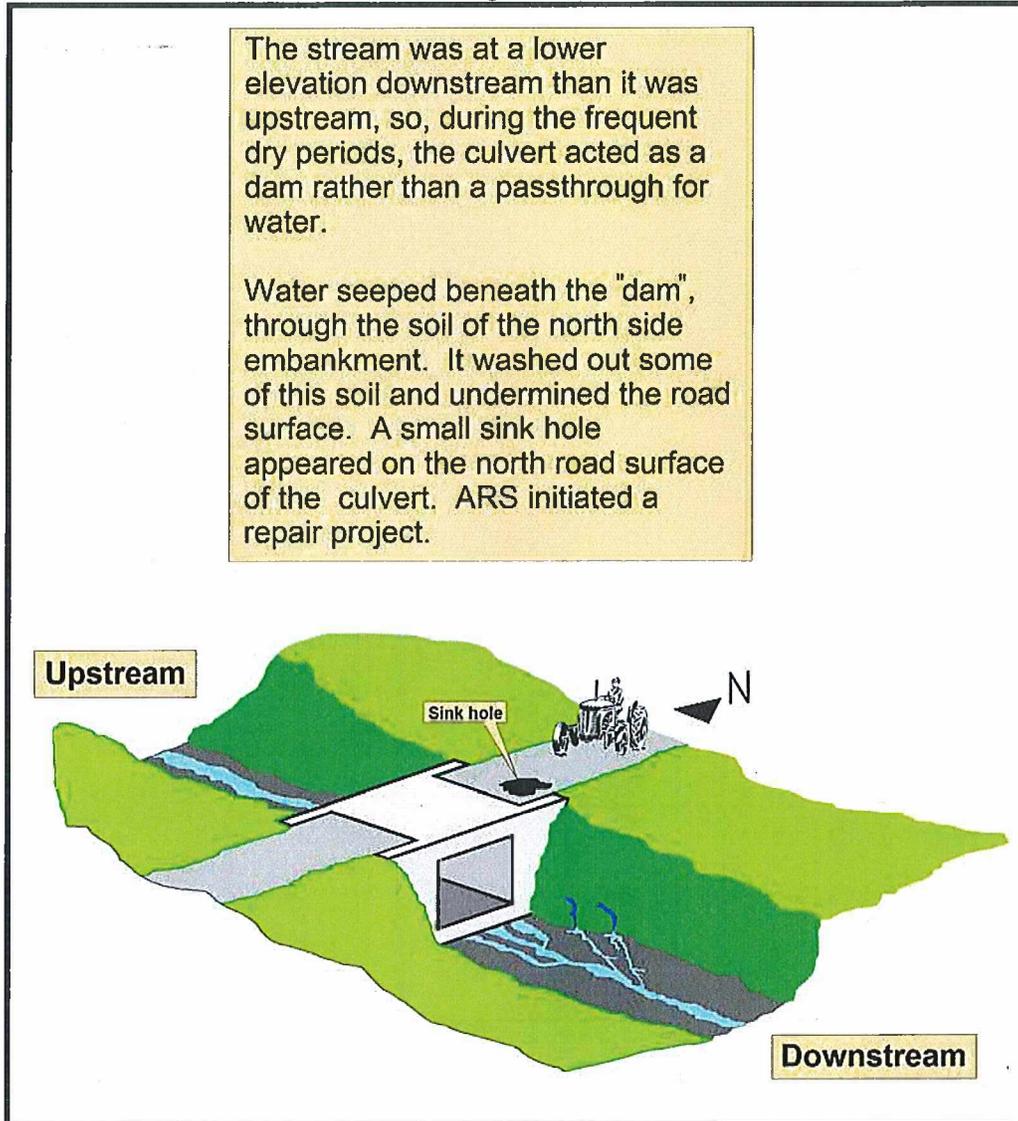


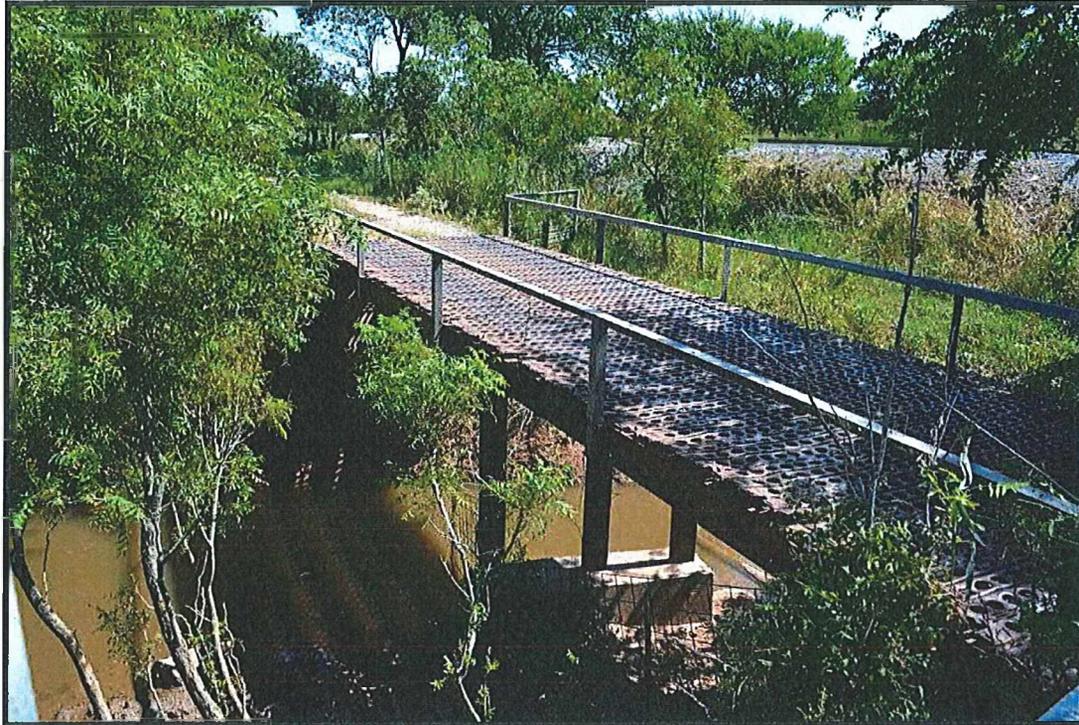
Figure 14



BRIDGE "C"

Bridge "C" also known as "Punch-Mat Bridge" is constructed out of Pierced Steel Plank (PSP) or Marston Mat which consists of steel strips with holes punched through it in rows and U-shaped channels formed between the holes. The hooks are formed along one long edge and slots along the other long edge so that they can be connected to each other. Originally developed by the United States at the Waterways Experiment Station shortly before World War II, primarily for the rapid construction of temporary runways and landing strips (Figure 15)

Figure 15, Punch-Mat Bridge



The Safety Team did a visual inspection of Punch-Mat Bridge. The bridge does not appear to be an engineered design build, rather it appears have been a construction project consisting of available material. While the bridge does appear to be in fair condition it is recommended that the bridge be restricted to light UTV (Utility Task Vehicle) farm equipment only. Location personnel do utilize a creek crossing in lieu of Punch Mat Bridge during low flow seasons.

BRIDGE “D”

Bridge “D” also known as “Target Bridge” is a concrete beam bridge. The Safety Team was unable to perform a visual inspection of Target Bridge due to high water levels however, a general assessment was made by viewing pictures taken by Location safety personnel. It appears that the piers and caps of Target Bridge have a significant amount of erosion due to scouring. This scouring has exposed the rebar within the piers in turn causing the rebar to corrode (Figure 16). There has been some spalling of the deck slab under the braces for the railing exposing the anchor bolts (Figure 17). Water flows have eroded around the abutments and has undermined the approach to Target Bridge. Location personnel have placed concrete and concrete filled sand bags in an attempt to stop the erosion (Figure 18). During our visit it was noted that last year a new earthen dam was constructed to replace the existing failing dam and to manage water flows through the area better. Water management should reduce flow velocities in the channel and slow erosion. The bridge surface is in need of an asphalt overlay (Figure 19).

Figure 16, Scouring of Piers



Figure 17, Spalling of Deck Slab



Figure 18, Erosion Prevention

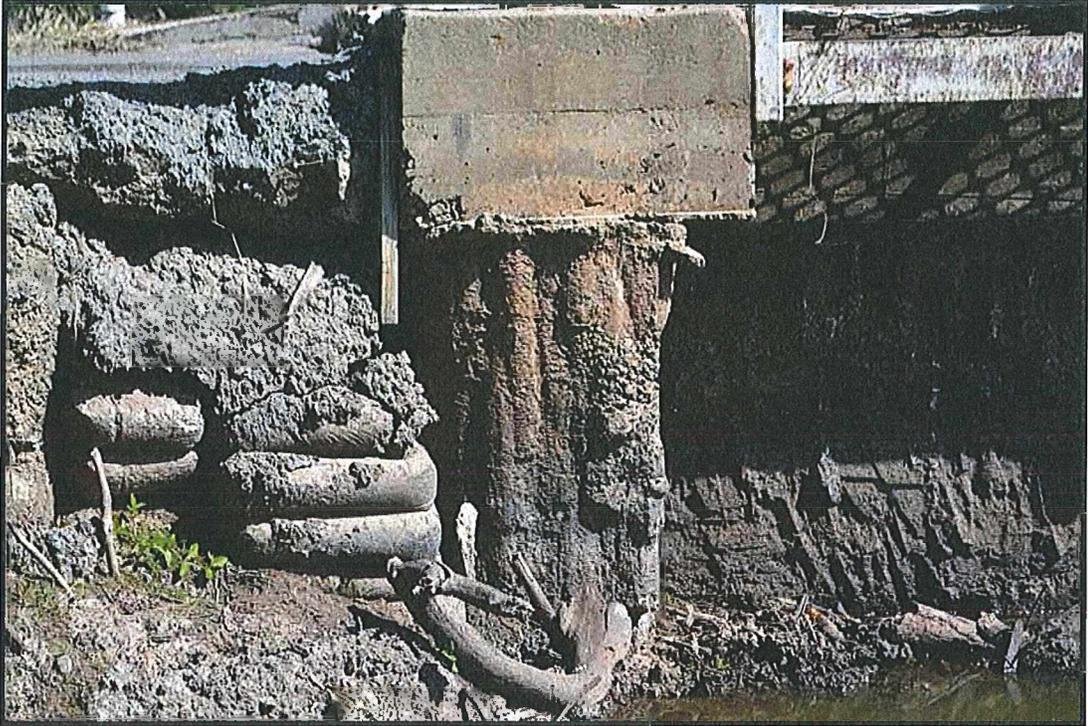


Figure 19, Bridge Surface



SUMMARY AND RECOMMENDATIONS

All bridges at the El Reno Location have experienced some level of erosion and deterioration. It is recommended that a Structural Engineer be contracted to address deficient bridges at the Location, make recommendations and provide an engineering report. The repair or rehabilitation of Bridge A would not be cost effective and it is recommended that the administrative process to replace Bridge A be started. It is noted that Bridge A is a historical structure and the proper agencies will need to be contacted before any preliminary design begins. Bridges B, C, D will all require some level of maintenance or rehabilitation. It is recommended that this maintenance or rehabilitation take place soon, the bridges will only worsen and costs to repair will continue to rise.

APPENDIX B – ENDANGERED SPECIES ACT COMPLIANCE REVIEW

OBS Ref. 2017-333-BUS-BMC

Dear Ms. Zeplin,

July 12, 2017

We have reviewed occurrence information on federal and state threatened, endangered or candidate species, as well as non-regulatory rare species and ecological systems of importance currently in the Oklahoma Natural Heritage Inventory database for the following location you provided:

Sec. 26, 2, 34, and 35-T13N-R8W, Canadian County.

We found 3 occurrence(s) of relevant species within the vicinity of the project location as described.

Whooping Crane (*Grus americana*), a federally listed endangered species, one occurrence in Sec. 12-T12N-R8W Canadian County.

Sprague's Pipit (*Anthus spragueii*), a candidate species for federal listing, two occurrences in Sec. 7-T12N-R7W, Canadian County.

Additionally, absence from our database does not preclude such species from occurring in the area.

If you have any questions about this response, please send me an email, or call us at the number given below.

Although not specific to your project, you may find the following links helpful.

ONHI, guide to ranking codes for endangered and threatened species:
http://vmpincel.ou.edu/heritage/ranking_guide.html

Information regarding the Oklahoma Natural Areas Registry:
http://www.oknaturalheritage.ou.edu/registry_faq.htm

Todd Fagin
Oklahoma Natural Heritage Inventory
(405) 325-4700
tfagin@ou.edu



United States Department of the Interior



FISH AND WILDLIFE SERVICE
Oklahoma Ecological Services Field Office
9014 East 21st Street
Tulsa, OK 74129-1428
Phone: (918) 581-7458 Fax: (918) 581-7467
<http://www.fws.gov/southwest/es/Oklahoma/>

In Reply Refer To:

October 05, 2017

Consultation Code: 02EKOK00-2018-SLI-0048

Event Code: 02EKOK00-2018-E-00116

Project Name: USDA Grazinglands Research Laboratory, El Reno Bridge Replacement Project

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the

human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2) (c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

<http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF>

Non-federal entities conducting activities that may result in take of listed species should consider seeking coverage under section 10 of the ESA, either through development of a Habitat Conservation Plan (HCP) or, by becoming a signatory to the General Conservation Plan (GCP) currently under development for the American burying beetle. Each of these mechanisms provides the means for obtaining a permit and coverage for incidental take of listed species during otherwise lawful activities.

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 et seq.), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (<http://www.fws.gov/windenergy/>) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm>; <http://www.towerkill.com>; and <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html>.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit through our Project Review step-wise process <http://www.fws.gov/southwest/es/oklahoma/OKESFO%20Permit%20Home.htm>.

Attachment(s):

- Official Species List
-

- USFWS National Wildlife Refuges and Fish Hatcheries
 - Migratory Birds
 - Wetlands
-

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Oklahoma Ecological Services Field Office

9014 East 21st Street

Tulsa, OK 74129-1428

(918) 581-7458

Project Summary

Consultation Code: 02EKOK00-2018-SLI-0048

Event Code: 02EKOK00-2018-E-00116

Project Name: USDA Grazinglands Research Laboratory, El Reno Bridge Replacement Project

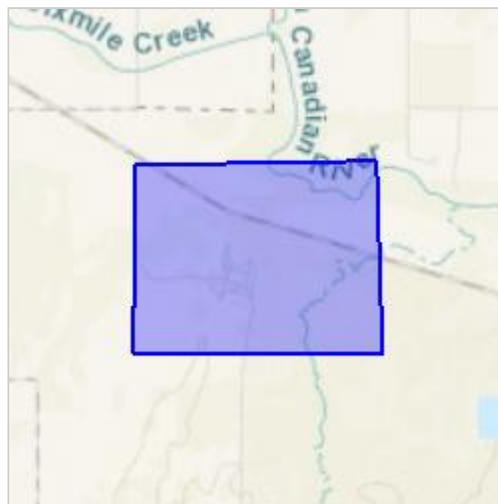
Project Type: BRIDGE CONSTRUCTION / MAINTENANCE

Project Description: Bridge replacement project at the USDA Grazinglands Research Laboratory

Project Location:

Approximate location of the project can be viewed in Google Maps:

<https://www.google.com/maps/place/35.564140296135754N98.03223576590926W>



Counties: Canadian, OK

Endangered Species Act Species

There is a total of 5 threatened, endangered, or candidate species on this species list. Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

Birds

NAME	STATUS
<p>Black-capped Vireo <i>Vireo atricapilla</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5716</p>	Endangered
<p>Least Tern <i>Sterna antillarum</i> Population: interior pop. No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8505</p>	Endangered
<p>Piping Plover <i>Charadrius melodus</i> Population: except Great Lakes watershed There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6039</p>	Threatened
<p>Red Knot <i>Calidris canutus rufa</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1864</p>	Threatened
<p>Whooping Crane <i>Grus americana</i> Population: Wherever found, except where listed as an experimental population There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/758</p>	Endangered

Critical habitats

There are no critical habitats within your project area under this office's jurisdiction.

USFWS National Wildlife Refuges And Fish Hatcheries

Any activity proposed on [National Wildlife Refuge](#) lands must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuges or fish hatcheries within your project area.

Migratory Birds

Certain birds are protected under the Migratory Bird Treaty Act¹ and the Bald and Golden Eagle Protection Act².

Any activity that results in the take of migratory birds or eagles is prohibited unless authorized by the U.S. Fish and Wildlife Service³. There are no provisions for allowing the take of migratory birds that are unintentionally killed or injured. Any person or organization who plans or conducts activities that may result in the take of migratory birds is responsible for complying with the appropriate regulations and implementing appropriate conservation measures, as described [below](#).

-
1. The [Migratory Birds Treaty Act](#) of 1918.
 2. The [Bald and Golden Eagle Protection Act](#) of 1940.
 3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

The birds listed below are [USFWS Birds of Conservation Concern](#) that might be affected by activities in this location. The list does not contain every bird you may find in this location, nor is it guaranteed that all of the birds on the list will be found on or near this location. To get a better idea of the specific locations where certain species have been reported and their level of occurrence, please refer to resources such as the [E-bird data mapping tool](#) (year-round bird sightings by birders and the general public) and [Breeding Bird Survey](#) (relative abundance maps for breeding birds). Although it is important to try to avoid and minimize impacts to all birds, special attention should be given to the birds on the list below. To get a list of all birds potentially present in your project area, visit the [E-bird Explore Data Tool](#).

NAME	BREEDING SEASON
American Golden-plover <i>Pluvialis dominica</i> Bird of Conservation Concern (BCC)	Breeds elsewhere
Buff-breasted Sandpiper <i>Tryngites subruficollis</i> Bird of Conservation Concern (BCC)	Breeds elsewhere
Harris's Sparrow <i>Zonotrichia querula</i> Bird of Conservation Concern (BCC)	Breeds elsewhere
Hudsonian Godwit <i>Limosa haemastica</i> Bird of Conservation Concern (BCC)	Breeds elsewhere
Lesser Yellowlegs <i>Tringa flavipes</i> Bird of Conservation Concern (BCC) https://ecos.fws.gov/ecp/species/9679	Breeds elsewhere
Red-headed Woodpecker <i>Melanerpes erythrocephalus</i>	Breeds May 10 to Sep 10

Bird of Conservation Concern (BCC)

Semipalmated Sandpiper *Calidris pusilla*
Bird of Conservation Concern (BCC)

Breeds elsewhere

Snowy Plover *Charadrius alexandrinus*
Bird of Conservation Concern (BCC)

Breeds Mar 5 to Sep 15

Whimbrel *Numenius phaeopus*
Bird of Conservation Concern (BCC)

Breeds elsewhere

<https://ecos.fws.gov/ecp/species/9483>

Additional information can be found using the following links:

- Birds of Conservation Concern <http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php>
 - Measures for avoiding and minimizing impacts to birds
<http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php>
 - Nationwide conservation measures for birds
<http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeas>
-

Wetlands

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

FRESHWATER EMERGENT WETLAND

- [PEM1Ch](#)
- [PEM1C](#)

FRESHWATER FORESTED/SHRUB WETLAND

- [PFO1A](#)
- [PSS1C](#)

FRESHWATER POND

- [PUBHx](#)
 - [PUBHh](#)
-

Species Conclusions Table

Project Name: U.S. Department of Agriculture, Grazinglands Research Laboratory, El Reno Bridge Replacement Project

Date: October 5, 2017

Species / Critical Habitat	Habitat Determination	Notes / Documentation	ESA Determination
Black-capped vireo	No habitat present	Project area does not contain shrublands that would be suitable habitat for the black-capped vireo.	No effect
Least tern	No habitat present	Project area does not contain any sandbars, sand and gravel pits, or lake and reservoir shorelines that would be suitable habitat for the least tern.	No effect
Piping plover	No habitat present	Project area does not contain any sandbars, sand and gravel pits, or lake and reservoir shorelines that would be suitable habitat for the piping plover.	No effect
Red knot	No habitat present	Project area does not contain any sandbars, beaches, or lake and reservoir shorelines that would be suitable habitat for the red knot.	No effect
Whooping crane	No habitat present	Project area does not contain wetlands that would be suitable stopover habitat for the whooping crane.	No effect

Remember to save a copy of this form once you have filled it out. This table is part of your project review package.

APPENDIX C – SECTION 106 CONSULTATION



United States Department of Agriculture

Research, Education, and Economics
Agricultural Research Service

January 30, 2017

Melvena Heisch
State Historic Preservation Office
Oklahoma Historical Society
800 Nazih Zuhdi Drive
Oklahoma City, OK 73105

Dear Ms. Heisch:

The USDA-Agricultural Research Service (ARS) is requesting your review of its petition to replace the following bridges located at the USDA-ARS, Grazinglands Research Laboratory, 7207 W. Cheyenne St., El Reno, OK.

3070	El Reno	621800S04A	BRIDGE A-SOAP SUDS SOUTH	240	SQUARE YARDS	1/1/1948
3070	El Reno	621800S04D	BRIDGE D-TARGET CREEK	100	SQUARE YARDS	1/1/1948

Attached is the Historic Preservation Resource Identification Form for each bridge. The supporting documentation (description, condition, and maps) are provided in pages from the Technical Report prepared by the firm of Burns McDonnell hired by ARS.

ARS is conducting a NEPA as ground disturbance is anticipated with this project. ARS believes that the proposed undertaking will have no adverse effect on one or more historic resources. Please advise whether you concur with this assessment.

If you have any questions, please contact me at the address/phone number below.

Sincerely,


ERICA JONES
Lease Contracting Officer

Enclosure

Western Business Service Center
Facilities, Property, and Safety Branch
141 Experiment Station Road • Stoneville, MS 38776
Voice: 662-686-5323 • Fax: 662-686-5373 • E-mail: erica.jones@ars.usda.gov
USDA is an Equal Opportunity Provider and Employer

HISTORIC PRESERVATION RESOURCE IDENTIFICATION FORM

PLEASE TYPE ALL DATA IN UPPERCASE

1. PROPERTY NAME: BRIDGE (Bridge D Target Creek)
2. RESOURCE NAME: ROADWAY
3. ADDRESS: 7207 W. CHEYENNE ST
4. CITY: EL RENO, OK 5. VICINITY: _____
6. COUNTY NAME: CANADIAN
7. LOT: _____ 8. BLOCK: _____ 9. PLAT NAME: _____
10. SECTION: 27 11. TOWNSHIP: 13N 12. RANGE: 8W
13. LATITUDE (NORTH): (ENTER AS: "dd.dddd") 35.554889
14. LONGITUDE (WEST): (ENTER AS: "-dd.dddd") 98.025906
15. UTM ZONE: _____ 16. NORTHINGS: _____ 17. EASTINGS: _____
18. RESOURCE TYPE: STRUCTURE
19. HISTORIC FUNCTION: BRIDGE
20. CURRENT FUNCTION: BRIDGE
21. AREA OF SIGNIFICANCE, PRIMARY: _____
22. AREA OF SIGNIFICANCE, SECONDARY: _____
23. DESCRIPTION OF SIGNIFICANCE:
24. DOCUMENTATION RESOURCE:
25. NAME OF PREPARER: ERICA JONES
59. SURVEY PROJECT YES NO 26. PROJECT NAME: N/A
27. DATE OF PREPARATION: JANUARY 2017 28. PHOTOGRAPHS Y
29. YEAR: 2017

30. ARCHITECT/BUILDER: UNKNOWN

31. YEAR BUILT: 1948

32. ORIGINAL SITE: Y

33. DATE MOVED: N/A

34. FROM WHERE: N/A

35. ACCESSIBLE: YES

36. ARCHITECTURAL STYLE:

37. OTHER ARCHITECTURAL STYLE:

38. FOUNDATION MATERIAL: concrete

39. ROOF TYPE:

40. ROOF MATERIAL:

41. WALL MATERIAL, PRIMARY:

42. WALL MATERIAL, SECONDARY:

43. WINDOW TYPE:

44. WINDOW MATERIAL:

45. DOOR TYPE:

46. DOOR MATERIAL:

47. EXTERIOR FEATURES:

48. INTERIOR FEATURES:

49. DECORATIVE DETAILS:

50. CONDITION OF RESOURCE: 04 POOR

51. DESCRIPTION OF RESOURCE: Due to its age and overall poor condition Bridge "D" is considered structurally deficient and should be replaced.

52. COMMENTS: The load carrying members are in poor condition due to deterioration and/or damage. The bridge should be restricted to a 4-ton load limit until it can be replaced.

53. ATTACH LOCATION MAP

54. LISTED ON NATIONAL REGISTER: YES NO

55. NATIONAL REGISTER ENTRY:

56. CONTINUATION

Bridge "D" (Target Bridge)

Findings and Recommendations

Date of inspection: 11-2-2016

Existing Plans: None

Location:

Latitude: N 35° 33' 17.60"

Longitude: W 98° 01' 33.26"

Bridge "D" is a 60' long, 4-span, concrete slab bridge founded on concrete abutments and 2-column piers with a roadway width of 14'-9" between the curbs and railings (Figures D1 and D2).

As noted in the December 01, 2015 ARS in-house report there is considerable spalling of the concrete and deterioration of the reinforcing in the pier columns and caps. The pier columns are in fair to poor condition. Reinforcement is exposed in some of the columns and the concrete surface of all the columns has deteriorated. In the pier caps, the main reinforcement is exposed in each cap and the concrete is in poor condition. There is a construction joint at the top of each of column where it connects to the pier cap and each joint is in a state of deterioration (Figures D3 and D4).

Both abutments are in fair condition. Erosion has occurred and was noted around both abutments. Wading and probing around the west abutment did not reveal any undermining. Due to the soft conditions of the channel bottom we were unable to inspect around the bottom of the east abutment. At the time of the site visit, Location Personnel had begun re-grading the channel banks to address scour and erosion issues around both abutments. We recommend this work be completed to fill in any areas of erosion and that rip-rap material be placed around both abutments. The rip-rap should be placed along the front face of each abutment as best as possible and extend up to the top of the channel banks along the face of each wingwall (Figures D5 and D6). If possible, geotextile material (filter fabric) should be placed on top of the graded earthwork before placing the rip-rap. The filter fabric will greatly aid in retaining the soil and mitigating erosion of the soil from under the rip-rap.

Roughly 40% to 50% of the deck is delaminated. There are cracks in the deck over each pier and shear cracks in the deck at the face of each abutment indicating the bridge has experienced excessive loads (Figures D7 and D8).

Summary:

- Due to its age and overall poor condition Bridge "D" is considered structurally deficient and should be replaced.
- The load carrying members are in poor condition due to deterioration and/or damage.
- The bridge should be restricted to a 4-ton load limit until it can be replaced.

Short term recommendations:

- Location Personnel should complete their work in addressing scour and erosion issues.
- The ARS in-house report states the bridge surface is in need of an asphalt overlay. In our opinion, due to the age and condition of the structure, the application of an asphalt surface would not provide any significant benefit. The cost thereof would be better used in completing the work to mitigate scour and erosion around the abutments and/or applying the cost towards a new structure.

Long term – Replacement recommendation:

- The load posting of the bridge with a 4-ton weight limit requires any and all equipment/vehicles over 4 tons in weight to detour around this structure. The additional travel time will impact the operating cost of the research grounds. Therefore, for safety and economic reasons the process to replace Bridge “D” should begin immediately.
- For a replacement structure, we recommend a 100’ long single span bridge with a 24’ roadway width between railings. The proposed bridge length would place the abutments behind 2:1 front slopes and at or behind the top of the channel banks to avoid on-going scour issues, debris problems and maintenance costs.
- Included at the end of this report is an opinion of cost for the replacement of Bridge D.

Bridge D (Target Bridge) photos



Figure D1 – looking westerly along the bridge.

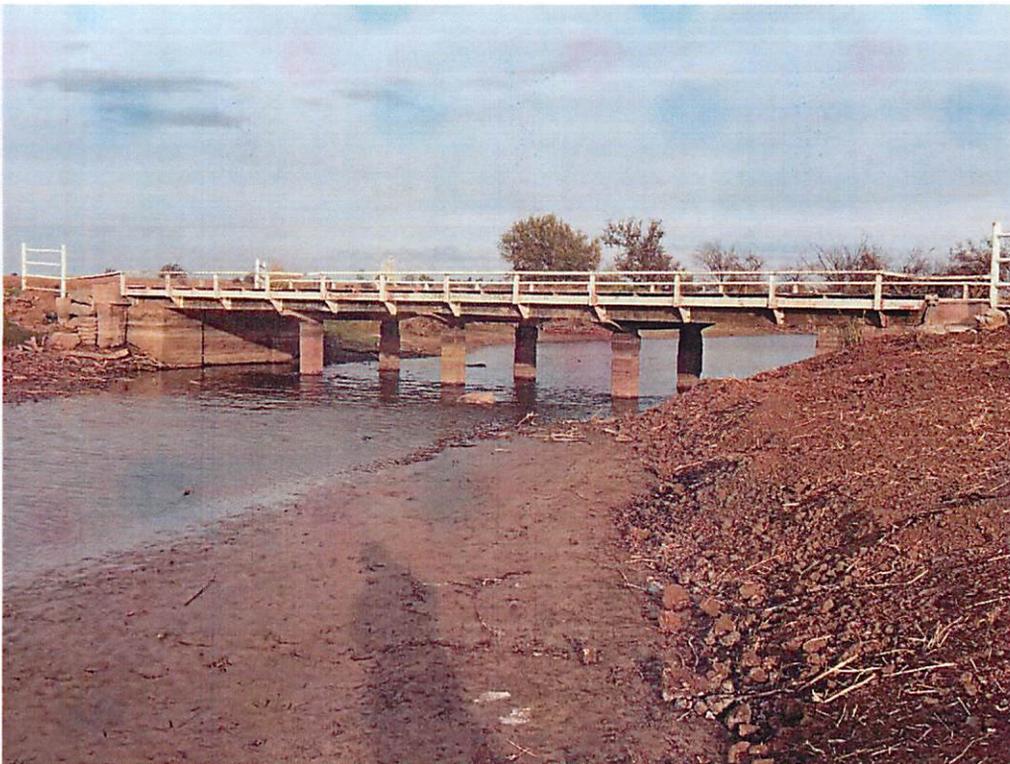


Figure D2 – looking northerly at the upstream face.

Bridge D (Target Bridge) photos



Figure D3 – exposed reinforcing and deteriorated concrete. Typical of all three pier caps.



Figure D4 – exposed reinforcing & deteriorated concrete at all columns & pier cap connections.

Bridge D (Target Bridge) photos



Figure D5 – scour and erosion at the west abutment on the upstream side.



Figure D6 – scour and erosion at the west abutment on the downstream side.

Bridge D (Target Bridge) photos

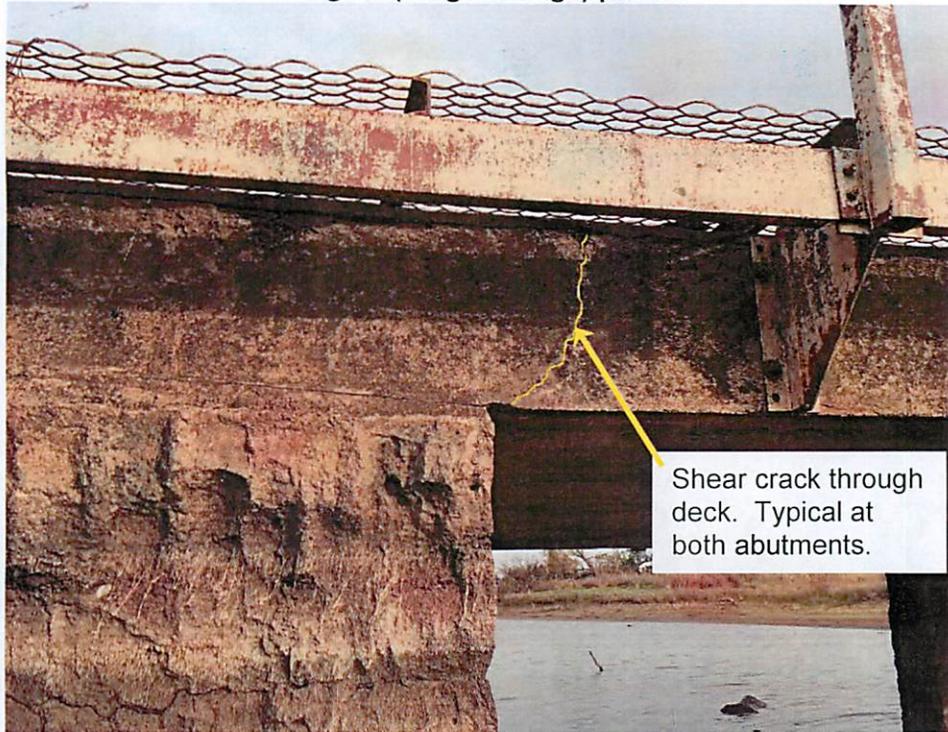


Figure D7 (top photo).



Figure D8 (side photo) cracks in deck. Typical over each pier.

HISTORIC PRESERVATION RESOURCE IDENTIFICATION FORM

PLEASE TYPE ALL DATA IN UPPERCASE

1. PROPERTY NAME: BRIDGE (Bridge A Soap Suds South)

2. RESOURCE NAME: ROADWAY

3. ADDRESS: 7207 W. CHEYENNE ST

4. CITY: EL RENO, OK 5. VICINITY: _____

6. COUNTY NAME: CANADIAN

7. LOT: _____ 8. BLOCK: _____ 9. PLAT NAME: _____

10. SECTION: 27 11. TOWNSHIP: 13N 12. RANGE: 8W

13. LATITUDE (NORTH): (ENTER AS: "dd.dddd") 35.568089

14. LONGITUDE (WEST): (ENTER AS: "-dd.dddd") 98.036306

15. UTM ZONE: _____ 16. NORTHINGS: _____ 17. EASTINGS: _____

18. RESOURCE TYPE: STRUCTURE

19. HISTORIC FUNCTION: BRIDGE

20. CURRENT FUNCTION: BRIDGE

21. AREA OF SIGNIFICANCE, PRIMARY: _____

22. AREA OF SIGNIFICANCE, SECONDARY: _____

23. DESCRIPTION OF SIGNIFICANCE:

24. DOCUMENTATION RESOURCE:

25. NAME OF PREPARER: ERICA JONES

59. SURVEY PROJECT YES NO 26. PROJECT NAME: N/A

27. DATE OF PREPARATION: JANUARY 2017 28. PHOTOGRAPHS Y

29. YEAR: 2017

30. ARCHITECT/BUILDER: UNKNOWN

31. YEAR BUILT: 1948

32. ORIGINAL SITE: Y

33. DATE MOVED: N/A

34. FROM WHERE: N/A

35. ACCESSIBLE: YES

36. ARCHITECTURAL STYLE:

37. OTHER ARCHITECTURAL STYLE:

38. FOUNDATION MATERIAL: concrete

39. ROOF TYPE:

40. ROOF MATERIAL:

41. WALL MATERIAL, PRIMARY:

42. WALL MATERIAL, SECONDARY:

43. WINDOW TYPE:

44. WINDOW MATERIAL:

45. DOOR TYPE:

46. DOOR MATERIAL:

47. EXTERIOR FEATURES:

48. INTERIOR FEATURES:

49. DECORATIVE DETAILS:

50. CONDITION OF RESOURCE: 04 POOR

51. DESCRIPTION OF RESOURCE: Bridge "A" is a 48' long, 3-span, concrete slab bridge founded on concrete abutments and 2-column piers with a roadway width of 17'-9" between the curbs and railings. There is a retaining wall in front of the existing south abutment with an embossed impression indicating the structure was built during 1945 by POW labor workers

52. COMMENTS:

53. ATTACH LOCATION MAP

54. LISTED ON NATIONAL REGISTER: YES NO

55. NATIONAL REGISTER ENTRY:

56. CONTINUATION



Executive Summary

On November 2, 2016 a visual investigation was performed on Bridges A, B, C and D to assess whether each bridge should be replaced, repaired or even removed and not replaced if an alternate route is available.

- Bridge A is considered structurally deficient and for safety and economic reasons the process to replace this bridge should begin immediately. The foundation of the north abutment and the northeast column are partially undermined and a short term repair is recommended. The load posting for the bridge should remain at 4 tons.
- Bridge B is in fair to good condition. No repairs or further action is recommended at this time.
- Bridge C should be closed and removed from service as both abutments are severely undermined. It is understood there is a bypass route and a replacement structure is not required. No further action is required other than its immediate closure and removal.
- Bridge D is considered structurally deficient and for safety and economic reasons the process to replace this bridge should begin immediately. Due to its age and condition it should be posted immediately for 4 tons. Thus, only light traffic such as passenger vehicles and pickups may use it. Continue with the work to build the embankments up around both abutments and the placement of rock blanket to reduce the potential for scour around and behind the abutments.

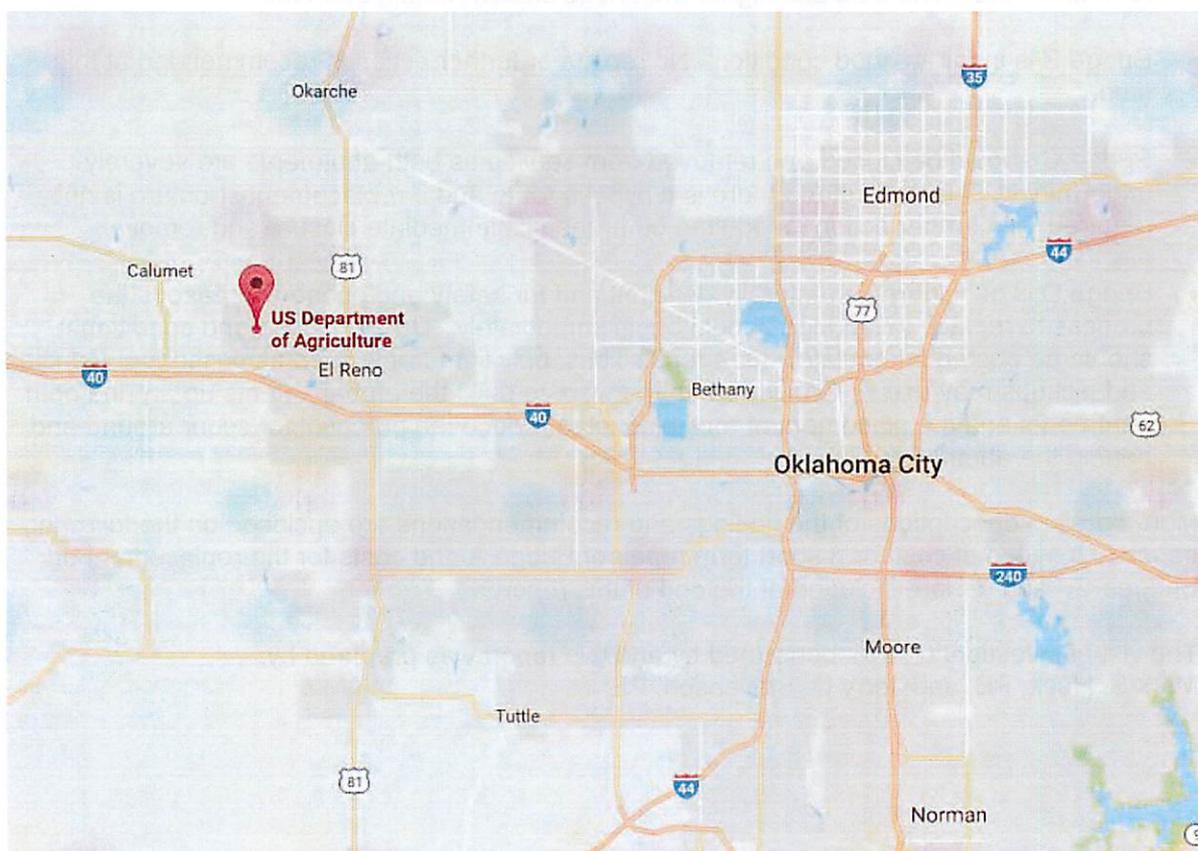
More detailed descriptions of the findings and recommendations are enclosed on the following pages. Opinions of cost for a short term repair of Bridge A and costs for the replacement of Bridges "A" and "D" are included at the end of this report.

The visual investigation was performed by and this report was prepared by:
Mark S. Huck, PE, and Jerry D. Stevenson, PE

FORT RENO
CANADIAN COUNTY
OKLAHOMA

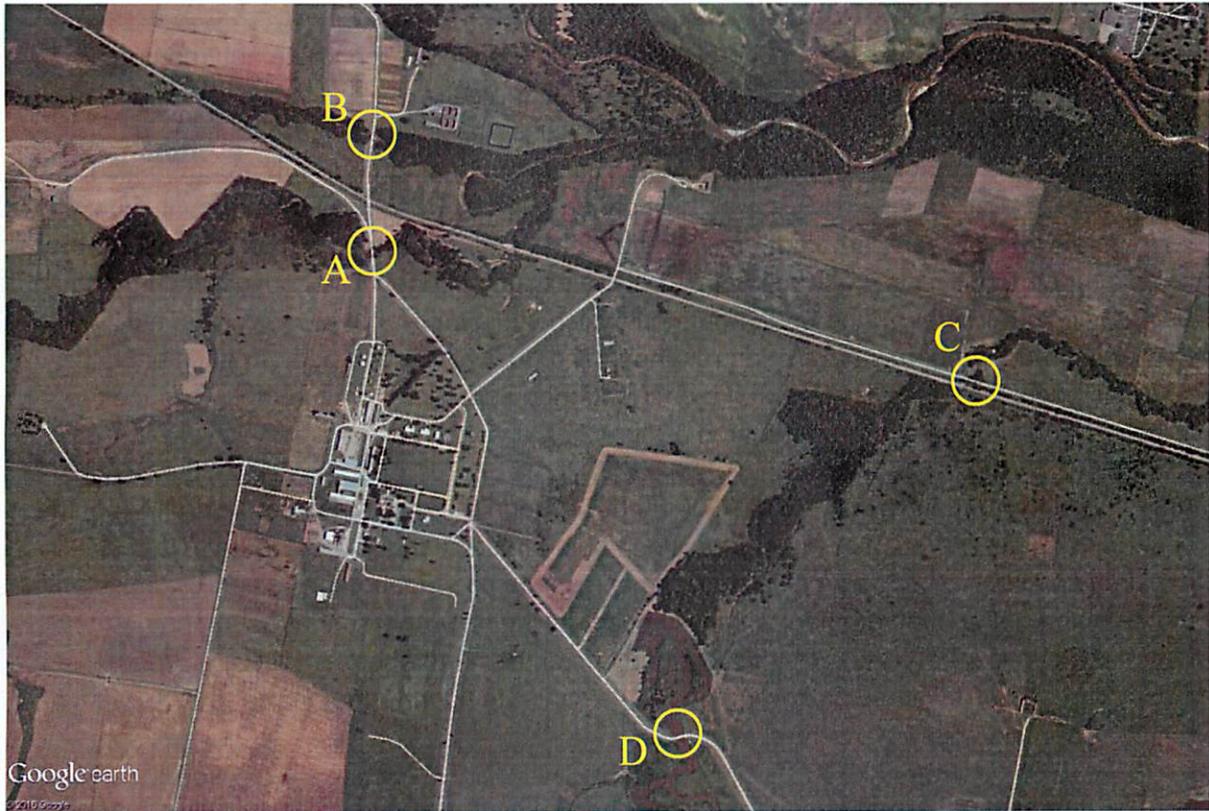
SITE LOCATION

Fort Reno is located west of Oklahoma City in Canadian County near El Reno, Oklahoma.



FORT RENO
CANADIAN COUNTY
OKLAHOMA

BRIDGE LOCATIONS



Bridge A:	Latitude: N 35° 34' 05.12"	Longitude: W 98° 02' 10.70"
Bridge B:	Latitude: N 35° 34' 16.49"	Longitude: W 98° 02' 10.72"
Bridge C:	Latitude: N 35° 33' 52.63"	Longitude: W 98° 00' 58.00"
Bridge D:	Latitude: N 35° 33' 17.60"	Longitude: W 98° 01' 33.26"

Bridge "A"

Findings and Recommendations

Date of inspection: 11-2-2016

Existing Plans: None

Location:

Latitude: N 35° 34' 05.12"

Longitude: W 98° 02' 10.70"

Bridge "A" is a 48' long, 3-span, concrete slab bridge founded on concrete abutments and 2-column piers with a roadway width of 17'-9" between the curbs and railings (Figures A1 and A2). It is difficult to tell how much of the original bridge construction remains without any records or plans. There is a retaining wall in front of the existing south abutment with an embossed impression indicating the structure was built during 1945 by POW labor workers. It is unknown if this retaining wall was part of an original abutment or not. Its configuration is similar to the north abutment but structurally it is not part of the existing bridge. The configuration of the south abutment is different from the north abutment which could imply that it was built at a different time when the bridge may have been rehabbed and possibly lengthened. In addition, both columns and cap of the north pier have been widened and added onto sometime since the bridge was initially constructed (Figures A3 thru A6).

As noted in the December 01, 2015 ARS in-house report there is considerable spalling of the concrete and deterioration of the reinforcing in both the deck and pier columns. The pier columns sit on top of a concrete floor placed across the channel bottom. There is considerable undermining of the concrete floor and it is impacting the bearing (foundation) of the northeast column (Figures A7 and A9). In addition, portions of the north abutment are also undermined. During the site visit water was flowing under the concrete floor, further implying the severity of the condition and loss of structural support.

The location of the north abutment out in the channel contributes to its undermining and the erosion of the channel bank around the northeast wingwall (Figure A8).

Our findings support the findings of the ARS in-house report.

- Bridge "A" should be considered structurally deficient.
- The load carrying members are in poor condition due to deterioration and/or damage.
- The bridge should be restricted to the 4-ton load limit recommended in the in-house report.

Summary:

- Due to its age and condition, Bridge "A" is considered structurally deficient and should be replaced.
- The foundation of the north abutment and the northeast column are each partially undermined impacting their bearing capacity and structural integrity.

Short term – Repair recommendation:

- The downstream end of the concrete floor should be formed up. Holes cut through the concrete floor and the void under the floor filled with a flowable fill (concrete) to restore bearing to any affected columns and the north abutment.
- Included at the end of the photos for Bridge “A” is a sketch of the undermined area.
- Included at the end of this report is an opinion of cost for the short term repair.

Long term – Replacement recommendation:

- Further undermining of the structure will require its closure and create a long detour route and economic impact to the operating cost of the research grounds. In addition, the current load posting requires any and all equipment/vehicles over 4 tons in weight to detour around this structure. Thereby, further impacting the operating cost of the research grounds. Therefore, for safety and economic reasons the process to replace Bridge “A” should begin immediately.
- For a replacement structure, we recommend a 100’ long single span bridge with a 24’ roadway width between railings. The proposed bridge length would place the abutments behind 2:1 front slopes and at or behind the top of the channel banks to avoid on-going scour issues, debris problems and maintenance costs.
- Included at the end of this report is an opinion of cost for the replacement of Bridge A.

Bridge A photos

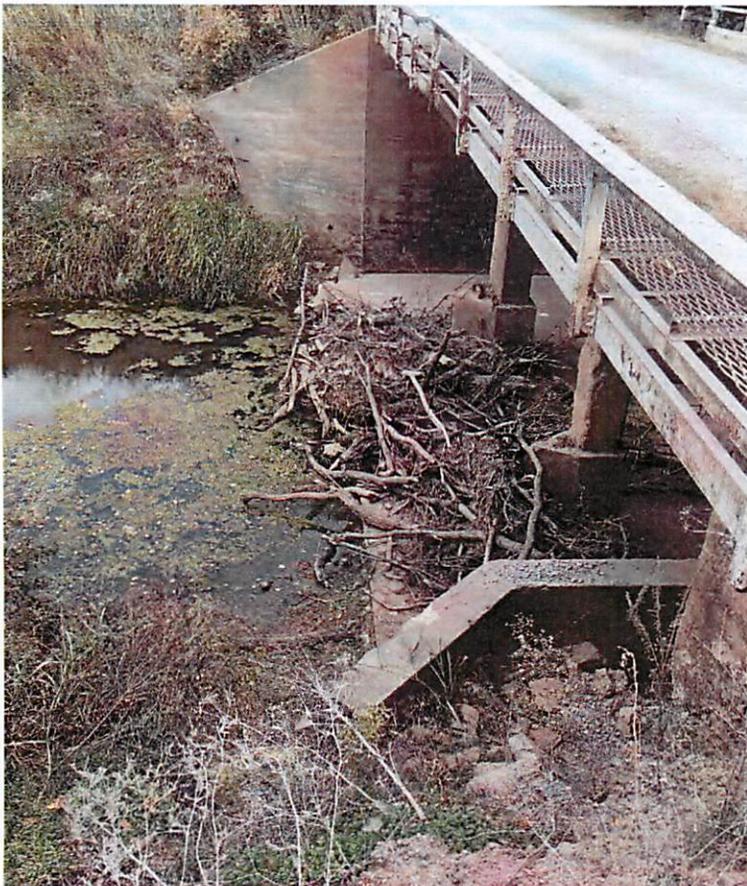


Figure A1 (top photo) is looking south along the bridge.

Figure A2 (side photo) is looking at the upstream / west face of the bridge. Removal of debris built up against the pier columns is a long term maintenance cost item and contributes to the deterioration of the columns and undermining of the structure.

Bridge A photos



Figure A3 – looking at the south abutment and retaining wall with POW embossed impression.

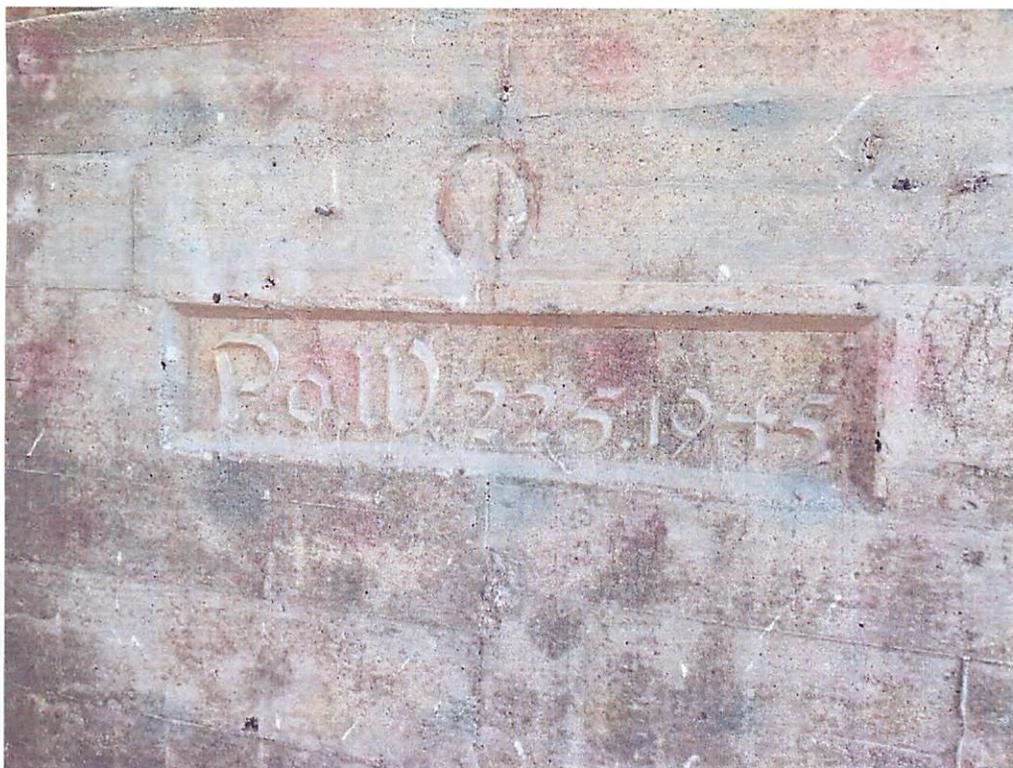


Figure A4 – POW embossed impression in retaining wall.

Bridge A photos

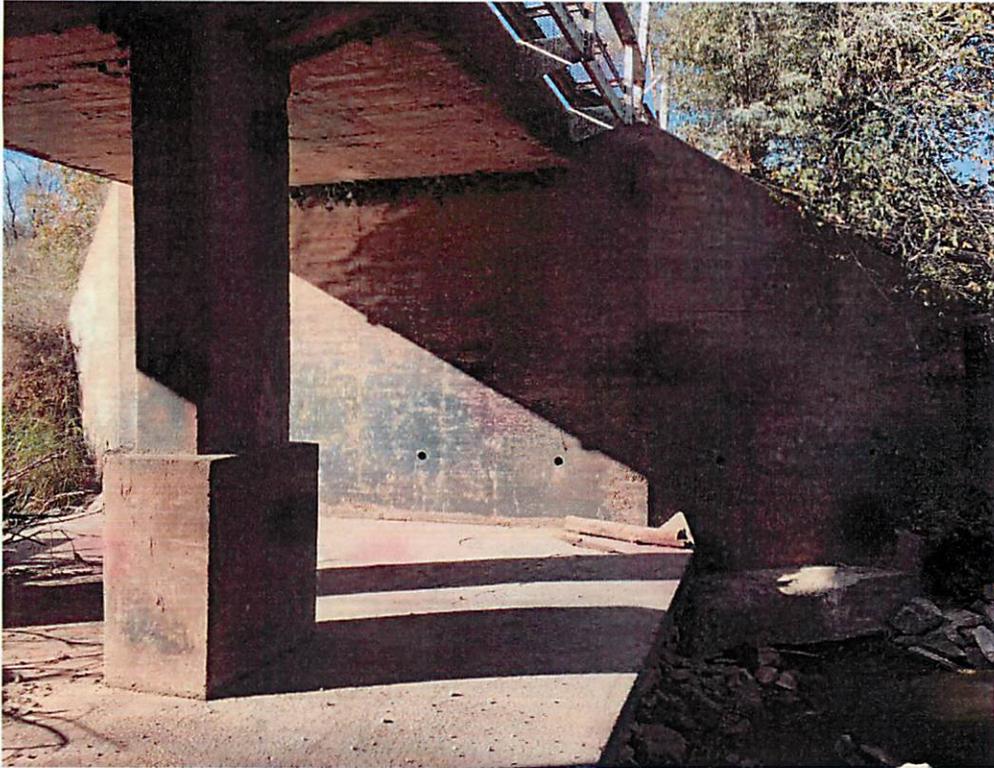


Figure A5 – face of north abutment

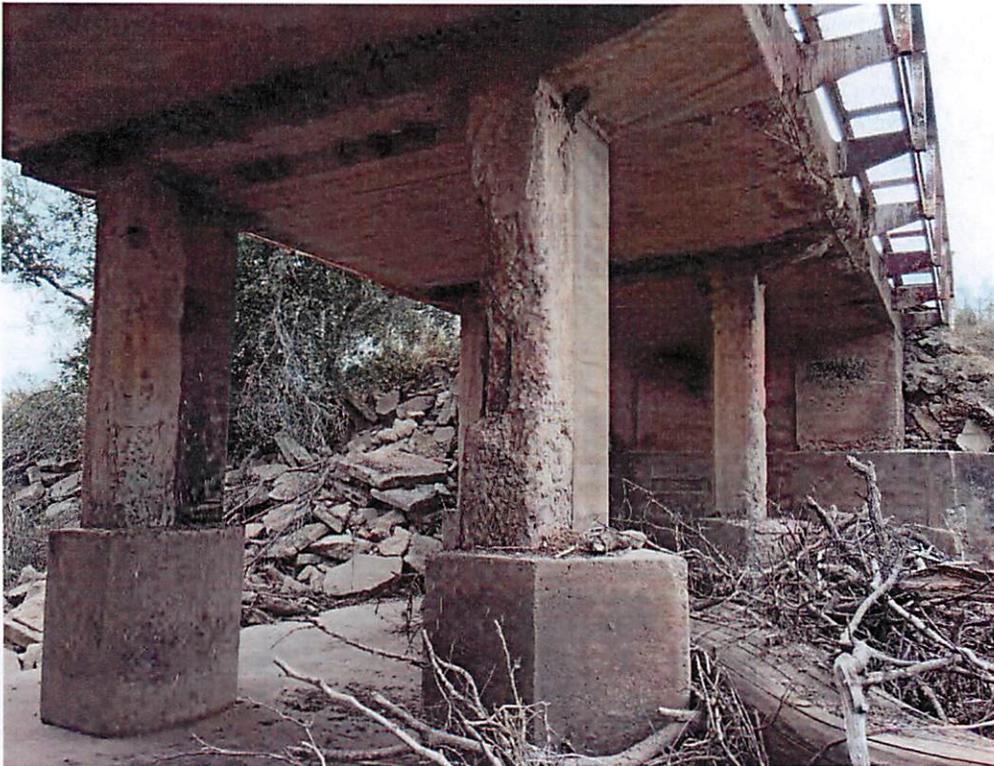


Figure A6 – upstream edge of deteriorated deck with exposed reinforcing. Columns at the north pier with exposed / corroded reinforcing and column additions.

Bridge A photos



Figure A7 – downstream face of bridge and undermining.

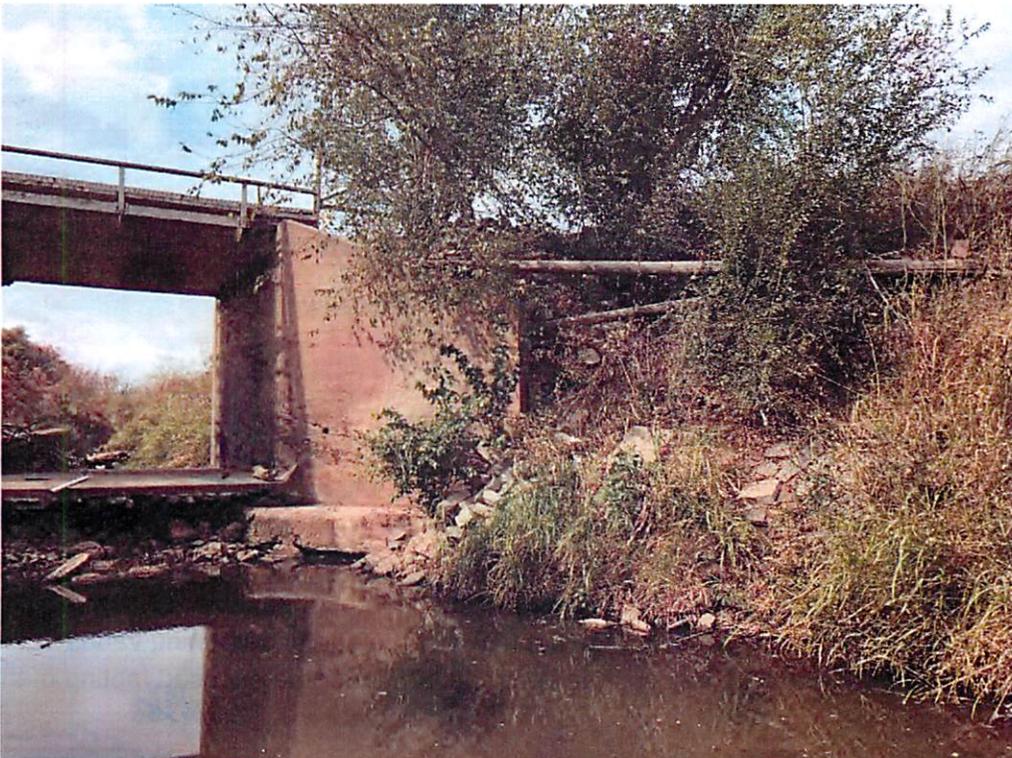


Figure A8 – undermining and erosion at the downstream wingwall of the north abutment.

Bridge A photos

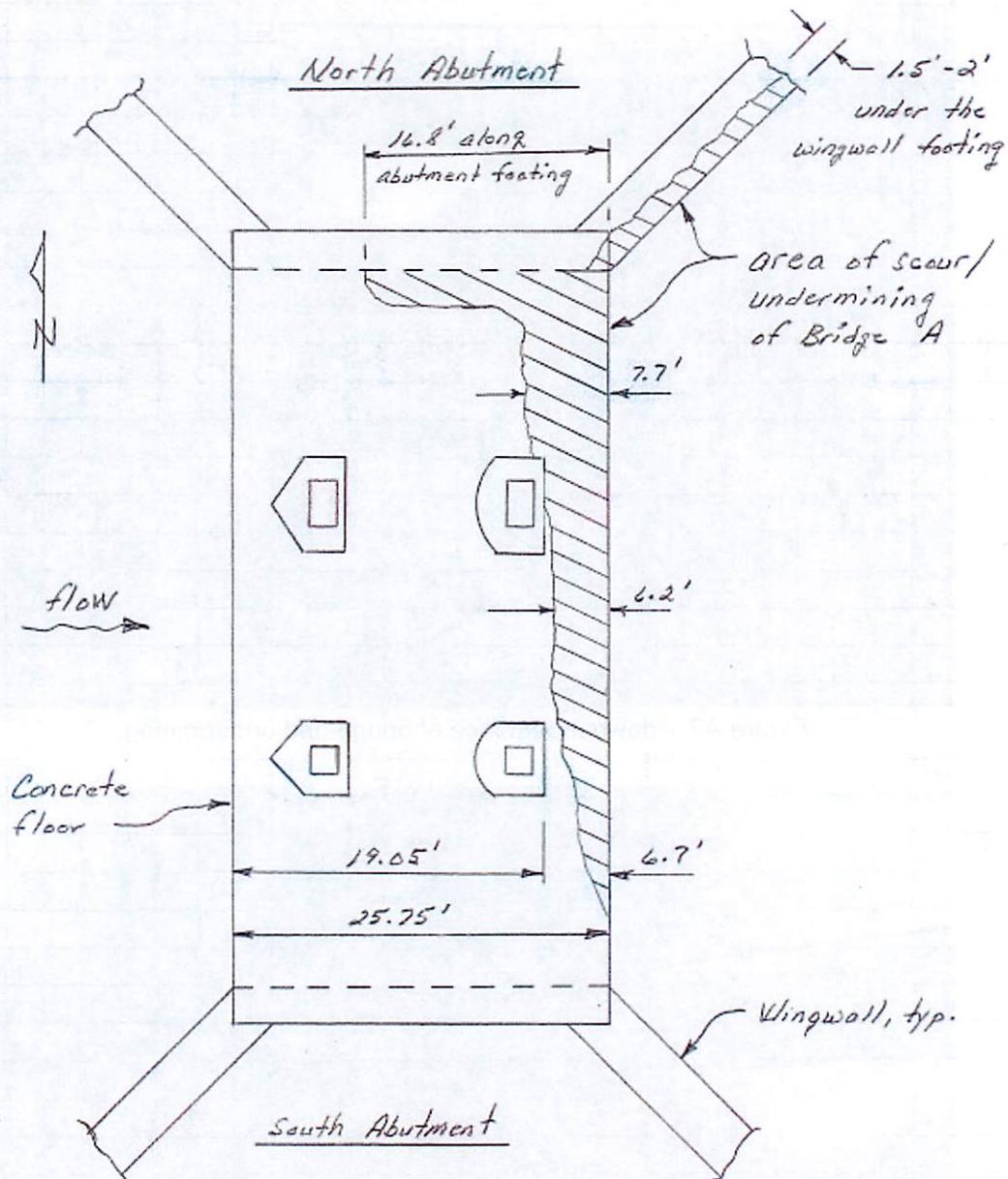


Figure A9

The above sketch shows the area under the concrete floor, northeast pier column and north abutment that has been undermined. The depth (height) of the undermining varies but is 3' +/- along the downstream face of the concrete floor and 12" under the exposed footing of the northeast wingwall.



United States Department of Agriculture

Research, Education, and Economics
Agricultural Research Service

January 31, 2017

Margaret Sutton
Tribal Historic Preservation Office
P.O. Box 167
Concho, OK 73022

Dear Ms. Sutton:

The USDA-Agricultural Research Service (ARS) recognizes the Cheyenne & Arapaho Tribe as a potential consulting party to the ARS bridge replacement project at the USDA-ARS, Grazinglands Research Laboratory, 7207 W. Cheyenne St., El Reno, OK. Thereby, we are providing the enclosed information (description, condition, photos, and maps) for your review and comments.

3070	El Reno	621800S04A	BRIDGE A-SOAP SUDS SOUTH	240	SQUARE YARDS	1/1/1948
3070	El Reno	621800S04D	BRIDGE D-TARGET CREEK	100	SQUARE YARDS	1/1/1948

Our initial determination is that the proposed undertaking will have no adverse effect on one or more historic resources. Please advise whether you concur with this assessment.

If you have any questions, please contact me at the address/phone number below.

Sincerely,

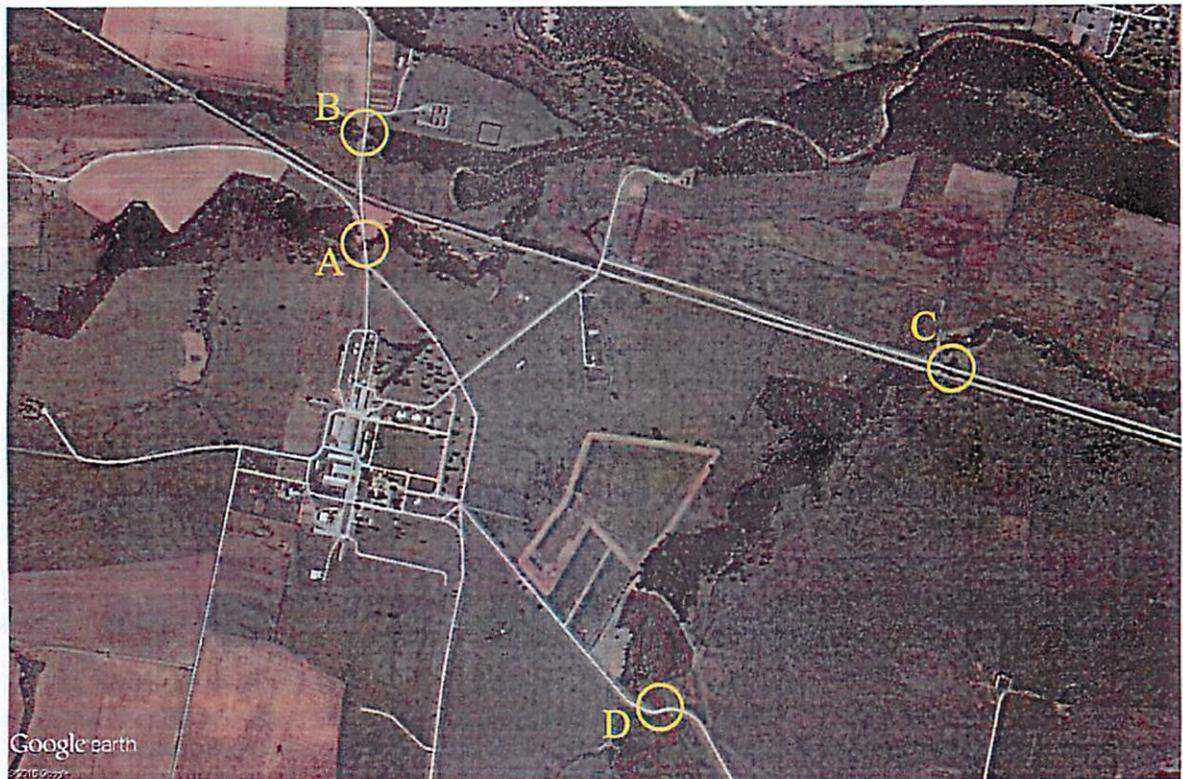


ERICA JONES
Lease Contracting Officer

Enclosure

FORT RENO
CANADIAN COUNTY
OKLAHOMA

BRIDGE LOCATIONS



Bridge A:	Latitude: N 35° 34' 05.12"	Longitude: W 98° 02' 10.70"
Bridge B:	Latitude: N 35° 34' 16.49"	Longitude: W 98° 02' 10.72"
Bridge C:	Latitude: N 35° 33' 52.63"	Longitude: W 98° 00' 58.00"
Bridge D:	Latitude: N 35° 33' 17.60"	Longitude: W 98° 01' 33.26"

Bridge "A"

Findings and Recommendations

Date of inspection: 11-2-2016
Existing Plans: None
Location:
Latitude: N 35° 34' 05.12"
Longitude: W 98° 02' 10.70"

Bridge "A" is a 48' long, 3-span, concrete slab bridge founded on concrete abutments and 2-column piers with a roadway width of 17'-9" between the curbs and railings (Figures A1 and A2). It is difficult to tell how much of the original bridge construction remains without any records or plans. There is a retaining wall in front of the existing south abutment with an embossed impression indicating the structure was built during 1945 by POW labor workers. It is unknown if this retaining wall was part of an original abutment or not. Its configuration is similar to the north abutment but structurally it is not part of the existing bridge. The configuration of the south abutment is different from the north abutment which could imply that it was built at a different time when the bridge may have been rehabbed and possibly lengthened. In addition, both columns and cap of the north pier have been widened and added onto sometime since the bridge was initially constructed (Figures A3 thru A6).

As noted in the December 01, 2015 ARS in-house report there is considerable spalling of the concrete and deterioration of the reinforcing in both the deck and pier columns. The pier columns sit on top of a concrete floor placed across the channel bottom. There is considerable undermining of the concrete floor and it is impacting the bearing (foundation) of the northeast column (Figures A7 and A9). In addition, portions of the north abutment are also undermined. During the site visit water was flowing under the concrete floor, further implying the severity of the condition and loss of structural support.

The location of the north abutment out in the channel contributes to its undermining and the erosion of the channel bank around the northeast wingwall (Figure A8).

Our findings support the findings of the ARS in-house report.

- Bridge "A" should be considered structurally deficient.
- The load carrying members are in poor condition due to deterioration and/or damage.
- The bridge should be restricted to the 4-ton load limit recommended in the in-house report.

Summary:

- Due to its age and condition, Bridge "A" is considered structurally deficient and should be replaced.
- The foundation of the north abutment and the northeast column are each partially undermined impacting their bearing capacity and structural integrity.

Short term – Repair recommendation:

- The downstream end of the concrete floor should be formed up. Holes cut through the concrete floor and the void under the floor filled with a flowable fill (concrete) to restore bearing to any affected columns and the north abutment.
- Included at the end of the photos for Bridge "A" is a sketch of the undermined area.
- Included at the end of this report is an opinion of cost for the short term repair.

Long term – Replacement recommendation:

- Further undermining of the structure will require its closure and create a long detour route and economic impact to the operating cost of the research grounds. In addition, the current load posting requires any and all equipment/vehicles over 4 tons in weight to detour around this structure. Thereby, further impacting the operating cost of the research grounds. Therefore, for safety and economic reasons the process to replace Bridge "A" should begin immediately.
- For a replacement structure, we recommend a 100' long single span bridge with a 24' roadway width between railings. The proposed bridge length would place the abutments behind 2:1 front slopes and at or behind the top of the channel banks to avoid on-going scour issues, debris problems and maintenance costs.
- Included at the end of this report is an opinion of cost for the replacement of Bridge A.

Bridge A photos

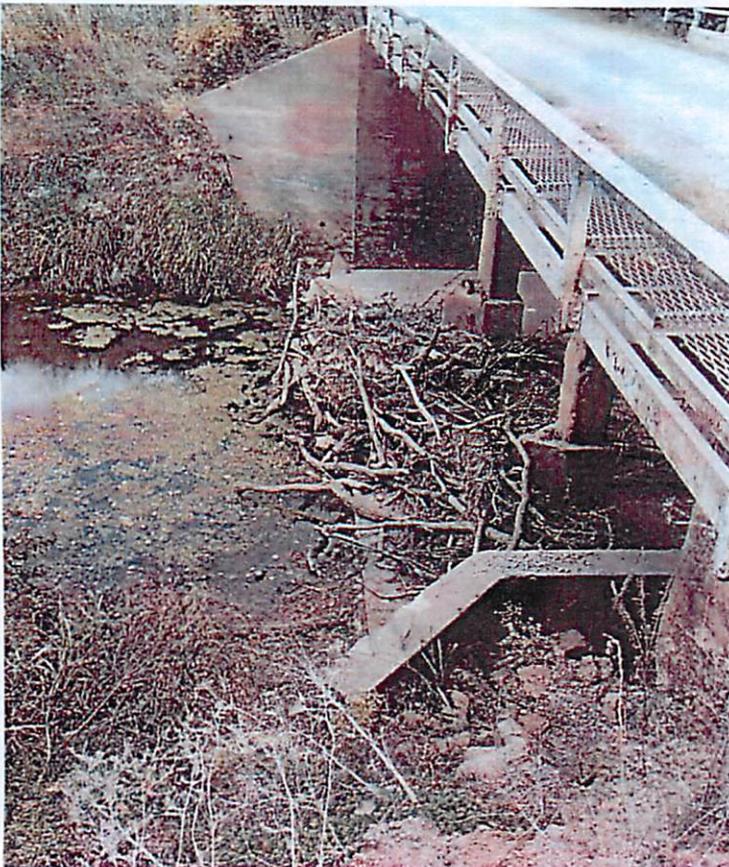


Figure A1 (top photo) is looking south along the bridge.

Figure A2 (side photo) is looking at the upstream / west face of the bridge. Removal of debris built up against the pier columns is a long term maintenance cost item and contributes to the deterioration of the columns and undermining of the structure.

Bridge A photos



Figure A3 – looking at the south abutment and retaining wall with POW embossed impression.



Figure A4 – POW embossed impression in retaining wall.

Bridge A photos

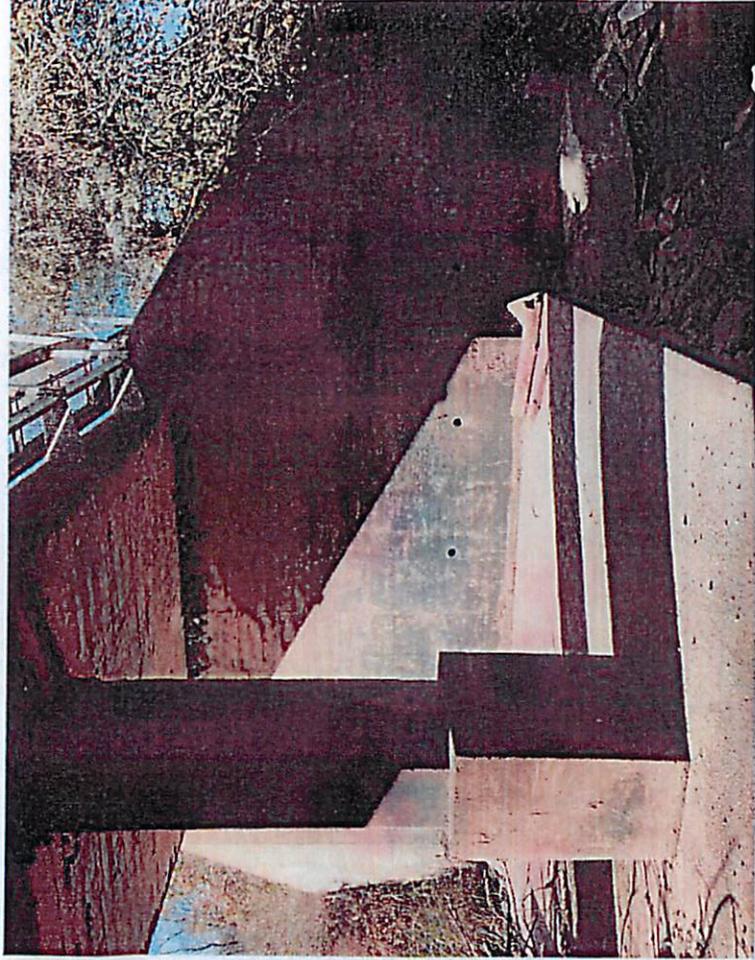


Figure A5 – face of north abutment

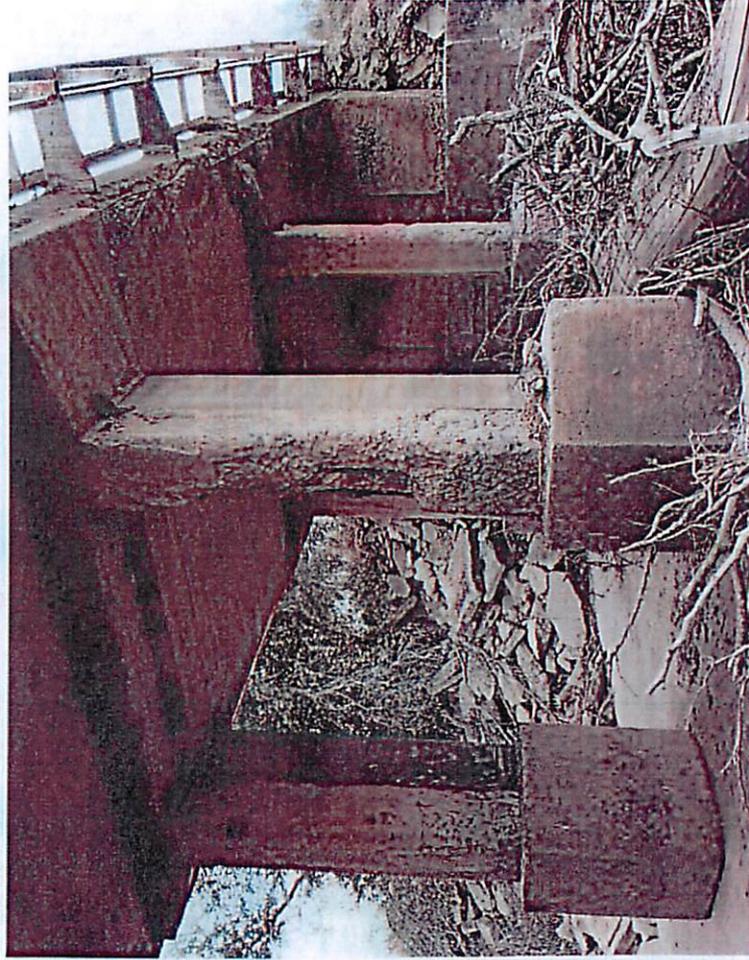


Figure A6 – upstream edge of deteriorated deck with exposed reinforcing. Columns at the north pier with exposed / corroded reinforcing and column additions.

Bridge A photos



Figure A7 – downstream face of bridge and undermining.



Figure A8 – undermining and erosion at the downstream wingwall of the north abutment.

Bridge A photos

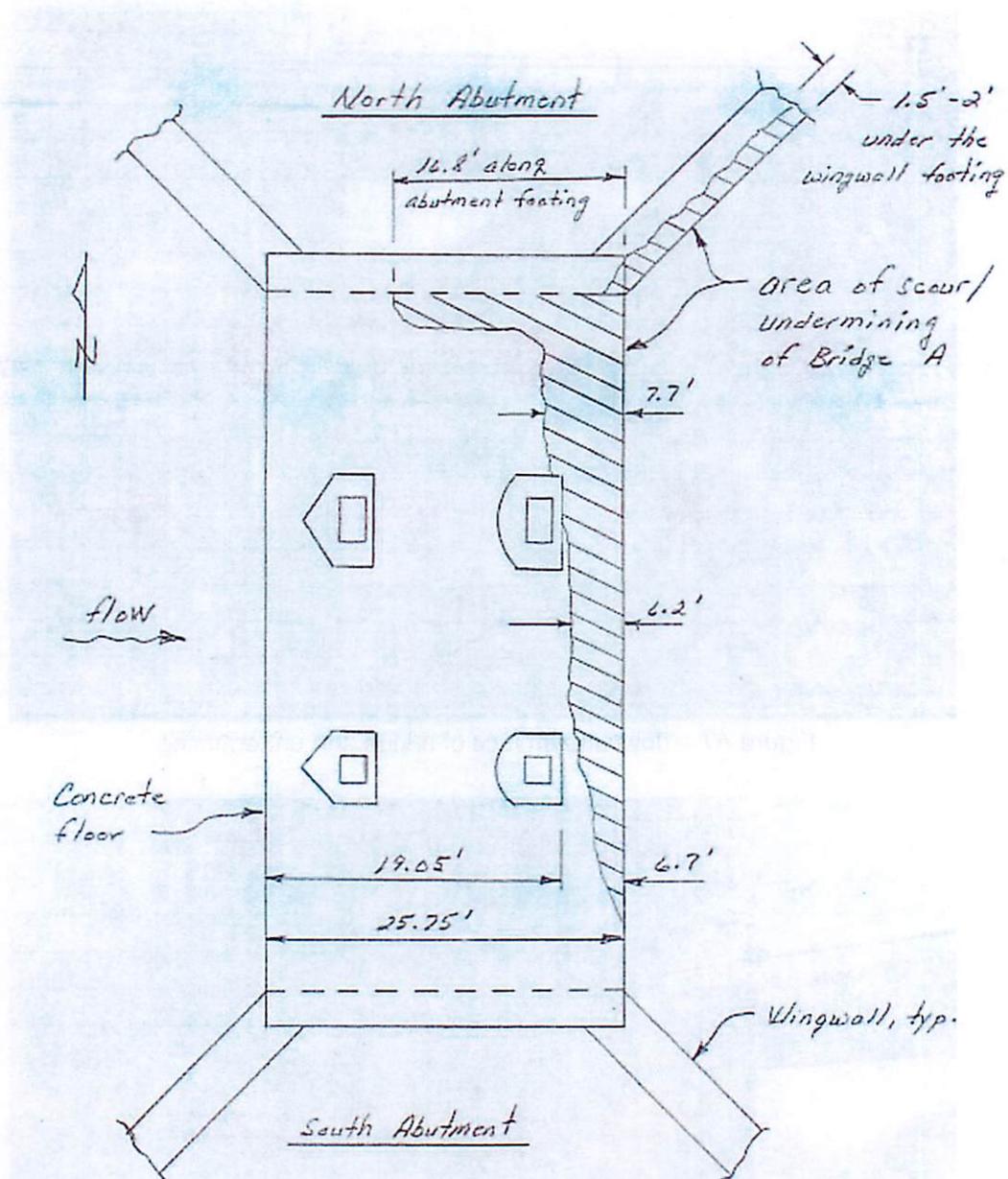


Figure A9

The above sketch shows the area under the concrete floor, northeast pier column and north abutment that has been undermined. The depth (height) of the undermining varies but is 3' +/- along the downstream face of the concrete floor and 12" under the exposed footing of the northeast wingwall.



Bridge "D" (Target Bridge) Findings and Recommendations

Date of inspection: 11-2-2016
Existing Plans: None
Location:
Latitude: N 35° 33' 17.60"
Longitude: W 98° 01' 33.26"

Bridge "D" is a 60' long, 4-span, concrete slab bridge founded on concrete abutments and 2-column piers with a roadway width of 14'-9" between the curbs and railings (Figures D1 and D2).

As noted in the December 01, 2015 ARS in-house report there is considerable spalling of the concrete and deterioration of the reinforcing in the pier columns and caps. The pier columns are in fair to poor condition. Reinforcement is exposed in some of the columns and the concrete surface of all the columns has deteriorated. In the pier caps, the main reinforcement is exposed in each cap and the concrete is in poor condition. There is a construction joint at the top of each of column where it connects to the pier cap and each joint is in a state of deterioration (Figures D3 and D4).

Both abutments are in fair condition. Erosion has occurred and was noted around both abutments. Wading and probing around the west abutment did not reveal any undermining. Due to the soft conditions of the channel bottom we were unable to inspect around the bottom of the east abutment. At the time of the site visit, Location Personnel had begun re-grading the channel banks to address scour and erosion issues around both abutments. We recommend this work be completed to fill in any areas of erosion and that rip-rap material be placed around both abutments. The rip-rap should be placed along the front face of each abutment as best as possible and extend up to the top of the channel banks along the face of each wingwall (Figures D5 and D6). If possible, geotextile material (filter fabric) should be placed on top of the graded earthwork before placing the rip-rap. The filter fabric will greatly aid in retaining the soil and mitigating erosion of the soil from under the rip-rap.

Roughly 40% to 50% of the deck is delaminated. There are cracks in the deck over each pier and shear cracks in the deck at the face of each abutment indicating the bridge has experienced excessive loads (Figures D7 and D8).

Summary:

- Due to its age and overall poor condition Bridge "D" is considered structurally deficient and should be replaced.
- The load carrying members are in poor condition due to deterioration and/or damage.
- The bridge should be restricted to a 4-ton load limit until it can be replaced.

Short term recommendations:

- Location Personnel should complete their work in addressing scour and erosion issues.
- The ARS in-house report states the bridge surface is in need of an asphalt overlay. In our opinion, due to the age and condition of the structure, the application of an asphalt surface would not provide any significant benefit. The cost thereof would be better used in completing the work to mitigate scour and erosion around the abutments and/or applying the cost towards a new structure.

Long term – Replacement recommendation:

- The load posting of the bridge with a 4-ton weight limit requires any and all equipment/vehicles over 4 tons in weight to detour around this structure. The additional travel time will impact the operating cost of the research grounds. Therefore, for safety and economic reasons the process to replace Bridge “D” should begin immediately.
- For a replacement structure, we recommend a 100’ long single span bridge with a 24’ roadway width between railings. The proposed bridge length would place the abutments behind 2:1 front slopes and at or behind the top of the channel banks to avoid on-going scour issues, debris problems and maintenance costs.
- Included at the end of this report is an opinion of cost for the replacement of Bridge D.

Bridge D (Target Bridge) photos



Figure D1 – looking westerly along the bridge.

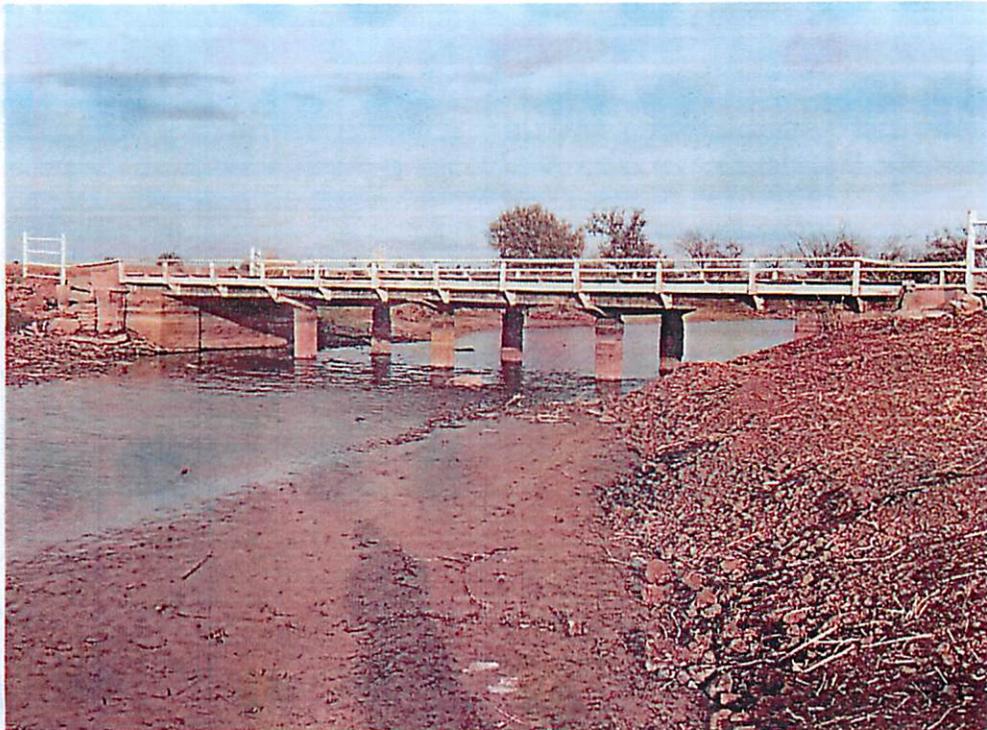


Figure D2 – looking northerly at the upstream face.

Bridge D (Target Bridge) photos

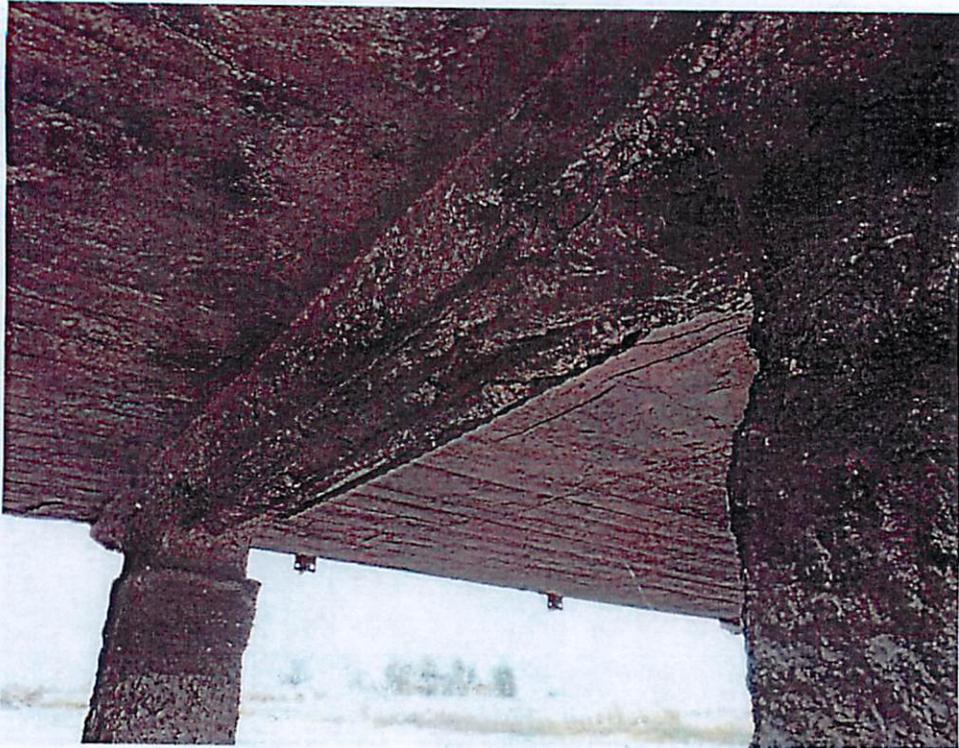


Figure D3 – exposed reinforcing and deteriorated concrete. Typical of all three pier caps.

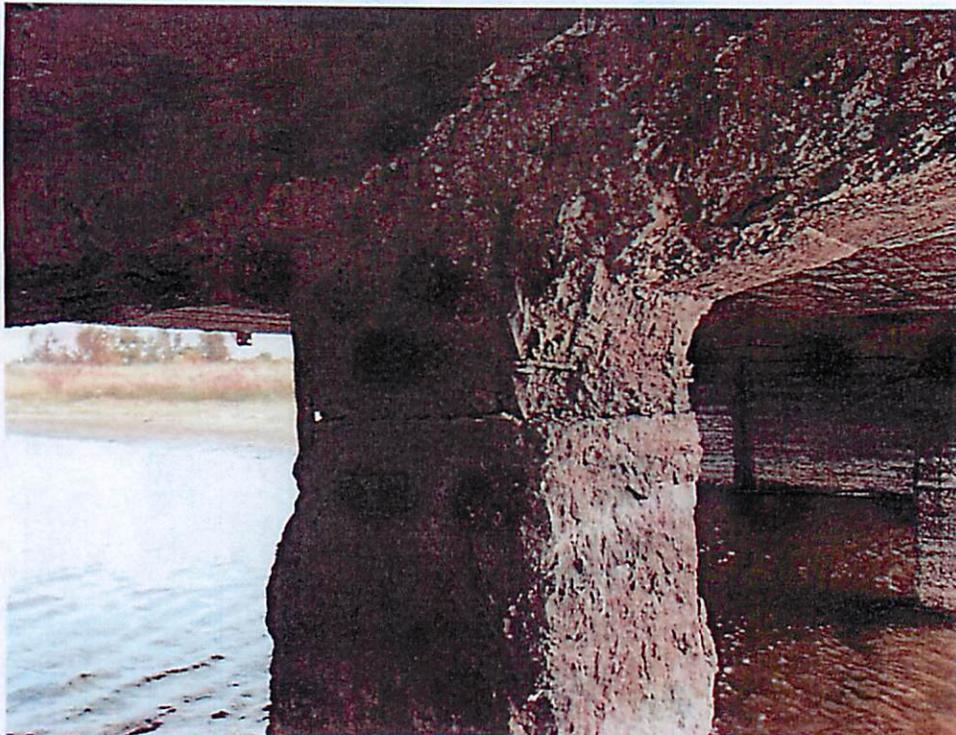


Figure D4 – exposed reinforcing & deteriorated concrete at all columns & pier cap connections.

Bridge D (Target Bridge) photos



Figure D5 – scour and erosion at the west abutment on the upstream side.



Figure D6 – scour and erosion at the west abutment on the downstream side.

Bridge D (Target Bridge) photos

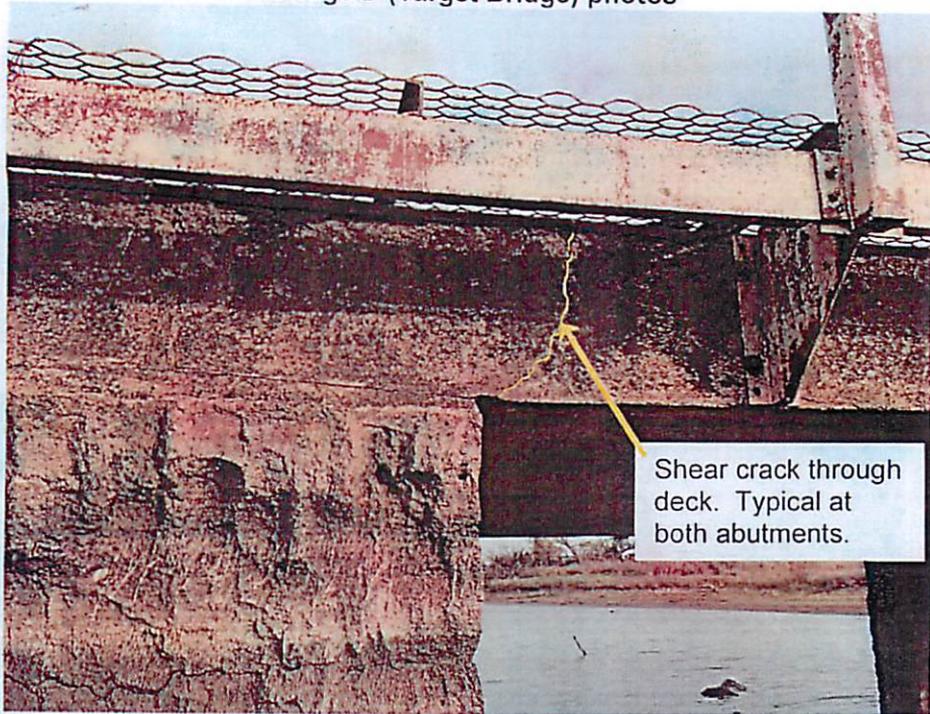


Figure D7 (top photo).

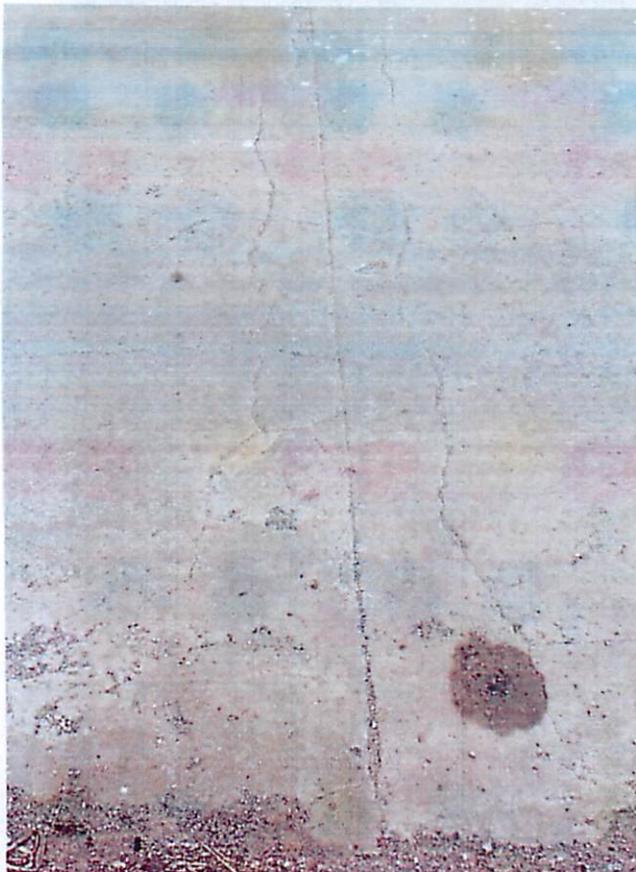


Figure D8 (side photo) cracks in deck. Typical over each pier.



January 31, 2017

Oklahoma Archeological Survey
University of Oklahoma
111 East Chesapeake, Buildings # 134
Norman, OK 73019-0575

Dear Sir/Madam:

The USDA-Agricultural Research Service (ARS) is requesting your review of its petition to replace the following bridges located at the USDA-ARS, Grazinglands Research Laboratory, 7207 W. Cheyenne St., El Reno, OK.

			BRIDGE A-SOAP SUDS SOUTH			
3070	El Reno	621800S04A	Located in S27 T13N R8W	240	SQUARE YARDS	1/1/1948
			BRIDGE D-TARGET CREEK			
3070	El Reno	621800S04D	Located in S35 T13N R8W	100	SQUARE YARDS	1/1/1948

The location of Bridge A and Bridge D are denoted on the attached topographical map. Also enclosed are pictures of each bridge.

ARS is conducting a NEPA as ground disturbance is anticipated with this project. ARS believes that the proposed undertaking will have no adverse effect on one or more historic resources. Please advise whether you concur with this assessment.

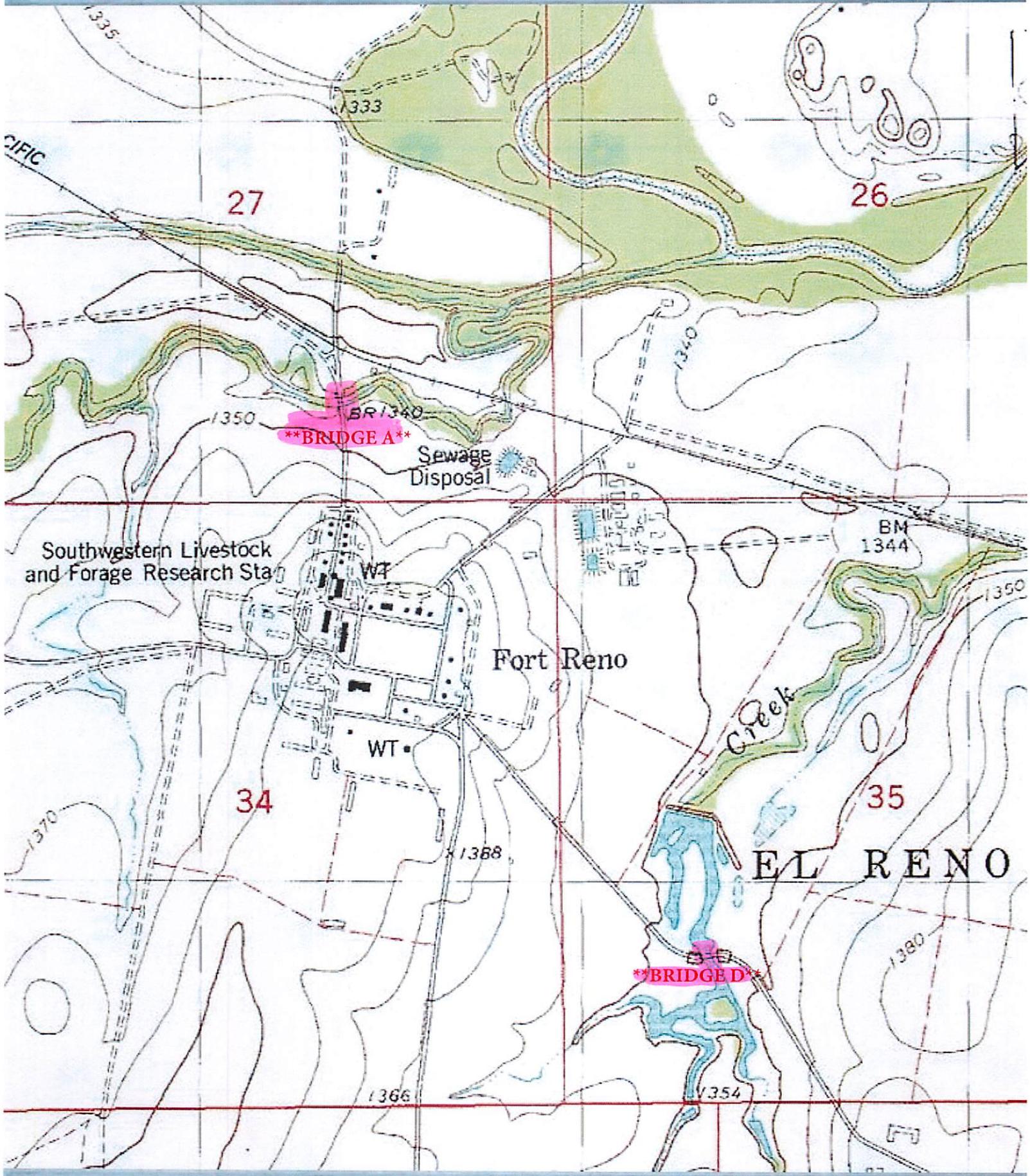
If you have any questions, please contact me at the address/phone number below.

Sincerely,



ERICA JONES
Lease Contracting Officer

Enclosure



Bridge A photos

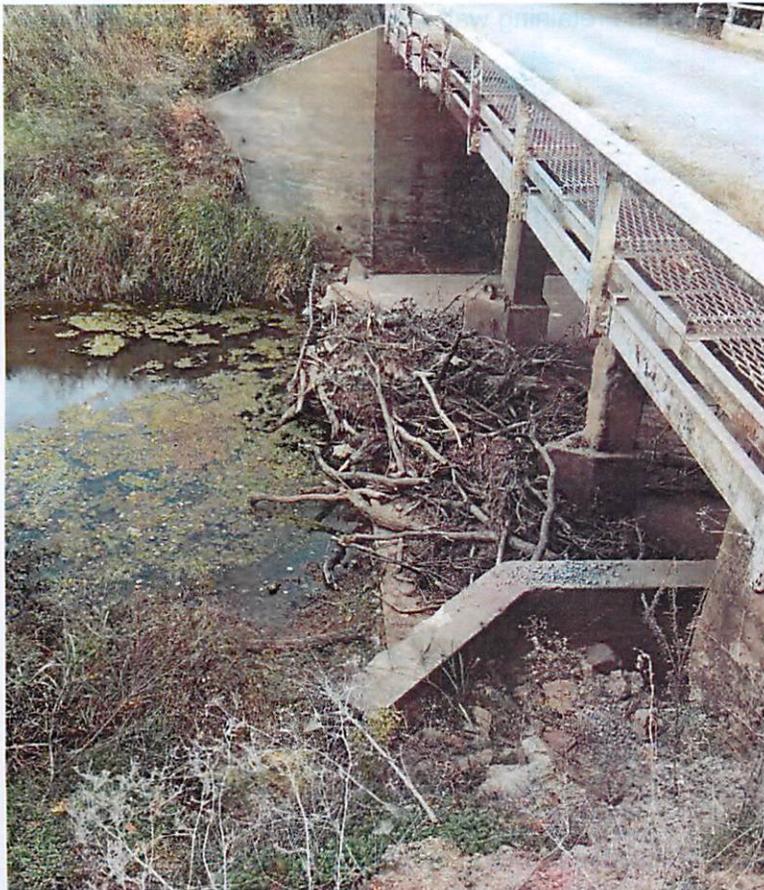


Figure A1 (top photo) is looking south along the bridge.

Figure A2 (side photo) is looking at the upstream / west face of the bridge. Removal of debris built up against the pier columns is a long term maintenance cost item and contributes to the deterioration of the columns and undermining of the structure.

Bridge A photos

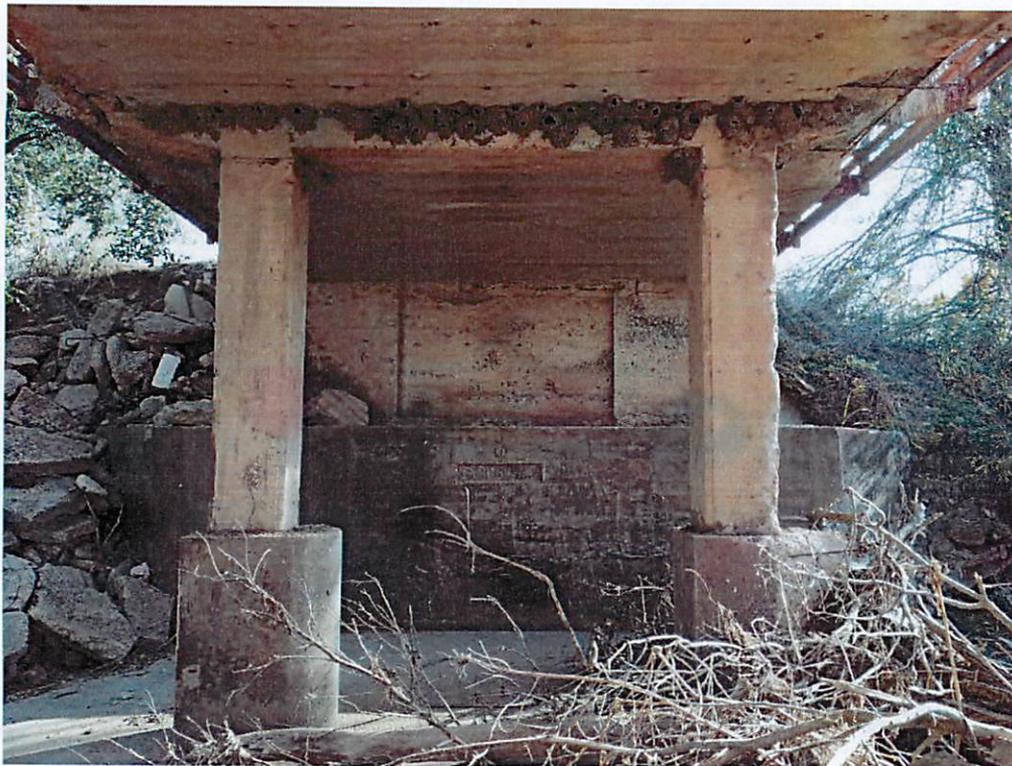


Figure A3 – looking at the south abutment and retaining wall with POW embossed impression.

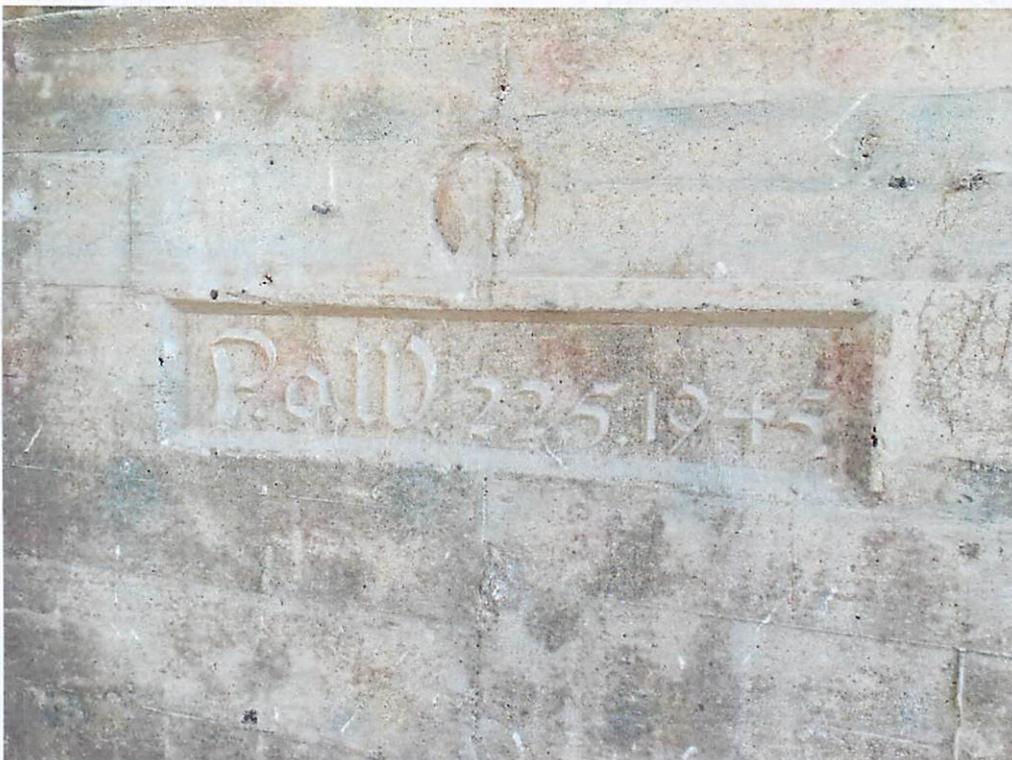


Figure A4 – POW embossed impression in retaining wall.

Bridge A photos

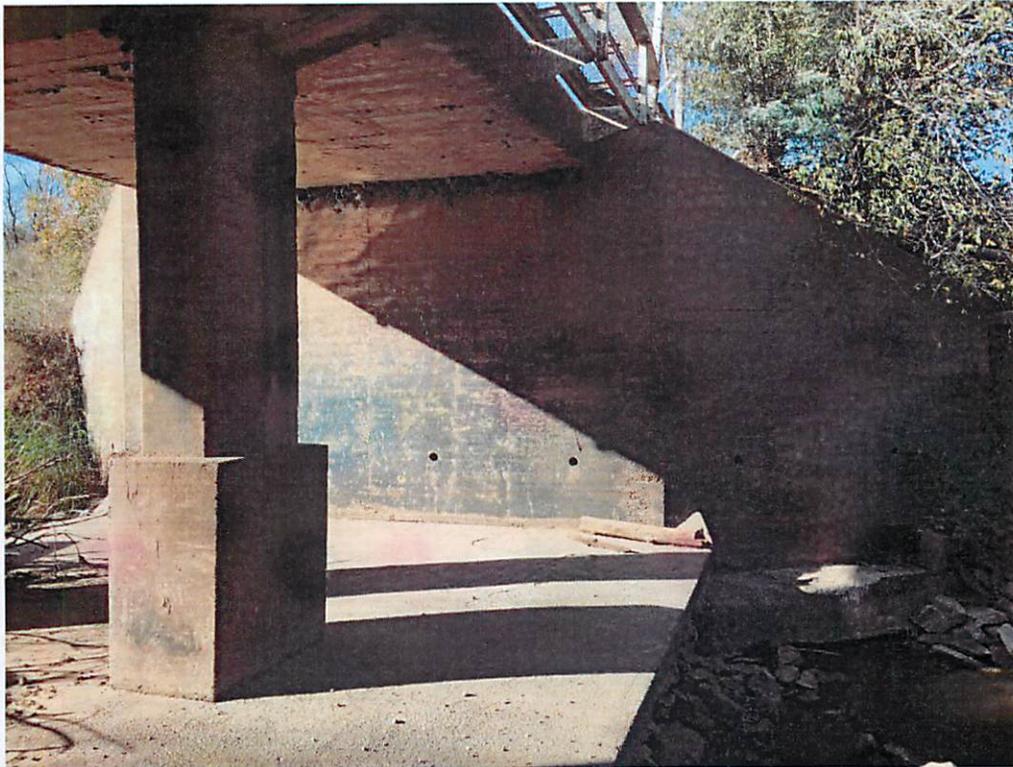


Figure A5 – face of north abutment



Figure A6 – upstream edge of deteriorated deck with exposed reinforcing. Columns at the north pier with exposed / corroded reinforcing and column additions.

Bridge A photos



Figure A7 – downstream face of bridge and undermining.

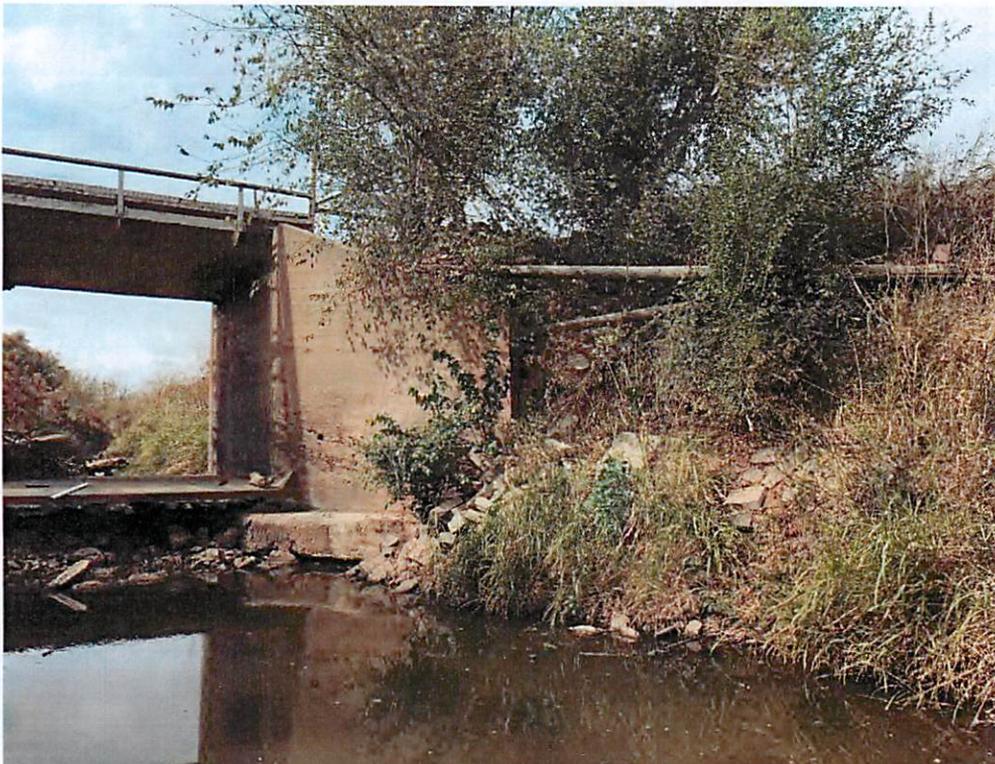


Figure A8 – undermining and erosion at the downstream wingwall of the north abutment.

Bridge D (Target Bridge) photos



Figure D1 – looking westerly along the bridge.

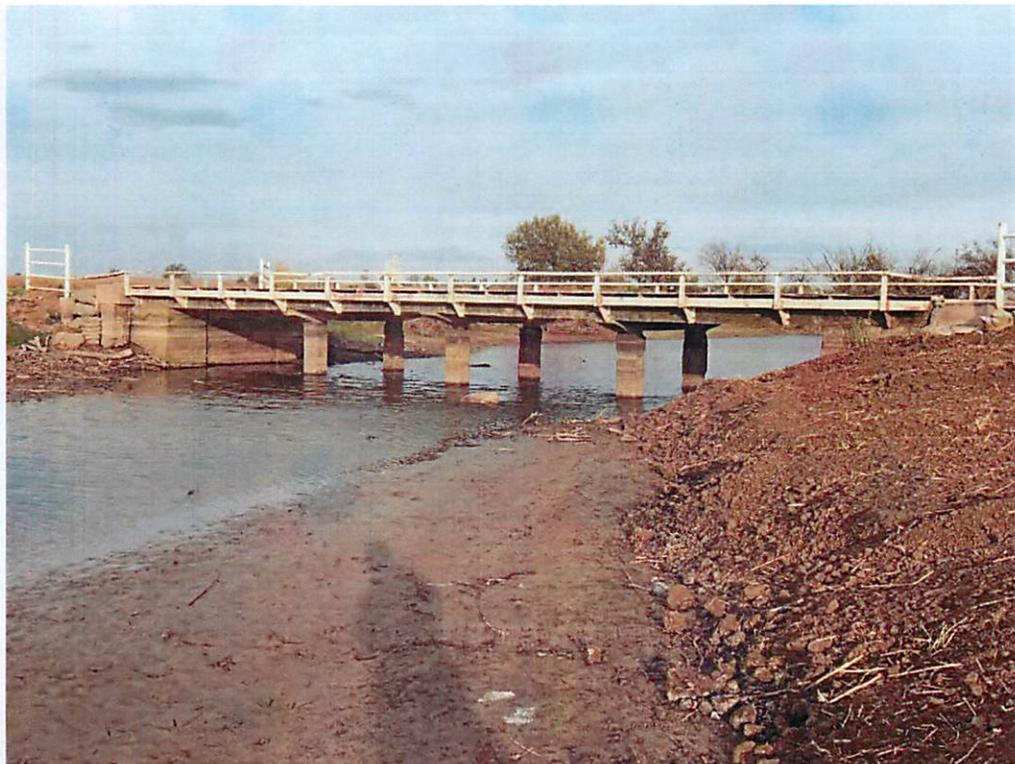


Figure D2 – looking northerly at the upstream face.

Bridge D (Target Bridge) photos



Figure D3 – exposed reinforcing and deteriorated concrete. Typical of all three pier caps.



Figure D4 – exposed reinforcing & deteriorated concrete at all columns & pier cap connections.

Bridge D (Target Bridge) photos



Figure D5 – scour and erosion at the west abutment on the upstream side.



Figure D6 – scour and erosion at the west abutment on the downstream side.

Bridge D (Target Bridge) photos

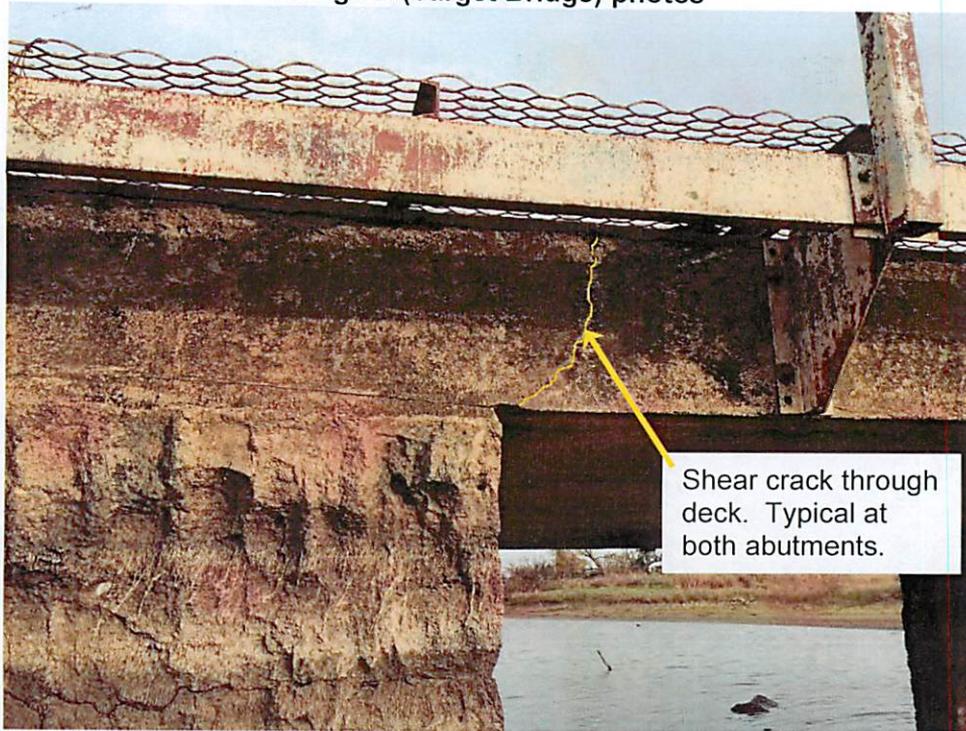


Figure D7 (top photo).



Figure D8 (side photo) cracks in deck. Typical over each pier.



Oklahoma Archeological Survey

February 2, 2017

THE UNIVERSITY OF OKLAHOMA

Erica Jones
USDA
Western Business Service Center
Facilities, Property and Safety Branch
141 Experiment Station Road
Stoneville, MS 38776

Re: USDA Petition to Replace 2 Bridges: A-Soap Suds South, D-Target Creek
USDA-ARS, Grazinglands Research Laboratory – 7207 W. Cheyenne Street, El Reno.
Legal Description: NE ¼ SW ¼ SE ¼ of Section 27, T13N, R8W
NE ¼ SW ¼ SW ¼ of Section 35, T13N, R8W, Canadian County,
Oklahoma.

Dear Ms. Jones:

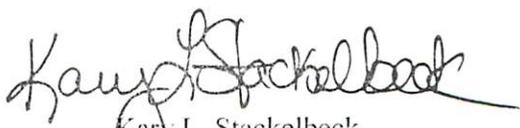
The Community Assistance Program staff of the Oklahoma Archeological Survey has reviewed the above referenced project in order to identify areas that may potentially contain prehistoric or historic archeological materials (historic properties). The location of your project has been crosschecked with the state site files containing approximately 23,000 archaeological sites, which are currently recorded for the state of Oklahoma. **Site(s) are listed in your project area (CN139), and based on the topographic and hydrologic setting of your project, additional archeological materials are likely to be encountered. An archaeological field inspection is therefore considered necessary prior to project construction in order to identify significant archaeological resources that may exist in your area. NOTE: Survey is only required for Section 27, Bridge A – Soap Suds South. Section 35, Bridge D– Target Creek has been previously surveyed; therefore, survey is not required.** Please contact this office at (405) 325-7211 if you require additional information on this project.

This environmental review and evaluation is done in cooperation with the State Historic Preservation Office, Oklahoma Historical Society. The responsible federal agency or their official delegate must also have a letter from that office to document consultation pursuant to Section 106 of the National Historic Preservation Act.

In addition to our review comments, under 36CFR Part 800.3 you are reminded of your responsibility to consult with the appropriate Native American tribe/groups to identify any concerns they may have pertaining to this undertaking and potential impacts to properties of traditional and/or ceremonial value.

Sincerely,


J. Matthew Oliver
Staff Archaeologist


Kary L. Stackelbeck
State Archaeologist

: brb
cc: SHPO





Oklahoma Historical Society

Founded May 27, 1893

State Historic Preservation Office

Oklahoma History Center • 800 Nazih Zuhdi Drive • Oklahoma City, OK 73105-7917
(405) 521-6249 • Fax (405) 522-0816 • www.okhistory.org/shpo/shpom.htm

March 13, 2017

Ms. Erica Jones
USDA Agricultural Research Service
141 Experiment Station Road
Stoneville, MS 38776

RE: File #0730-17; USDA-ARS Proposed Bridge A & D Replacements, Grazinglands Research Station, 7207 West Cheyenne Street, El Reno, Canadian County

Dear Ms. Jones:

We have reviewed the documentation submitted on the referenced project. Based on the information submitted, it is our opinion that "Bridge A" is eligible for the National Register of Historic Places under Criterion A for its association with social history and military history. When determining eligibility, the condition of a resource is not the determining factor. The role of the Prisoners of War in the construction of this bridge makes "Bridge A" historically significant.

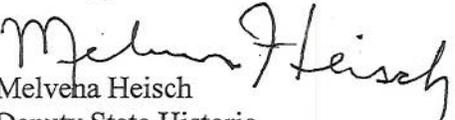
In addition, we find that "Bridge C" and "Bridge D" are not eligible for listing in the National Register of Historic Places.

If you concur with this opinion on eligibility, please sign and date the attached form and return it to our office with a description of the proposed project (unless this has already been submitted). We will then complete the review and issue an opinion of effect.

If you do not concur with this opinion of eligibility, we are willing to review any materials you may wish to submit supporting your position. You may also resolve our disagreement about this opinion by writing directly to the Keeper of the National Register, 1201 "I" Street Northwest, Mail Stop #2280, Washington, D.C. 20005, as noted in 36 CFR Part 63.

Future correspondence pertaining to this project must reference the above underlined file number. If you have any questions, please contact Ms. Lynda Schwan Ozan, Architectural Historian, at 405/522-4478. Thank you.

Sincerely,


Melvena Heisch
Deputy State Historic
Preservation Officer

MH:pm

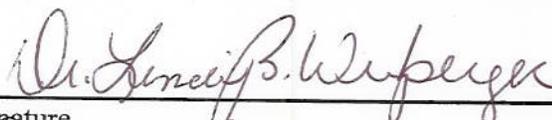
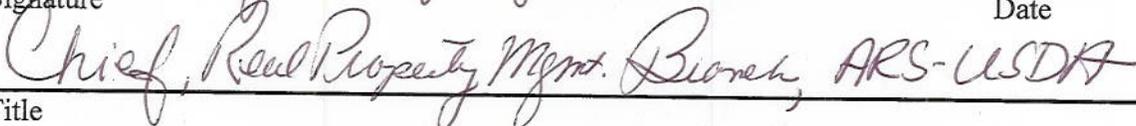
Attachment

State Historic Preservation Office
Oklahoma History Center
800 Nazih Zuhdi Drive
Oklahoma City, OK 73105

RE: File #0730-17; USDA-ARS Project, Bridge "A," Grazinglands Research Station, 7207 West
Cheyenne Street, El Reno, Canadian County

I have read and understand the statement of opinion of the Oklahoma State Historic Preservation Officer.
I agree with the opinion that this property is eligible for the National Register of Historic Places and so
indicate my agreement by my signature as designated agent for the agency responsible for this
undertaking.

I hereby concur with the opinion regarding the referenced property.

	4/14/17
Signature	Date
<hr/>  <hr/>	
Title	



United States Department of Agriculture

Research, Education, and Economics
Agricultural Research Service

May 25, 2017

Melvena Heisch
State Historic Preservation Office
Oklahoma Historical Society
800 Nazih Zuhdi Drive
Oklahoma City, OK 73105

Dear Ms. Heisch:

SUBJECT: USDA-ARS Proposed Bridge A Demolition, Grazinglands Research Station, 7207 West Cheyenne Street, El Reno, Canadian County, Oklahoma

The Agricultural Research Service is proposing to demolish Bridge A-Soap Suds South and replace it with a new bridge in the same footprint. The current bridge will be repaired to allow safe use of the bridge during the design phase for the new bridge.

Per your email of May 3, 2017, we anticipate receipt of a letter from your office of adverse effect finding for the NRHP eligible bridge. Upon receipt of your letter, we will contact the Advisory Council on Historic Preservation (ACHP) to invite the ACHP to participate in the consultation.

Please let us know if there is any additional documentation required to move forward with the development of the Memorandum of Agreement.

If you have any questions, please contact me at the address/phone number below.

Sincerely,

ERICA JONES
Real Estate Lease Contracting Officer



Oklahoma Archeological Survey

THE UNIVERSITY OF OKLAHOMA

June 15, 2017

Eric Jones
USDA, ARS. Western Business Service Center
PO Box 225
Stoneville, MS 38776

Re: *Cultural Resources Survey for the Proposed USDA Bridge "A" Replacement Project, Fort Reno, Canadian County, Oklahoma.* Report by Shelly Fischbeck and Brandy Harris (Burns and McDonnell).

Legal Description: NE ¼ SW ¼ SE ¼ of Section 27, T13N, R8W, Canadian County, Oklahoma.

Dear Ms. Jones:

This agency received the above-referenced cultural resources survey report of investigations for review and comment. The survey was conducted on April 24, 2017 by Burns and McDonnell. The survey involved the field inspection of approximately 1.5 acres constituting the project's direct Area of Potential Effect. During this survey, the archaeologist updated site 34CN139. This agency confirms the recommendations contained in this report as they pertain to prehistoric archaeological resources; however, we request that a site update be completed for 34CN139 and submitted to this agency. **We defer opinion on the eligibility of the historic component, as well as project effects to the Historic Archaeologist with the Oklahoma State Historic Preservation Office (SHPO), Oklahoma Historical Society.** This review has been conducted in cooperation with the Oklahoma SHPO. You must also have a letter from that office to document your consultation pursuant to Section 106 of the National Historic Preservation Act.

Sincerely,

Kary L. Stackelbeck
State Archaeologist

: brb

cc: SHPO





Oklahoma Historical Society

Founded May 27, 1893

State Historic Preservation Office

Oklahoma History Center • 800 Nazih Zuhdi Drive • Oklahoma City, OK 73105-7917
(405) 521-6249 • Fax (405) 522-0816 • www.okhistory.org/shpo/shpom.htm

June 20, 2017

Ms. Erica Jones, Realty Specialist
USDA Agricultural Research Service
P.O. Box 225
Stoneville, MS 38776

RE: File #0730-17; USDA Proposed Bridge A & D Project, Grazinglands Research Station,
El Reno, Canadian County, Oklahoma

Dear Ms. Jones:

We have reviewed the archaeological report prepared by Burns & McDonnell Engineering Company, Inc., for the referenced project. We find that we are unable to complete the review of your project without the following additional information:

- (1) Provide a copy of the original and updated site form for 34CN139.
- (2) Provide the name of the USGS 7.5-minute topographic map and the Township, Range and Section of where the project area is located.

If you should have any questions concerning this request, please contact me at 405/521-6381.

Thank you for the opportunity to review this project. Please reference the above underlined file number when responding.

Sincerely,

Catharine M. Wood
Historical Archaeologist

CMW:pm

PROGRAMMATIC AGREEMENT
AMONG THE
U.S. DEPARTMENT OF AGRICULTURE - AGRICULTURAL RESEARCH SERVICE,
THE OKLAHOMA STATE HISTORIC PRESERVATION OFFICER
AND THE ADVISORY COUNCIL ON HISTORIC PRESERVATION
REGARDING MANAGEMENT OF THE FORAGE AND LIVESTOCK
RESEARCH LABORATORY, EL RENO, OKLAHOMA

WHEREAS, the U.S. Department of Agricultural, Agriculture Research Service (ARS), uses and manages the Forage and Livestock Research Laboratory, El Reno, Oklahoma, in the administration of its Forage and Livestock Research Program; and

WHEREAS, ARS has determined that the management of the Laboratory may have an effect upon properties which have been listed on or determined eligible for the National Register, including the Fort Reno National Register Historic District, and has consulted with the Advisory Council on Historic Preservation (Council) and the Oklahoma State Historic Preservation Officer (SHPO) pursuant to Section 800.13 of the regulations, 36 CFR Part 800, implementing Section 106 of the National Historic Preservation Act (16 U.S.C. 470f);

NOW, THEREFORE, ARS, the Council and the SHPO agree that ARS will manage the Forage and Livestock Research Laboratory in accordance with the following stipulations to satisfy ARS's Section 106 responsibilities for all resulting individual undertakings.

Stipulations

ARS will ensure that the following measures are carried out:

I. UNDERTAKINGS NOT REQUIRING REVIEW BY THE SHPO OR THE COUNCIL

A. Review by the SHPO or the Council is not required if the undertaking will affect only: 1) buildings that are less than 50 years of age or; 2) buildings within the Fort Reno Historic District listed in Appendix "A" which have been determined by ARS, in consultation with the SHPO, to be not eligible for inclusion in the National Register individually or as a contributing property to the historic district. ARS shall document its determination that no historic properties were included in the undertaking's area of potential effect and maintain this record in its project file.

B. All activities enumerated in Appendix "C" will be exempt from review by the SHPO or the Council. ARS will maintain project records to verify that an undertaking qualifies for this exemption from review.

II. IDENTIFICATION, EVALUATION, AND NOMINATION OF HISTORIC PROPERTIES

A. ARS, in consultation with the SHPO, has evaluated the properties at the Fort Reno National Register Historic District and listed the buildings which are considered to contribute to the significance of the Fort Reno National Register Historic District in Appendix "B" of this Agreement.

B. When an undertaking is identified by ARS, it shall consult with the SHPO to determine if any properties that are included in or that have been determined eligible for inclusion in the National Register of Historic Places are located in a proposed undertaking's area of potential effect. ARS shall also request the views of the SHPO on further actions that may be necessary to identify historic properties which may be affected by the undertaking. If previously unevaluated properties that may be affected by the undertaking are identified, ARS will evaluate them, in consultation with the SHPO, against the National Register criteria, in accordance with 36 CFR Section 800.4(c). ARS shall provide the SHPO with copies of the material developed to evaluate a property and afford the SHPO a 30-day period to review ARS' evaluation of the property's eligibility. If the SHPO does not provide views within this time frame, then he/she shall be presumed to agree with ARS' determination.

C. ARS, in consultation with the SHPO, will periodically review the lists of contributing and noncontributing properties within the Fort Reno Historic District, and any other relevant, existing data regarding other properties which are located on the lands managed by the Laboratory, to determine if any such properties should be included or deleted from the list of contributing or eligible properties, or re-evaluated for National Register eligibility. It is anticipated that such a review and re-evaluation may be necessary at five-year intervals.

III. DETERMINATION OF EFFECT

A. If a proposed undertaking is not categorically exempt from review pursuant to Stipulation I. above and its area of potential effect, as defined in 36 CFR Section 800.2(c), may contain a historic property, then ARS will provide the SHPO with a work description which adequately describes the project, the historic property, and the undertaking's potential effect on the historic property, in accordance with the SHPO review and compliance manual. This review should occur early in the planning stages of the undertaking, when the widest feasible range of alternatives is open for consideration. ARS shall consult with the SHPO to apply the Criteria of Effect and Adverse Effect, 36 CFR Section 800.9, and if an effect will occur, then to determine if the proposed undertaking meets one of the exceptions to the Criteria of Adverse Effect:

1. If ARS and the SHPO agree that an undertaking will have no effect, ARS shall notify the SHPO in writing of this finding. If the SHPO does not object to this written notice within 15 days, the undertaking may proceed without further review.

2. If ARS and the SHPO agree that an undertaking will have an adverse effect, ARS shall notify the SHPO in writing of this finding and include the following information, as appropriate:

a. If the undertaking will adversely affect a historic property which is of value only for its potential contribution to archeological or historical research and such value can be substantially preserved through the conduct of appropriate research, ARS, in consultation with the SHPO, may determine if the property can be preserved on-site or if the development and implementation of a data recovery plan is appropriate. Such a plan shall be consistent with the Secretary of the Interior's Standards and Guidelines for Archeological Documentation (48 FR 44734-37), take into account the Council's publication, "Treatment of Archeological Properties," and conform to all relevant SHPO guidance. It will be provided to the SHPO with ARS's written determination.

b. If the undertaking is limited to the rehabilitation of buildings and structures in accordance with the Secretary of the Interior's Standards and Guidelines for Rehabilitating Historic Buildings [36 CFR Section 67.7(b)], plans, specifications, work write-ups, or other pertinent project documents will be provided to the SHPO with ARS's written determination.

c. If the proposed undertaking consists of the issuance of a permit to a non-Federal entity to conduct activities on Laboratory lands, then ARS, in consultation with the SHPO, will develop conditions to be included in the permit to ensure the protection and maintenance of any historic property located on lands which will be affected by the permitted activity.

IV. DISPUTE RESOLUTION

Should the SHPO or Council object within 30 days, unless otherwise noted, to any plans, specifications, or other documentation provided for review pursuant to this Agreement, ARS shall consult further with the SHPO or Council to resolve the objection. If the objection relates to ARS' determination that an undertaking will not adversely effect historic properties and ARS determines that it cannot modify the undertaking to avoid the adverse effect, then ARS will enter into adverse effect consultation under 35 CFR Section 800.5(e). If any of the parties determines that the adverse effect consultation process is unproductive, that party may terminate the consultation process. ARS shall notify all parties, forward all documentation relevant to the dispute to the Council, and request the Council's comments in accordance with 36 CFR Section 800.6(b). Any recommendation or comment provided by the Council will be understood to pertain only to the subject of the dispute, and ARS's responsibility to carry out all actions under this Agreement that are not the subject of the dispute will remain unchanged.

V. IMPLEMENTATION AND TRAINING

ARS will notify appropriate staff of the execution of this Agreement and will develop management procedures to ensure that its terms are implemented. The SHPO and the Council, as appropriate, will provide occasional, basic historic preservation training to ARS, its representatives or designees. This training can include, but may not be limited to, the implementation of this Agreement and the application of the Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings and Standards and Guidelines for Archeological Documentation.

VI. MONITORING

The SHPO and the Council may monitor any activities carried out pursuant to this Agreement, and the Council will review such activity if so requested. ARS will cooperate with the SHPO and the Council in carrying out these monitoring and review responsibilities.

VII. AMENDMENTS

Any party to this Agreement may request that it be amended or modified, whereupon the parties will consult, in accordance with 36 CFR Section 800.13, to consider such revisions. Any resulting amendments or addenda shall be reduced to writing and will be developed and executed in the same manner as this original Agreement.

VIII. TERMINATION

Any party to this Programmatic Agreement may terminate it by providing thirty days notice to the other parties, provided that the parties will consult during the period prior to termination to seek agreement on amendments or other actions that would avoid termination. In the event of termination, ARS will comply with 36 CFR Sections 800.4 through 800.6 with regard to individual undertakings covered by this Agreement.

IX. FAILURE TO COMPLY WITH AGREEMENT

In the event ARS does not carry out the terms of this Programmatic Agreement, ARS will comply with 36 CFR Sections 800.4 through 800.6 with regard to individual undertakings covered by this Agreement.

EXECUTION AND IMPLEMENTATION of this Programmatic Agreement evidences that ARS has afforded the Council a reasonable opportunity to comment on ARS' proposal to use and manage the Forage and Livestock Research Laboratory, El Reno, Oklahoma (Laboratory) in the administration of its Forage and Livestock Research Program.

U.S. DEPARTMENT OF AGRICULTURE - AGRICULTURAL RESEARCH SERVICE

By: Floyd A. Han
Director, USDA-ARS Southern Plains Office

Date: 3-2-92

OKLAHOMA STATE HISTORIC PRESERVATION OFFICER

By: Blake Ward
Title:

Date: 8-3-92

ADVISORY COUNCIL ON HISTORIC PRESERVATION

By: Roberto. Bush
Title:

Date: 9/10/92

APPENDIX "A"
LIST OF STRUCTURES AND BUILDINGS LOCATED
AT THE FORAGE AND LIVESTOCK RESEARCH LABORATORIES
WHICH HAVE BEEN DETERMINED TO BE NOT ELIGIBLE
FOR INCLUSION IN THE NATIONAL REGISTER OF HISTORIC PLACES

The following buildings and structures have been determined to be not eligible for inclusion in the National Register of Historic Places by ARS in consultation with the SHPO. This list was reviewed on 15 October 1990 with revisions noted. Undertakings proposed for these buildings and structures will not be reviewed by the SHPO or Council.

<u>Bldg. No.</u>	<u>Name</u>
22	Granary
23	Granary
24	Livestock Sales (Riding Hall)
25	Paint or Water Treatment Shed
27	Plumbing Shop
30	Filling Station
32	Implement Shed
34	Bull Barn
35	Cattle Barn
37	Cattle Barn
38	Cattle Barn
39	Cattle Barn
40	Cattle Barn
41	Cattle Barn
42	Cattle Barn
43	Cattle Barn
44	Cattle Barn
45	Physiology Barn
46	Cattle Barn
47	Cattle Barn
48	Cattle Barn
49	Cattle Barn
50	Calf Feeding Barn
51	Metabolism Barn
53	Shelter
54	Shelter
55	Shelter
56	Shelter
57	Shelter
58	Shelter
59	Shelter
60	Shelter
61	Shelter
62	Shelter
63	Shelter

Bldg. No.Name

64	Shelter
65	Shelter
66	Shelter
67	Scale House
68	Scale House
69	Scale House
71	Sheep Barn
72	Swine Barn
73	Swine Barn
74	Swine Barn
75	Swine Barn
76	Swine Barn
77	Swine Barn
78	Swine Barn
79	Swine Barn
82	Hay Shed
85	Seed Cleaning Shed
86	Storage
87	Garage
88	Garage
89	Garage
92	Metal Shed
93	Residence
95	Alco Steel Building
96	Feed Mill Complex
96A	Boiler Building
96B	Hay Storage
97	Pole Barn
98	Wool Shed

CR & NR

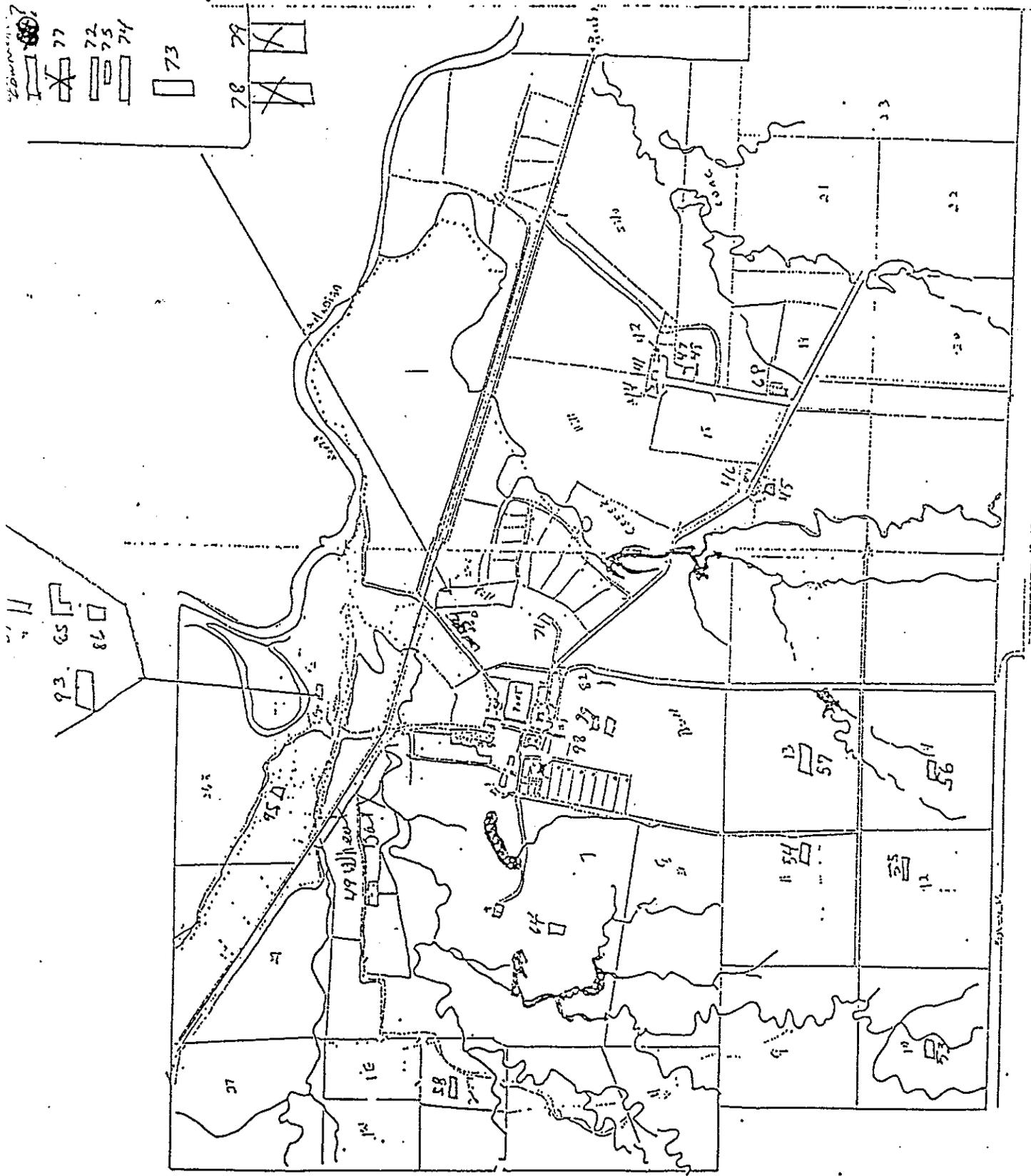
Appendix "B"

LIST OF STRUCTURES AND BUILDINGS LOCATED
AT THE FORAGE AND LIVESTOCK RESEARCH LABORATORIES
WHICH HAVE BEEN DETERMINED TO BE ELIGIBLE
FOR INCLUSION IN THE NATIONAL REGISTER OF HISTORIC PLACES

The following buildings and structures have been determined to be eligible for inclusion in the National Register of Historic Places by ARS in consultation with the SHPO.

<u>Bldg. No.</u>	<u>Name</u>
01	Office/Lab (Barracks/hospital) (Exterior Repairs Only)
02	Residence
03	Residence
04	Residence
05	Residence
06	Residence
07	Residence
09	Residence
10	Residence
12	Residence
13	Residence
14	Residence
15	Residence
16	Residence
17	Residence
18	Residence
19	Residence
20	Residence
21	Chapel
26	Machine Shop
28	Carpenter Shop
29	Warehouse
31	Warehouse
31A	Magazine
33	Implement Shed
36	Cavalry Stable
70	Sheep Barn

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To El Paso

APPENDIX D – SCOPING LETTERS AND RESPONSES



United States Department of the Interior

U.S. GEOLOGICAL SURVEY

Oklahoma Water Science Center

202 NW 66th Street, Bldg. 7

Oklahoma City, Ok 73116

June 5, 2017

Jennifer Bell
Senior Environmental Scientist
Burns-McDonnell
9785 Maroon Circle, Suite 400
Centennial, CO 80112

Dear Ms. Bell,

In response to your letter of June 1, 2017 regarding replacement of two bridges at the USDA-ARS Grazinglands Research Laboratory in El Reno, Oklahoma, I offer the following information:

- 1) These sites are underlain by the Dog Creek Shale of the El Reno Group of Permian age, which consist of about 220 ft of reddish-brown shale and thin beds of siltstone and dolomite (Carr and Bergman, 1976).
- 2) The topographic elevations of Bridges A and D are about 1340 and 1345 ft above mean sea level (U.S. Geological Survey, 1979). Bridge A crosses an unnamed creek and Bridge D crosses Target Creek (upstream of an earthen dam). Both of these creeks are tributaries of the Canadian River which is important habitat for the threatened Arkansas River Shiner (*Notropis girardi*).
- 3) Site A is likely to be underlain by the Port silty clay loam, a frequently-flooded well-drained soil developed on calcareous loamy alluvium (Natural Resources Conservation Service, 2017). Site D is probably underlain by the Bethany silt loam, a well-drained silty loam developed on silty alluvium overlying shales (Natural Resources Conservation Service, 2017).
- 4) These bridge-replacement projects appear to pose no notable issues or conflicts with existing land use, aesthetics, socioeconomic, hazardous materials sites, or cultural resources, or pose interference with important transportation corridors.

Given the drainage of these sites to the Canadian River, which is habitat of the threatened Arkansas River Shiner, work crews should clean up any spills of solvents or other man-made compounds as quickly as possible and take measures to minimize erosion of disturbed soils during the construction process. I hope that this information will be useful for your environmental assessment.

Sincerely,

William J. Andrews, Ph.D.
Hydrologist

References

Carr, J.E., and Bergman, D.L., 1976, Reconnaissance of the water resources of the Clinton Quadrangle, West-central Oklahoma: Oklahoma Geological Survey, Hydrologic Atlas 5, 4 sheets.

Natural Resources Conservation Service, 2017, Web soil survey: Natural Resources Conservation Service, available online at <http://websoilsurvey.nrcs.usda.gov/>

U.S. Geological Survey, 1979, Fort Reno, Oklahoma: U.S. Geological Survey, 1:24,000 topographic quadrangle map, 1 sheet.



DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, TULSA DISTRICT
1645 SOUTH 101ST EAST AVENUE
TULSA, OKLAHOMA 74128-4609

June 29, 2017

Regulatory Office

Ms. Jennifer Bell
Senior Environmental Scientist
Burns & McDonnell
9785 Maroon Circle, Suite 400
Centennial, Colorado 80112

Dear Ms. Bell:

Please reference your submittal on behalf of the U.S. Department of Agriculture's Agricultural Research Station for replacement of two bridges located at the Grazinglands Research Laboratory; 7207 West Cheyenne Street; El Reno, Canadian County, Oklahoma. Submitted data indicates Bridge 'A' (North Latitude 35.56809, West Longitude 98.036306) crosses an unnamed tributary; Bridge 'D' (North Latitude 35.554889, West Longitude 98.025906) crosses Target Creek. Both tributaries to the North Canadian River are possibly jurisdictional waters of the United States.

Please review the enclosed Nationwide Permit 14 (NWP-14) for Linear Transportation Projects that pertains to your proposed placement of dredged or fill material into aquatic areas. Provided you comply with all the terms and conditions therein, the project may proceed at any time. Please respond if you cannot comply with the conditions of the NWP.

This NWP is scheduled to expire on March 18, 2022. It is incumbent on you to remain informed of changes to the NWP. The Corps will issue a public notice announcing the changes as they occur. Furthermore, if you commence or are under contract to commence the activity before the date the NWP is modified or revoked, you will have 12 months from the date of the modification or revocation to complete the activity under the present terms and conditions of this NWP.

Refer to Regulatory Office Permit Number SWT-2017-374 in correspondence. Questions may be addressed to Mr. Timothy Hartsfield at 918-669-7237.

Sincerely,

Michael A. Ware
Acting Chief, Regulatory Office

Nationwide Permit 14 - Linear Transportation Projects
Effective Date: March 19, 2017; Expiration Date: March 18, 2022
(NWP Final Notice, 82 FR 1860)

Nationwide Permit 14 - Linear Transportation Projects. Activities required for crossings of waters of the United States associated with the construction, expansion, modification, or improvement of linear transportation projects (e.g., roads, highways, railways, trails, airport runways, and taxiways) in waters of the United States. For linear transportation projects in non-tidal waters, the discharge cannot cause the loss of greater than 1/2-acre of waters of the United States. For linear transportation projects in tidal waters, the discharge cannot cause the loss of greater than 1/3-acre of waters of the United States. Any stream channel modification, including bank stabilization, is limited to the minimum necessary to construct or protect the linear transportation project; such modifications must be in the immediate vicinity of the project.

This NWP also authorizes temporary structures, fills, and work, including the use of temporary mats, necessary to construct the linear transportation project. Appropriate measures must be taken to maintain normal downstream flows and minimize flooding to the maximum extent practicable, when temporary structures, work, and discharges, including cofferdams, are necessary for construction activities, access fills, or dewatering of construction sites. Temporary fills must consist of materials, and be placed in a manner, that will not be eroded by expected high flows. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The areas affected by temporary fills must be revegetated, as appropriate.

This NWP cannot be used to authorize non-linear features commonly associated with transportation projects, such as vehicle maintenance or storage buildings, parking lots, train stations, or aircraft hangars.

Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity if: (1) the loss of waters of the United States exceeds 1/10-acre; or (2) there is a discharge in a special aquatic site, including wetlands. (See general condition 32.) (Authorities: Sections 10 and 404)

Note 1: For linear transportation projects crossing a single waterbody more than one time at separate and distant locations, or multiple waterbodies at separate and distant locations, each crossing is considered a single and complete project for purposes of NWP authorization. Linear transportation projects must comply with 33 CFR 330.6(d).

Note 2: Some discharges for the construction of farm roads or forest roads, or temporary roads for moving mining equipment, may qualify for an exemption under section 404(f) of the Clean Water Act (see 33 CFR 323.4).

Note 3: For NWP 14 activities that require pre-construction notification, the PCN must include any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity, including other separate and distant crossings that require Department of the Army authorization but do not require pre-construction notification (see paragraph (b) of general condition 32). The district engineer will evaluate the PCN in accordance with Section D, "District Engineer's Decision." The district engineer may require mitigation to ensure that the authorized activity results in no more than minimal individual and cumulative adverse environmental effects (see general condition 23).

A. Nationwide Permit General Conditions

Note: To qualify for NWP authorization, the prospective permittee must comply with the following general conditions, as applicable, in addition to any regional or case-specific conditions imposed by the division engineer or district engineer. Prospective permittees should contact the appropriate Corps district office to determine if regional conditions have been imposed on an NWP. Prospective permittees should also contact the appropriate Corps district office to determine the status of Clean Water Act Section 401 water quality certification and/ or

Coastal Zone Management Act consistency for an NWP. Every person who may wish to obtain permit authorization under one or more NWPs, or who is currently relying on an existing or prior permit authorization under one or more NWPs, has been and is on notice that all of the provisions of 33 CFR 330.1 through 330.6 apply to every NWP authorization. Note especially 33 CFR 330.5 relating to the modification, suspension, or revocation of any NWP authorization.

1. **Navigation.** (a) No activity may cause more than a minimal adverse effect on navigation. (b) Any safety lights and signals prescribed by the U.S. Coast Guard, through regulations or otherwise, must be installed and maintained at the permittee's expense on authorized facilities in navigable waters of the United States. (c) The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

2. **Aquatic Life Movements.** No activity may substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. All permanent and temporary crossings of waterbodies shall be suitably culverted, bridged, or otherwise designed and constructed to maintain low flows to sustain the movement of those aquatic species. If a bottomless culvert cannot be used, then the crossing should be designed and constructed to minimize adverse effects to aquatic life movements.

3. **Spawning Areas.** Activities in spawning areas during spawning seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g., through excavation, fill, or downstream smothering by substantial turbidity) of an important spawning area are not authorized.

4. **Migratory Bird Breeding Areas.** Activities in waters of the United States that serve as breeding areas for migratory birds must be avoided to the maximum extent practicable.

5. **Shellfish Beds.** No activity may occur in areas of concentrated shellfish populations, unless the activity is directly related to a shellfish harvesting activity authorized by NWPs 4 and 48, or is a shellfish seeding or habitat restoration activity authorized by NWP 27.

6. **Suitable Material.** No activity may use unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.). Material used for construction or discharged must be free from toxic pollutants in toxic amounts (see section 307 of the Clean Water Act).

7. **Water Supply Intakes.** No activity may occur in the proximity of a public water supply intake, except where the activity is for the repair or improvement of public water supply intake structures or adjacent bank stabilization.

8. **Adverse Effects from Impoundments.** If the activity creates an impoundment of water, adverse effects to the aquatic system due to accelerating the passage of water, and/or restricting its flow must be minimized to the maximum extent practicable.

9. **Management of Water Flows.** To the maximum extent practicable, the preconstruction course, condition, capacity, and location of open waters must be maintained for each activity, including stream channelization, storm water management activities, and temporary and permanent road crossings, except as provided below. The activity must be constructed to withstand expected high flows. The activity must not restrict or impede the passage of normal or high flows, unless the primary purpose of the activity is to impound water or manage high flows. The activity may alter the preconstruction course, condition, capacity, and location of open waters if it

benefits the aquatic environment (e.g., stream restoration or relocation activities).

10. **Fills Within 100-Year Floodplains.** The activity must comply with applicable FEMA-approved state or local floodplain management requirements.

11. **Equipment.** Heavy equipment working in wetlands or mudflats must be placed on mats, or other measures must be taken to minimize soil disturbance.

12. **Soil Erosion and Sediment Controls.** Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Permittees are encouraged to perform work within waters of the United States during periods of low-flow or no-flow, or during low tides.

13. **Removal of Temporary Fills.** Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The affected areas must be revegetated, as appropriate.

14. **Proper Maintenance.** Any authorized structure or fill shall be properly maintained, including maintenance to ensure public safety and compliance with applicable NWP general conditions, as well as any activity-specific conditions added by the district engineer to an NWP authorization.

15. **Single and Complete Project.** The activity must be a single and complete project. The same NWP cannot be used more than once for the same single and complete project.

16. **Wild and Scenic Rivers.**

(a) No NWP activity may occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, unless the appropriate Federal agency with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic River designation or study status.

(b) If a proposed NWP activity will occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, the permittee must submit a pre-construction notification (see general condition 32). The district engineer will coordinate the PCN with the Federal agency with direct management responsibility for that river. The permittee shall not begin the NWP activity until notified by the district engineer that the Federal agency with direct management responsibility for that river has determined in writing that the proposed NWP activity will not adversely affect the Wild and Scenic River designation or study status.

(c) Information on Wild and Scenic Rivers may be obtained from the appropriate Federal land management agency responsible for the designated Wild and Scenic River or study river (e.g., National Park Service, U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service). Information on these rivers is also available at: <http://www.rivers.gov/>.

17. **Tribal Rights.** No NWP activity may cause more than minimal adverse effects on tribal rights (including treaty rights), protected tribal resources, or tribal lands.

18. **Endangered Species.**

(a) No activity is authorized under any NWP which is likely to directly or indirectly jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act (ESA), or which will directly or indirectly destroy or adversely modify the

critical habitat of such species. No activity is authorized under any NWP which “may affect” a listed species or critical habitat, unless ESA section 7 consultation addressing the effects of the proposed activity has been completed. Direct effects are the immediate effects on listed species and critical habitat caused by the NWP activity. Indirect effects are those effects on listed species and critical habitat that are caused by the NWP activity and are later in time, but still are reasonably certain to occur.

(b) Federal agencies should follow their own procedures for complying with the requirements of the ESA. If preconstruction notification is required for the proposed activity, the Federal permittee must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will verify that the appropriate documentation has been submitted. If the appropriate documentation has not been submitted, additional ESA section 7 consultation may be necessary for the activity and the respective federal agency would be responsible for fulfilling its obligation under section 7 of the ESA.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if any listed species or designated critical habitat might be affected or is in the vicinity of the activity, or if the activity is located in designated critical habitat, and shall not begin work on the activity until notified by the district engineer that the requirements of the ESA have been satisfied and that the activity is authorized. For activities that might affect Federally-listed endangered or threatened species or designated critical habitat, the pre-construction notification must include the name(s) of the endangered or threatened species that might be affected by the proposed activity or that utilize the designated critical habitat that might be affected by the proposed activity. The district engineer will determine whether the proposed activity “may affect” or will have “no effect” to listed species and designated critical habitat and will notify the non-Federal applicant of the Corps’ determination within 45 days of receipt of a complete pre-construction notification. In cases where the non-Federal applicant has identified listed species or critical habitat that might be affected or is in the vicinity of the activity, and has so notified the Corps, the applicant shall not begin work until the Corps has provided notification that the proposed activity will have “no effect” on listed species or critical habitat, or until ESA section 7 consultation has been completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

(d) As a result of formal or informal consultation with the FWS or NMFS the district engineer may add species-specific permit conditions to the NWPs.

(e) Authorization of an activity by an NWP does not authorize the “take” of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with “incidental take” provisions, etc.) from the FWS or the NMFS, the Endangered Species Act prohibits any person subject to the jurisdiction of the United States to take a listed species, where “take” means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. The word “harm” in the definition of “take” means an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering.

(f) If the non-federal permittee has a valid ESA section 10(a)(1)(B) incidental take permit with an approved Habitat Conservation Plan for a project or a group of projects that includes the proposed NWP activity, the non-federal applicant should provide a copy of that ESA section 10(a)(1)(B) permit with the PCN required by paragraph (c) of this general condition. The district engineer will coordinate with the agency that issued the ESA section 10(a)(1)(B) permit to determine whether the proposed NWP activity and the associated incidental take were considered in the internal ESA section 7 consultation conducted for the ESA section 10(a)(1)(B) permit. If that coordination results in concurrence from the agency that the proposed NWP activity and the associated incidental take were considered in the internal ESA section 7 consultation for the ESA section 10(a)(1)(B) permit, the district engineer does not need to conduct a separate ESA section 7 consultation for the proposed NWP activity. The district engineer will notify the non-federal applicant within 45 days of receipt of a complete pre-construction notification whether the ESA section 10(a)(1)(B) permit covers the proposed NWP activity or whether

additional ESA section 7 consultation is required.

(g) Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the FWS and NMFS or their world wide Web pages at <http://www.fws.gov/> or <http://www.fws.gov/ipac> and <http://www.nmfs.noaa.gov/pr/species/esa/> respectively.

19. Migratory Birds and Bald and Golden Eagles. The permittee is responsible for ensuring their action complies with the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. The permittee is responsible for contacting appropriate local office of the U.S. Fish and Wildlife Service to determine applicable measures to reduce impacts to migratory birds or eagles, including whether “incidental take” permits are necessary and available under the Migratory Bird Treaty Act or Bald and Golden Eagle Protection Act for a particular activity.

20. Historic Properties. (a) In cases where the district engineer determines that the activity may have the potential to cause effects to properties listed, or eligible for listing, in the National Register of Historic Places, the activity is not authorized, until the requirements of Section 106 of the National Historic Preservation Act (NHPA) have been satisfied.

(b) Federal permittees should follow their own procedures for complying with the requirements of section 106 of the National Historic Preservation Act. If pre-construction notification is required for the proposed NWP activity, the Federal permittee must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will verify that the appropriate documentation has been submitted. If the appropriate documentation is not submitted, then additional consultation under section 106 may be necessary. The respective federal agency is responsible for fulfilling its obligation to comply with section 106.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if the NWP activity might have the potential to cause effects to any historic properties listed on, determined to be eligible for listing on, or potentially eligible for listing on the National Register of Historic Places, including previously unidentified properties. For such activities, the preconstruction notification must state which historic properties might have the potential to be affected by the proposed NWP activity or include a vicinity map indicating the location of the historic properties or the potential for the presence of historic properties. Assistance regarding information on the location of, or potential for, the presence of historic properties can be sought from the State Historic Preservation Officer, Tribal Historic Preservation Officer, or designated tribal representative, as appropriate, and the National Register of Historic Places (see 33 CFR 330.4(g)). When reviewing pre-construction notifications, district engineers will comply with the current procedures for addressing the requirements of section 106 of the National Historic Preservation Act. The district engineer shall make a reasonable and good faith effort to carry out appropriate identification efforts, which may include background research, consultation, oral history interviews, sample field investigation, and field survey. Based on the information submitted in the PCN and these identification efforts, the district engineer shall determine whether the proposed NWP activity has the potential to cause effects on the historic properties. Section 106 consultation is not required when the district engineer determines that the activity does not have the potential to cause effects on historic properties (see 36 CFR 800.3(a)). Section 106 consultation is required when the district engineer determines that the activity has the potential to cause effects on historic properties. The district engineer will conduct consultation with consulting parties identified under 36 CFR 800.2(c) when he or she makes any of the following effect determinations for the purposes of section 106 of the NHPA: no historic properties affected, no adverse effect, or adverse effect. Where the non-Federal applicant has identified historic properties on which the activity might have the potential to cause effects and so notified the Corps, the non-Federal applicant shall not begin the activity until notified by the district engineer either that the activity has no potential to cause effects to historic properties or that NHPA section 106 consultation has been completed.

(d) For non-federal permittees, the district engineer will notify the prospective permittee within 45 days of receipt

of a complete pre-construction notification whether NHPA section 106 consultation is required. If NHPA section 106 consultation is required, the district engineer will notify the non-Federal applicant that he or she cannot begin the activity until section 106 consultation is completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

(e) Prospective permittees should be aware that section 110k of the NHPA (54 U.S.C. 306113) prevents the Corps from granting a permit or other assistance to an applicant who, with intent to avoid the requirements of section 106 of the NHPA, has intentionally significantly adversely affected a historic property to which the permit would relate, or having legal power to prevent it, allowed such significant adverse effect to occur, unless the Corps, after consultation with the Advisory Council on Historic Preservation (ACHP), determines that circumstances justify granting such assistance despite the adverse effect created or permitted by the applicant. If circumstances justify granting the assistance, the Corps is required to notify the ACHP and provide documentation specifying the circumstances, the degree of damage to the integrity of any historic properties affected, and proposed mitigation. This documentation must include any views obtained from the applicant, SHPO/THPO, appropriate Indian tribes if the undertaking occurs on or affects historic properties on tribal lands or affects properties of interest to those tribes, and other parties known to have a legitimate interest in the impacts to the permitted activity on historic properties.

21. Discovery of Previously Unknown Remains and Artifacts. If you discover any previously unknown historic, cultural or archeological remains and artifacts while accomplishing the activity authorized by this permit, you must immediately notify the district engineer of what you have found, and to the maximum extent practicable, avoid construction activities that may affect the remains and artifacts until the required coordination has been completed. The district engineer will initiate the Federal, Tribal, and state coordination required to determine if the items or remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

22. Designated Critical Resource Waters. Critical resource waters include, NOAA-managed marine sanctuaries and marine monuments, and National Estuarine Research Reserves. The district engineer may designate, after notice and opportunity for public comment, additional waters officially designated by a state as having particular environmental or ecological significance, such as outstanding national resource waters or state natural heritage sites. The district engineer may also designate additional critical resource waters after notice and opportunity for public comment.

(a) Discharges of dredged or fill material into waters of the United States are not authorized by NWP 7, 12, 14, 16, 17, 21, 29, 31, 35, 39, 40, 42, 43, 44, 49, 50, 51, and 52 for any activity within, or directly affecting, critical resource waters, including wetlands adjacent to such waters.

(b) For NWPs 3, 8, 10, 13, 15, 18, 19, 22, 23, 25, 27, 28, 30, 33, 34, 36, 37, 38, and 54, notification is required in accordance with general condition 32, for any activity proposed in the designated critical resource waters including wetlands adjacent to those waters. The district engineer may authorize activities under these NWPs only after it is determined that the impacts to the critical resource waters will be no more than minimal.

23. Mitigation. The district engineer will consider the following factors when determining appropriate and practicable mitigation necessary to ensure that the individual and cumulative adverse environmental effects are no more than minimal:

(a) The activity must be designed and constructed to avoid and minimize adverse effects, both temporary and permanent, to waters of the United States to the maximum extent practicable at the project site (i.e., on site).

(b) Mitigation in all its forms (avoiding, minimizing, rectifying, reducing, or compensating for resource losses) will be required to the extent necessary to ensure that the individual and cumulative adverse environmental effects are no more than minimal.

(c) Compensatory mitigation at a minimum one-for-one ratio will be required for all wetland losses that exceed 1/10-acre and require preconstruction notification, unless the district engineer determines in writing that either some other form of mitigation would be more environmentally appropriate or the adverse environmental effects of the proposed activity are no more than minimal, and provides an activity-specific waiver of this requirement. For wetland losses of 1/10-acre or less that require preconstruction notification, the district engineer may determine on a case-by-case basis that compensatory mitigation is required to ensure that the activity results in only minimal adverse environmental effects.

(d) For losses of streams or other open waters that require pre-construction notification, the district engineer may require compensatory mitigation to ensure that the activity results in no more than minimal adverse environmental effects. Compensatory mitigation for losses of streams should be provided, if practicable, through stream rehabilitation, enhancement, or preservation, since streams are difficult to-replace resources (see 33 CFR 332.3(e)(3)).

(e) Compensatory mitigation plans for NWP activities in or near streams or other open waters will normally include a requirement for the restoration or enhancement, maintenance, and legal protection (e.g., conservation easements) of riparian areas next to open waters. In some cases, the restoration or maintenance/protection of riparian areas may be the only compensatory mitigation required. Restored riparian areas should consist of native species. The width of the required riparian area will address documented water quality or aquatic habitat loss concerns. Normally, the riparian area will be 25 to 50 feet wide on each side of the stream, but the district engineer may require slightly wider riparian areas to address documented water quality or habitat loss concerns. If it is not possible to restore or maintain/protect a riparian area on both sides of a stream, or if the waterbody is a lake or coastal waters, then restoring or maintaining/protecting a riparian area along a single bank or shoreline may be sufficient. Where both wetlands and open waters exist on the project site, the district engineer will determine the appropriate compensatory mitigation (e.g., riparian areas and/or wetlands compensation) based on what is best for the aquatic environment on a watershed basis. In cases where riparian areas are determined to be the most appropriate form of minimization or compensatory mitigation, the district engineer may waive or reduce the requirement to provide wetland compensatory mitigation for wetland losses.

(f) Compensatory mitigation projects provided to offset losses of aquatic resources must comply with the applicable provisions of 33 CFR part 332.

(1) The prospective permittee is responsible for proposing an appropriate compensatory mitigation option if compensatory mitigation is necessary to ensure that the activity results in no more than minimal adverse environmental effects. For the NWPs, the preferred mechanism for providing compensatory mitigation is mitigation bank credits or in-lieu fee program credits (see 33 CFR 332.3(b)(2) and (3)). However, if an appropriate number and type of mitigation bank or in-lieu credits are not available at the time the PCN is submitted to the district engineer, the district engineer may approve the use of permittee-responsible mitigation.

(2) The amount of compensatory mitigation required by the district engineer must be sufficient to ensure that the authorized activity results in no more than minimal individual and cumulative adverse environmental effects (see 33 CFR 330.1(e)(3)). (See also 33 CFR 332.3(f)).

(3) Since the likelihood of success is greater and the impacts to potentially valuable uplands are reduced, aquatic resource restoration should be the first compensatory mitigation option considered for permittee-responsible mitigation.

(4) If permittee-responsible mitigation is the proposed option, the prospective permittee is responsible for submitting a mitigation plan. A conceptual or detailed mitigation plan may be used by the district engineer to make the decision on the NWP verification request, but a final mitigation plan that addresses the applicable requirements of 33 CFR 332.4(c)(2) through (14) must be approved by the district engineer before the permittee

begins work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation (see 33 CFR 332.3(k)(3)).

(5) If mitigation bank or in-lieu fee program credits are the proposed option, the mitigation plan only needs to address the baseline conditions at the impact site and the number of credits to be provided.

(6) Compensatory mitigation requirements (e.g., resource type and amount to be provided as compensatory mitigation, site protection, ecological performance standards, monitoring requirements) may be addressed through conditions added to the NWP authorization, instead of components of a compensatory mitigation plan (see 33 CFR 332.4(c)(1)(ii)).

(g) Compensatory mitigation will not be used to increase the acreage losses allowed by the acreage limits of the NWPs. For example, if an NWP has an acreage limit of 1/2-acre, it cannot be used to authorize any NWP activity resulting in the loss of greater than 1/2- acre of waters of the United States, even if compensatory mitigation is provided that replaces or restores some of the lost waters. However, compensatory mitigation can and should be used, as necessary, to ensure that an NWP activity already meeting the established acreage limits also satisfies the no more than minimal impact requirement for the NWPs.

(h) Permittees may propose the use of mitigation banks, in-lieu fee programs, or permittee- responsible mitigation. When developing a compensatory mitigation proposal, the permittee must consider appropriate and practicable options consistent with the framework at 33 CFR 332.3(b). For activities resulting in the loss of marine or estuarine resources, permittee responsible mitigation may be environmentally preferable if there are no mitigation banks or in- lieu fee programs in the area that have marine or estuarine credits available for sale or transfer to the permittee. For permittee responsible mitigation, the special conditions of the NWP verification must clearly indicate the party or parties responsible for the implementation and performance of the compensatory mitigation project, and, if required, its long-term management.

(i) Where certain functions and services of waters of the United States are permanently adversely affected by a regulated activity, such as discharges of dredged or fill material into waters of the United States that will convert a forested or scrub-shrub wetland to a herbaceous wetland in a permanently maintained utility line right-of-way, mitigation may be required to reduce the adverse environmental effects of the activity to the no more than minimal level.

24. Safety of Impoundment Structures. To ensure that all impoundment structures are safely designed, the district engineer may require non-Federal applicants to demonstrate that the structures comply with established state dam safety criteria or have been designed by qualified persons. The district engineer may also require documentation that the design has been independently reviewed by similarly qualified persons, and appropriate modifications made to ensure safety.

25. Water Quality. Where States and authorized Tribes, or EPA where applicable, have not previously certified compliance of an NWP with CWA section 401, individual 401 Water Quality Certification must be obtained or waived (see 33 CFR 330.4(c)). The district engineer or State or Tribe may require additional water quality management measures to ensure that the authorized activity does not result in more than minimal degradation of water quality.

26. Coastal Zone Management. In coastal states where an NWP has not previously received a state coastal zone management consistency concurrence, an individual state coastal zone management consistency concurrence must be obtained, or a presumption of concurrence must occur (see 33 CFR 330.4(d)). The district engineer or a State may require additional measures to ensure that the authorized activity is consistent with state coastal zone management requirements.

27. Regional and Case-By-Case Conditions. The activity must comply with any regional conditions that may have been added by the Division Engineer (see 33 CFR 330.4(e)) and with any case specific conditions added by the Corps or by the state, Indian Tribe, or U.S. EPA in its section 401 Water Quality Certification, or by the state in its Coastal Zone Management Act consistency determination.

28. Use of Multiple Nationwide Permits. Use of Multiple Nationwide Permits. The use of more than one NWP for a single and complete project is prohibited, except when the acreage loss of waters of the United States authorized by the NWPs does not exceed the acreage limit of the NWP with the highest specified acreage limit. For example, if a road crossing over tidal waters is constructed under NWP 14, with associated bank stabilization authorized by NWP 13, the maximum acreage loss of waters of the United States for the total project cannot exceed 1/3- acre.

29. Transfer of Nationwide Permit Verifications. If the permittee sells the property associated with a nationwide permit verification, the permittee may transfer the nationwide permit verification to the new owner by submitting a letter to the appropriate Corps district office to validate the transfer. A copy of the nationwide permit verification must be attached to the letter, and the letter must contain the following statement and signature:

“When the structures or work authorized by this nationwide permit are still in existence at the time the property is transferred, the terms and conditions of this nationwide permit, including any special conditions, will continue to be binding on the new owner(s) of the property. To validate the transfer of this nationwide permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.”

(Transferee)

(Date)

30. Compliance Certification. Each permittee who receives an NWP verification letter from the Corps must provide a signed certification documenting completion of the authorized activity and implementation of any required compensatory mitigation. The success of any required permittee-responsible mitigation, including the achievement of ecological performance standards, will be addressed separately by the district engineer. The Corps will provide the permittee the certification document with the NWP verification letter. The certification document will include:

(a) A statement that the authorized activity was done in accordance with the NWP authorization, including any general, regional, or activity-specific conditions;

(b) A statement that the implementation of any required compensatory mitigation was completed in accordance with the permit conditions. If credits from a mitigation bank or in-lieu fee program are used to satisfy the compensatory mitigation requirements, the certification must include the documentation required by 33 CFR 332.3(l)(3) to confirm that the permittee secured the appropriate number and resource type of credits; and

(c) The signature of the permittee certifying the completion of the activity and mitigation. The completed certification document must be submitted to the district engineer within 30 days of completion of the

authorized activity or the implementation of any required compensatory mitigation, whichever occurs later.

31. **Activities Affecting Structures or Works Built by the United States.** If an NWP activity also requires permission from the Corps pursuant to 33 U.S.C. 408 because it will alter or temporarily or permanently occupy or use a U.S. Army Corps of Engineers (USACE) federally authorized Civil Works project (a "USACE project"), the prospective permittee must submit a preconstruction notification. See paragraph (b)(10) of general condition 32. An activity that requires section 408 permission is not authorized by NWP until the appropriate Corps office issues the section 408 permission to alter, occupy, or use the USACE project, and the district engineer issues a written NWP verification.

32. **Pre-Construction Notification.** (a) **Timing.** Where required by the terms of the NWP, the prospective permittee must notify the district engineer by submitting a pre-construction notification (PCN) as early as possible. The district engineer must determine if the PCN is complete within 30 calendar days of the date of receipt and, if the PCN is determined to be incomplete, notify the prospective permittee within that 30 day period to request the additional information necessary to make the PCN complete. The request must specify the information needed to make the PCN complete. As a general rule, district engineers will request additional information necessary to make the PCN complete only once. However, if the prospective permittee does not provide all of the requested information, then the district engineer will notify the prospective permittee that the PCN is still incomplete and the PCN review process will not commence until all of the requested information has been received by the district engineer. The prospective permittee shall not begin the activity until either:

(1) He or she is notified in writing by the district engineer that the activity may proceed under the NWP with any special conditions imposed by the district or division engineer; or

(2) 45 calendar days have passed from the district engineer's receipt of the complete PCN and the prospective permittee has not received written notice from the district or division engineer. However, if the permittee was required to notify the Corps pursuant to general condition 18 that listed species or critical habitat might be affected or are in the vicinity of the activity, or to notify the Corps pursuant to general condition 20 that the activity might have the potential to cause effects to historic properties, the permittee cannot begin the activity until receiving written notification from the Corps that there is "no effect" on listed species or "no potential to cause effects" on historic properties, or that any consultation required under Section 7 of the Endangered Species Act (see 33 CFR 330.4(f)) and/or section 106 of the National Historic Preservation Act (see 33 CFR 330.4(g)) has been completed. Also, work cannot begin under NWPs 21, 49, or 50 until the permittee has received written approval from the Corps. If the proposed activity requires a written waiver to exceed specified limits of an NWP, the permittee may not begin the activity until the district engineer issues the waiver. If the district or division engineer notifies the permittee in writing that an individual permit is required within 45 calendar days of receipt of a complete PCN, the permittee cannot begin the activity until an individual permit has been obtained. Subsequently, the permittee's right to proceed under the NWP may be modified, suspended, or revoked only in accordance with the procedure set forth in 33 CFR 330.5(d)(2).

(b) **Contents of Pre-Construction Notification:** The PCN must be in writing and include the following information:

(1) Name, address and telephone numbers of the prospective permittee;

(2) Location of the proposed activity;

(3) Identify the specific NWP or NWP(s) the prospective permittee wants to use to authorize the proposed activity;

(4) A description of the proposed activity; the activity's purpose; direct and indirect adverse environmental effects the activity would cause, including the anticipated amount of loss of wetlands, other special aquatic sites, and

other waters expected to result from the NWP activity, in acres, linear feet, or other appropriate unit of measure; a description of any proposed mitigation measures intended to reduce the adverse environmental effects caused by the proposed activity; and any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity, including other separate and distant crossings for linear projects that require Department of the Army authorization but do not require pre-construction notification. The description of the proposed activity and any proposed mitigation measures should be sufficiently detailed to allow the district engineer to determine that the adverse environmental effects of the activity will be no more than minimal and to determine the need for compensatory mitigation or other mitigation measures. For single and complete linear projects, the PCN must include the quantity of anticipated losses of wetlands, other special aquatic sites, and other waters for each single and complete crossing of those wetlands, other special aquatic sites, and other waters. Sketches should be provided when necessary to show that the activity complies with the terms of the NWP. (Sketches usually clarify the activity and when provided results in a quicker decision. Sketches usually clarify the activity and when provided results in a quicker decision. Sketches should contain sufficient detail to provide an illustrative description of the proposed activity (e.g., a conceptual plan), but do not need to be detailed engineering plans);

(5) The PCN must include a delineation of wetlands, other special aquatic sites, and other waters, such as lakes and ponds, and perennial, intermittent, and ephemeral streams, on the project site. Wetland delineations must be prepared in accordance with the current method required by the Corps. The permittee may ask the Corps to delineate the special aquatic sites and other waters on the project site, but there may be a delay if the Corps does the delineation, especially if the project site is large or contains many wetlands, other special aquatic sites, and other waters. Furthermore, the 45 day period will not start until the delineation has been submitted to or completed by the Corps, as appropriate;

(6) If the proposed activity will result in the loss of greater than 1/10-acre of wetlands and a PCN is required, the prospective permittee must submit a statement describing how the mitigation requirement will be satisfied, or explaining why the adverse environmental effects are no more than minimal and why compensatory mitigation should not be required. As an alternative, the prospective permittee may submit a conceptual or detailed mitigation plan.

(7) For non-Federal permittees, if any listed species or designated critical habitat might be affected or is in the vicinity of the activity, or if the activity is located in designated critical habitat, the PCN must include the name(s) of those endangered or threatened species that might be affected by the proposed activity or utilize the designated critical habitat that might be affected by the proposed activity. For NWP activities that require pre-construction notification, Federal permittees must provide documentation demonstrating compliance with the Endangered Species Act;

(8) For non-Federal permittees, if the NWP activity might have the potential to cause effects to a historic property listed on, determined to be eligible for listing on, or potentially eligible for listing on, the National Register of Historic Places, the PCN must state which historic property might have the potential to be affected by the proposed activity or include a vicinity map indicating the location of the historic property. For NWP activities that require pre-construction notification, Federal permittees must provide documentation demonstrating compliance with section 106 of the National Historic Preservation Act;

(9) For an activity that will occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, the PCN must identify the Wild and Scenic River or the "study river" (see general condition 16); and

(10) For an activity that requires permission from the Corps pursuant to 33 U.S.C. 408 because it will alter or temporarily or permanently occupy or use a U.S. Army Corps of Engineers federally authorized civil works project, the pre-construction notification must include a statement confirming that the project proponent has submitted a written request for section 408 permission from the Corps office having jurisdiction over that USACE

project.

(c) Form of Pre-Construction Notification: The standard individual permit application form (Form ENG 4345) may be used, but the completed application form must clearly indicate that it is an NWP PCN and must include all of the applicable information required in paragraphs (b)(1) through (10) of this general condition. A letter containing the required information may also be used. Applicants may provide electronic files of PCNs and supporting materials if the district engineer has established tools and procedures for electronic submittals.

(d) Agency Coordination: (1) The district engineer will consider any comments from Federal and state agencies concerning the proposed activity's compliance with the terms and conditions of the NWPs and the need for mitigation to reduce the activity's adverse environmental effects so that they are no more than minimal.

(2) Agency coordination is required for: (i) All NWP activities that require pre-construction notification and result in the loss of greater than 1/2-acre of waters of the United States; (ii) NWP 21, 29, 39, 40, 42, 43, 44, 50, 51, and 52 activities that require pre-construction notification and will result in the loss of greater than 300 linear feet of stream bed; (iii) NWP 13 activities in excess of 500 linear feet, fills greater than one cubic yard per running foot, or involve discharges of dredged or fill material into special aquatic sites; and (iv) NWP 54 activities in excess of 500 linear feet, or that extend into the waterbody more than 30 feet from the mean low water line in tidal waters or the ordinary high water mark in the Great Lakes.

(3) When agency coordination is required, the district engineer will immediately provide (e.g., via email, facsimile transmission, overnight mail, or other expeditious manner) a copy of the complete PCN to the appropriate Federal or state offices (FWS, state natural resource or water quality agency, EPA, and, if appropriate, the NMFS). With the exception of NWP 37, these agencies will have 10 calendar days from the date the material is transmitted to notify the district engineer via telephone, facsimile transmission, or email that they intend to provide substantive, site-specific comments. The comments must explain why the agency believes the adverse environmental effects will be more than minimal. If so contacted by an agency, the district engineer will wait an additional 15 calendar days before making a decision on the preconstruction notification. The district engineer will fully consider agency comments received within the specified time frame concerning the proposed activity's compliance with the terms and conditions of the NWPs, including the need for mitigation to ensure the net adverse environmental effects of the proposed activity are no more than minimal. The district engineer will provide no response to the resource agency, except as provided below. The district engineer will indicate in the administrative record associated with each pre-construction notification that the resource agencies' concerns were considered. For NWP 37, the emergency watershed protection and rehabilitation activity may proceed immediately in cases where there is an unacceptable hazard to life or a significant loss of property or economic hardship will occur. The district engineer will consider any comments received to decide whether the NWP 37 authorization should be modified, suspended, or revoked in accordance with the procedures at 33 CFR 330.5.

(4) In cases of where the prospective permittee is not a Federal agency, the district engineer will provide a response to NMFS within 30 calendar days of receipt of any Essential Fish Habitat conservation recommendations, as required by section 305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation and Management Act.

(5) Applicants are encouraged to provide the Corps with either electronic files or multiple copies of preconstruction notifications to expedite agency coordination.

B. District Engineer's Decision.

1. In reviewing the PCN for the proposed activity, the district engineer will determine whether the activity authorized by the NWP will result in more than minimal individual or cumulative adverse environmental effects or may be contrary to the public interest. If a project proponent requests authorization by a specific NWP, the district engineer should issue the NWP verification for that activity if it meets the terms and conditions of that NWP, unless he or she determines, after considering mitigation, that the proposed activity will result in more than

minimal individual and cumulative adverse effects on the aquatic environment and other aspects of the public interest and exercises discretionary authority to require an individual permit for the proposed activity. For a linear project, this determination will include an evaluation of the individual crossings of waters of the United States to determine whether they individually satisfy the terms and conditions of the NWP(s), as well as the cumulative effects caused by all of the crossings authorized by NWP. If an applicant requests a waiver of the 300 linear foot limit on impacts to streams or of an otherwise applicable limit, as provided for in NWPs 13, 21, 29, 36, 39, 40, 42, 43, 44, 50, 51, 52, or 54, the district engineer will only grant the waiver upon a written determination that the NWP activity will result in only minimal individual and cumulative adverse environmental effects. For those NWPs that have a waivable 300 linear foot limit for losses of intermittent and ephemeral stream bed and a 1/2-acre limit (i.e., NWPs 21, 29, 39, 40, 42, 43, 44, 50, 51, and 52), the loss of intermittent and ephemeral stream bed, plus any other losses of jurisdictional waters and wetlands, cannot exceed 1/2- acre.

2. When making minimal adverse environmental effects determinations the district engineer will consider the direct and indirect effects caused by the NWP activity. He or she will also consider the cumulative adverse environmental effects caused by activities authorized by NWP and whether those cumulative adverse environmental effects are no more than minimal. The district engineer will also consider site specific factors, such as the environmental setting in the vicinity of the NWP activity, the type of resource that will be affected by the NWP activity, the functions provided by the aquatic resources that will be affected by the NWP activity, the degree or magnitude to which the aquatic resources perform those functions, the extent that aquatic resource functions will be lost as a result of the NWP activity (e.g., partial or complete loss), the duration of the adverse effects (temporary or permanent), the importance of the aquatic resource functions to the region (e.g., watershed or ecoregion), and mitigation required by the district engineer. If an appropriate functional or condition assessment method is available and practicable to use, that assessment method may be used by the district engineer to assist in the minimal adverse environmental effects determination. The district engineer may add case-specific special conditions to the NWP authorization to address site-specific environmental concerns.

3. If the proposed activity requires a PCN and will result in a loss of greater than 1/10-acre of wetlands, the prospective permittee should submit a mitigation proposal with the PCN. Applicants may also propose compensatory mitigation for NWP activities with smaller impacts, or for impacts to other types of waters (e.g., streams). The district engineer will consider any proposed compensatory mitigation or other mitigation measures the applicant has included in the proposal in determining whether the net adverse environmental effects of the proposed activity are no more than minimal. The compensatory mitigation proposal may be either conceptual or detailed. If the district engineer determines that the activity complies with the terms and conditions of the NWP and that the adverse environmental effects are no more than minimal, after considering mitigation, the district engineer will notify the permittee and include any activity specific conditions in the NWP verification the district engineer deems necessary. Conditions for compensatory mitigation requirements must comply with the appropriate provisions at 33 CFR 332.3(k). The district engineer must approve the final mitigation plan before the permittee commences work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation. If the prospective permittee elects to submit a compensatory mitigation plan with the PCN, the district engineer will expeditiously review the proposed compensatory mitigation plan. The district engineer must review the proposed compensatory mitigation plan within 45 calendar days of receiving a complete PCN and determine whether the proposed mitigation would ensure the NWP activity results in no more than minimal adverse environmental effects. If the net adverse environmental effects of the NWP activity (after consideration of the mitigation proposal) are determined by the district engineer to be no more than minimal, the district engineer will provide a timely written response to the applicant. The response will state that the NWP activity can proceed under the terms and conditions of the NWP, including any activity-specific conditions added to the NWP authorization by the district engineer.

4. If the district engineer determines that the adverse environmental effects of the proposed activity are more than minimal, then the district engineer will notify the applicant either: (a) That the activity does not qualify for authorization under the NWP and instruct the applicant on the procedures to seek authorization under an

individual permit; (b) that the activity is authorized under the NWP subject to the applicant's submission of a mitigation plan that would reduce the adverse environmental effects so that they are no more than minimal; or (c) that the activity is authorized under the NWP with specific modifications or conditions. Where the district engineer determines that mitigation is required to ensure no more than minimal adverse environmental effects, the activity will be authorized within the 45-day PCN period (unless additional time is required to comply with general conditions 18, 20, and/or 31, or to evaluate PCNs for activities authorized by NWPs 21, 49, and 50), with activity specific conditions that state the mitigation requirements. The authorization will include the necessary conceptual or detailed mitigation plan or a requirement that the applicant submit a mitigation plan that would reduce the adverse environmental effects so that they are no more than minimal. When compensatory mitigation is required, no work in waters of the United States may occur until the district engineer has approved a specific mitigation plan or has determined that prior approval of a final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation.

C. Further Information

1. District Engineers have authority to determine if an activity complies with the terms and conditions of an NWP.
2. NWPs do not obviate the need to obtain other federal, state, or local permits, approvals, or authorizations required by law.
3. NWPs do not grant any property rights or exclusive privileges.
4. NWPs do not authorize any injury to the property or rights of others.
5. NWPs do not authorize interference with any existing or proposed Federal project (see general condition 31).

D. Definitions

Best management practices (BMPs): Policies, practices, procedures, or structures implemented to mitigate the adverse environmental effects on surface water quality resulting from development. BMPs are categorized as structural or non-structural.

Compensatory mitigation: The restoration (re-establishment or rehabilitation), establishment (creation), enhancement, and/or in certain circumstances preservation of aquatic resources for the purposes of offsetting unavoidable adverse impacts which remain after all appropriate and practicable avoidance and minimization has been achieved.

Currently serviceable: Useable as is or with some maintenance, but not so degraded as to essentially require reconstruction.

Direct effects: Effects that are caused by the activity and occur at the same time and place.

Discharge: The term "discharge" means any discharge of dredged or fill material into waters of the United States.

Ecological reference: A model used to plan and design an aquatic habitat and riparian area restoration, enhancement, or establishment activity under NWP 27. An ecological reference may be based on the structure, functions, and dynamics of an aquatic habitat type or a riparian area type that currently exists in the region where the proposed NWP 27 activity is located. Alternatively, an ecological reference may be based on a conceptual model for the aquatic habitat type or riparian area type to be restored, enhanced, or established as a result of the

proposed NWP 27 activity. An ecological reference takes into account the range of variation of the aquatic habitat type or riparian area type in the region.

Enhancement: The manipulation of the physical, chemical, or biological characteristics of an aquatic resource to heighten, intensify, or improve a specific aquatic resource function(s). Enhancement results in the gain of selected aquatic resource function(s), but may also lead to a decline in other aquatic resource function(s). Enhancement does not result in a gain in aquatic resource area.

Ephemeral stream: An ephemeral stream has flowing water only during, and for a short duration after, precipitation events in a typical year. Ephemeral stream beds are located above the water table year-round. Groundwater is not a source of water for the stream. Runoff from rainfall is the primary source of water for stream flow.

Establishment (creation): The manipulation of the physical, chemical, or biological characteristics present to develop an aquatic resource that did not previously exist at an upland site. Establishment results in a gain in aquatic resource area.

High Tide Line: The line of intersection of the land with the water's surface at the maximum height reached by a rising tide. The high tide line may be determined, in the absence of actual data, by a line of oil or scum along shore objects, a more or less continuous deposit of fine shell or debris on the foreshore or berm, other physical markings or characteristics, vegetation lines, tidal gages, or other suitable means that delineate the general height reached by a rising tide. The line encompasses spring high tides and other high tides that occur with periodic frequency but does not include storm surges in which there is a departure from the normal or predicted reach of the tide due to the piling up of water against a coast by strong winds such as those accompanying a hurricane or other intense storm.

Historic Property: Any prehistoric or historic district, site (including archaeological site), building, structure, or other object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria (36 CFR part 60).

Independent utility: A test to determine what constitutes a single and complete non-linear project in the Corps Regulatory Program. A project is considered to have independent utility if it would be constructed absent the construction of other projects in the project area. Portions of a multi-phase project that depend upon other phases of the project do not have independent utility. Phases of a project that would be constructed even if the other phases were not built can be considered as separate single and complete projects with independent utility.

Indirect effects: Effects that are caused by the activity and are later in time or farther removed in distance, but are still reasonably foreseeable.

Intermittent stream: An intermittent stream has flowing water during certain times of the year, when groundwater provides water for stream flow. During dry periods, intermittent streams may not have flowing water. Runoff from rainfall is a supplemental source of water for stream flow.

Loss of waters of the United States: Waters of the United States that are permanently adversely affected by filling, flooding, excavation, or drainage because of the regulated activity. Permanent adverse effects include permanent discharges of dredged or fill material that change an aquatic area to dry land, increase the bottom elevation of a waterbody, or change the use of a waterbody. The acreage of loss of waters of the United States is a threshold measurement of the impact to jurisdictional waters for determining whether a project may qualify for an NWP; it is not a net threshold that is calculated after considering compensatory mitigation that may be used to offset losses of aquatic functions and services. The loss of stream bed includes the acres or linear feet of stream

bed that are filled or excavated as a result of the regulated activity. Waters of the United States temporarily filled, flooded, excavated, or drained, but restored to pre-construction contours and elevations after construction, are not included in the measurement of loss of waters of the United States. Impacts resulting from activities that do not require Department of the Army authorization, such as activities eligible for exemptions under section 404(f) of the Clean Water Act, are not considered when calculating the loss of waters of the United States.

Navigable waters: Waters subject to section 10 of the Rivers and Harbors Act of 1899. These waters are defined at 33 CFR part 329.

Non-tidal wetland: A non-tidal wetland is a wetland that is not subject to the ebb and flow of tidal waters. Non-tidal wetlands contiguous to tidal waters are located landward of the high tide line (i.e., spring high tide line).

Open water: For purposes of the NHPs, an open water is any area that in a year with normal patterns of precipitation has water flowing or standing above ground to the extent that an ordinary high water mark can be determined. Aquatic vegetation within the area of flowing or standing water is either non-emergent, sparse, or absent. Vegetated shallows are considered to be open waters. Examples of “open waters” include rivers, streams, lakes, and ponds.

Ordinary High Water Mark: An ordinary high water mark is a line on the shore established by the fluctuations of water and indicated by physical characteristics, or by other appropriate means that consider the characteristics of the surrounding areas.

Perennial stream: A perennial stream has flowing water year-round during a typical year. The water table is located above the stream bed for most of the year. Groundwater is the primary source of water for stream flow. Runoff from rainfall is a supplemental source of water for stream flow.

Practicable: Available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes.

Pre-construction notification: A request submitted by the project proponent to the Corps for confirmation that a particular activity is authorized by nationwide permit. The request may be a permit application, letter, or similar document that includes information about the proposed work and its anticipated environmental effects. Preconstruction notification may be required by the terms and conditions of a nationwide permit, or by regional conditions. A pre-construction notification may be voluntarily submitted in cases where preconstruction notification is not required and the project proponent wants confirmation that the activity is authorized by nationwide permit.

Preservation: The removal of a threat to, or preventing the decline of, aquatic resources by an action in or near those aquatic resources. This term includes activities commonly associated with the protection and maintenance of aquatic resources through the implementation of appropriate legal and physical mechanisms. Preservation does not result in a gain of aquatic resource area or functions.

Protected tribal resources: Those natural resources and properties of traditional or customary religious or cultural importance, either on or off Indian lands, retained by, or reserved by or for, Indian tribes through treaties, statutes, judicial decisions, or executive orders, including tribal trust resources.

Re-establishment: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former aquatic resource. Reestablishment results in rebuilding a former aquatic resource and results in a gain in aquatic resource area and functions.

Rehabilitation: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of repairing natural/historic functions to a degraded aquatic resource. Rehabilitation results in a gain in aquatic

resource function, but does not result in a gain in aquatic resource area.

Restoration: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former or degraded aquatic resource. For the purpose of tracking net gains in aquatic resource area, restoration is divided into two categories: Reestablishment and rehabilitation.

Riffle and pool complex: Riffle and pool complexes are special aquatic sites under the 404(b)(1) Guidelines. Riffle and pool complexes sometimes characterize steep gradient sections of streams. Such stream sections are recognizable by their hydraulic characteristics. The rapid movement of water over a coarse substrate in riffles results in a rough flow, a turbulent surface, and high dissolved oxygen levels in the water. Pools are deeper areas associated with riffles. A slower stream velocity, a streaming flow, a smooth surface, and a finer substrate characterize pools.

Riparian areas: Riparian areas are lands next to streams, lakes, and estuarine-marine shorelines. Riparian areas are transitional between terrestrial and aquatic ecosystems, through which surface and subsurface hydrology connects riverine, lacustrine, estuarine, and marine waters with their adjacent wetlands, non-wetland waters, or uplands. Riparian areas provide a variety of ecological functions and services and help improve or maintain local water quality. (See general condition 23.)

Shellfish seeding: The placement of shellfish seed and/or suitable substrate to increase shellfish production. Shellfish seed consists of immature individual shellfish or individual shellfish attached to shells or shell fragments (i.e., spat on shell). Suitable substrate may consist of shellfish shells, shell fragments, or other appropriate materials placed into waters for shellfish habitat.

Single and complete linear project: A linear project is a project constructed for the purpose of getting people, goods, or services from a point of origin to a terminal point, which often involves multiple crossings of one or more waterbodies at separate and distant locations. The term "single and complete project" is defined as that portion of the total linear project proposed or accomplished by one owner/developer or partnership or other association of owners/developers that includes all crossings of a single water of the United States (i.e., a single waterbody) at a specific location. For linear projects crossing a single or multiple waterbodies several times at separate and distant locations, each crossing is considered a single and complete project for purposes of NWP authorization. However, individual channels in a braided stream or river, or individual arms of a large, irregularly shaped wetland or lake, etc., are not separate waterbodies, and crossings of such features cannot be considered separately.

Single and complete non-linear project: For non-linear projects, the term "single and complete project" is defined at 33 CFR 330.2(i) as the total project proposed or accomplished by one owner/developer or partnership or other association of owners/developers. A single and complete non-linear project must have independent utility (see definition of "independent utility"). Single and complete non-linear projects may not be "piecemealed" to avoid the limits in an NWP authorization. Stormwater management: Stormwater management is the mechanism for controlling stormwater runoff for the purposes of reducing downstream erosion, water quality degradation, and flooding and mitigating the adverse effects of changes in land use on the aquatic environment.

Stormwater management facilities: Stormwater management facilities are those facilities, including but not limited to, stormwater retention and detention ponds and best management practices, which retain water for a period of time to control runoff and/or improve the quality (i.e., by reducing the concentration of nutrients, sediments, hazardous substances and other pollutants) of stormwater runoff.

Stream bed: The substrate of the stream channel between the ordinary high water marks. The substrate may be bedrock or inorganic particles that range in size from clay to boulders. Wetlands contiguous to the stream bed, but outside of the ordinary high water marks, are not considered part of the stream bed.

Stream channelization: The manipulation of a stream's course, condition, capacity, or location that causes more than minimal interruption of normal stream processes. A channelized stream remains a water of the United States.

Structure: An object that is arranged in a definite pattern of organization. Examples of structures include, without limitation, any pier, boat dock, boat ramp, wharf, dolphin, weir, boom, breakwater, bulkhead, revetment, riprap, jetty, artificial island, artificial reef, permanent mooring structure, power transmission line, permanently moored floating vessel, piling, aid to navigation, or any other manmade obstacle or obstruction.

Tidal wetland: A tidal wetland is a jurisdictional wetland that is inundated by tidal waters. Tidal waters rise and fall in a predictable and measurable rhythm or cycle due to the gravitational pulls of the moon and sun. Tidal waters end where the rise and fall of the water surface can no longer be practically measured in a predictable rhythm due to masking by other waters, wind, or other effects. Tidal wetlands are located channelward of the high tide line.

Tribal lands: Any lands title to which is either: (1) Held in trust by the United States for the benefit of any Indian tribe or individual; or (2) held by any Indian tribe or individual subject to restrictions by the United States against alienation.

Tribal rights: Those rights legally accruing to a tribe or tribes by virtue of inherent sovereign authority, unextinguished aboriginal title, treaty, statute, judicial decisions, executive order or agreement, and that give rise to legally enforceable remedies.

Vegetated shallows: Vegetated shallows are special aquatic sites under the 404(b)(1) Guidelines. They are areas that are permanently inundated and under normal circumstances have rooted aquatic vegetation, such as seagrasses in marine and estuarine systems and a variety of vascular rooted plants in freshwater systems.

Waterbody: For purposes of the NWP, a waterbody is a jurisdictional water of the United States. If a wetland is adjacent to a waterbody determined to be a water of the United States, that waterbody and any adjacent wetlands are considered together as a single aquatic unit (see 33 CFR 328.4(c)(2)). Examples of "waterbodies" include streams, rivers, lakes, ponds, and wetlands.

ADDITIONAL INFORMATION

Information about the U.S. Army Corps of Engineers regulatory program, including nationwide permits, may also be accessed at <http://www.swt.usace.army.mil/Missions/Regulatory.aspx> or <http://www.usace.army.mil/Missions/CivilWorks/RegulatoryProgramandPermits.aspx>



United States Department of Agriculture

June 8, 2017

Jennifer Bell
Burns & McDonnell
9785 Maroon Circle, Suite 400
Centennial, CO 80112

Re: USDA-ARS Grazinglands Research Laboratory, El Reno, Oklahoma
Environmental Assessment for Bridge Replacement Project
Burns & McDonnell Project #95531

Dear Ms. Bell:

Per your request, we have reviewed the subject project information and determined that the proposed project will not impact any easements, watersheds or prime farmland soils as defined by the Farmland Protection Policy Act.

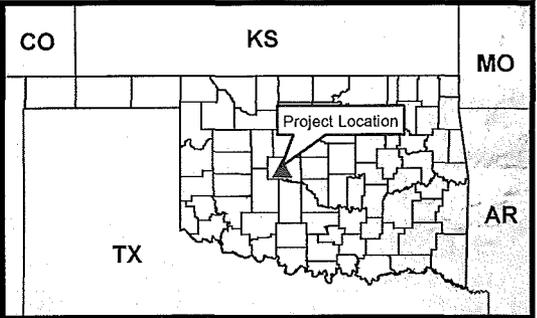
If I can be of further assistance, let me know.

Sincerely,

A handwritten signature in black ink that reads "Steve Glasgow". The signature is written in a cursive, flowing style.

Steve Glasgow
STATE RESOURCE CONSERVATIONIST

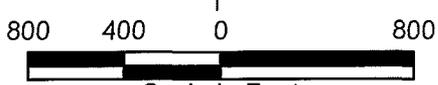
Enclosure – Project Map



Bridge A
 Long: -98.036306
 Lat: 35.56809

Bridge D
 Long: -98.025906
 Lat: 35.554889

Bridge



Scale in Feet



Grazinglands Research Laboratory
 Bridge Replacement
 El Reno
 Canadian County, OK

Path: \\mcd\dfs\Clients\ANF\USDA\195531_ElReno\OK\Studies\Geospatial\DataFiles\ArcDocs\ElReno2.mxd apwoehler 4/28/2017
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Bell, Jennifer

From: Stackelbeck, Kary <kstackelbeck@ou.edu>
Sent: Tuesday, June 06, 2017 8:51 AM
To: Bell, Jennifer
Cc: Green, Debra K.; Erica.Jones@ARS.USDA.GOV; Catharine Wood
Subject: USDA-ARS Grazinglands Research Laboratory

Dear Ms. Bell,

We recently received a letter from your office concerning the proposed bridge replacement project at the USDA-ARS Grazinglands Research Laboratory. This letter was issued as part of USDA's preparation of an EA under the NEPA process.

I am writing to let you know that USDA has been in consultation with our office and the SHPO regarding this project under Section 106 of the NHPA. Our office has issued comments on both bridges that are proposed for replacement. I encourage you to coordinate with Ms. Erica Jones (copied with this message) concerning our responses and those of the SHPO regarding potential impacts to cultural resources. One point I would like to make, however, is in regard to the representation of the project area that was included in your correspondence. Your letter would seem to suggest that the work to be completed on the bridge replacements is confined to the current bridge locations. We have learned through Section 106 consultation with USDA that the actual Area of Potential Effects includes the staging areas for the proposed construction, which makes the area to be impacted larger than what you have included on your maps soliciting comments for the EA. Clarification of the APE certainly had bearing on our comments, and I suspect it may be equally true for other environmental agencies who may be reviewing this project.

Also, please note that future correspondence on the project directed to the Oklahoma Archeological Survey should come to my attention (as opposed to Dr. Amanda Regnier).

I appreciate your attention in this matter.

Sincerely,
Kary

Kary L. Stackelbeck, Ph.D.
State Archaeologist
Oklahoma Archeological Survey
University of Oklahoma
111 E. Chesapeake Street
Norman, OK 73019-5111
(405) 325-7211



**STATE OF OKLAHOMA
WATER RESOURCES BOARD**
www.owrb.ok.gov

OKLAHOMA WATER RESOURCES BOARD
Planning & Management Division
Oklahoma City, OK

PUBLIC NOTICE REVIEW

We have no comments to offer. We offer the following comments.

WE RECOMMEND THAT YOU CONTACT THE LOCAL FLOODPLAIN ADMINISTRATOR FOR POSSIBLE PERMIT REQUIREMENTS FOR THIS PROJECT. THE OWRB WEB SITE, www.owrb.ok.gov, contains a directory of floodplain administrators and is located under forms/floodplain management/floodplain administrators, listed alphabetically by name of community. **If this development would fall on state owned or operated property, a floodplain development permit is required from OWRB.** The Chapter 55 Rules and permit application for this requirement can be found on the OWRB web site listed above. If this project is proposed in a non-participating community, try to ensure that this project is completed so that it is reasonably safe from flooding and so that it does not flood adjacent property if at all possible.

Reviewer: Cathy L. Poage, CFM

DATE 06/14/2017

Project Name: Proposed Bridge Replacements (2) by USDA-ARS Project number 95531, Located at the Grazinglands Research Laboratory at 7207 W. Cheyenne Street, El Reno, Canadian County, OK

FIRM Name: Burns McDonnell, Jennifer Bell, Sr. Environmental Scientist
CC: Shelly Dalla Rosa, El Reno FPA

* El Reno participates in the NFIP and has a floodplain development permitting system. See paragraph above.

Bell, Jennifer

From: Fagin, Todd D. <tfagin@ou.edu>
Sent: Friday, June 09, 2017 10:39 AM
To: Bell, Jennifer
Subject: ONHI Information Request, re: USDA-ARS Grazing Research Lab. Environmental Assessment
Attachments: 2017-269-BUS-BUR.pdf

Ms. Bell,

Attached are the results of your recent Oklahoma Natural Heritage Inventory information request. Our agency maintains databases related to Oklahoma's biodiversity. The attached report lists the federally or state listed species (including candidate species) in the project area.

Thank you,

Todd Fagin

Oklahoma Natural Heritage Inventory/
Oklahoma Biological Survey

OBS Ref. 2017-269-BUS-BUR

Dear Ms. Bell,

June 9, 2017

We have reviewed occurrence information on federal and state threatened, endangered or candidate species, as well as non-regulatory rare species and ecological systems of importance currently in the Oklahoma Natural Heritage Inventory database for the following location you provided:

Sec. 27 and 35-T13N-R8W (-98.036306, 35.56809 and -98.025906, 35.554889), Canadian County.

We found 3 occurrence(s) of relevant species within the vicinity of the project location as described.

Whooping Crane (*Grus americana*), a federally listed endangered species, one occurrence in Sec. 12-T12N-R8W, Canadian County

Sprague's Pipit (*Anthus spragueii*), a candidate species for federal listing, two occurrences in Sec. 7-T12N-R7W, Canadian County.

Additionally, absence from our database does not preclude such species from occurring in the area.

If you have any questions about this response, please send me an email, or call us at the number given below.

Although not specific to your project, you may find the following links helpful.

ONHI, guide to ranking codes for endangered and threatened species:
http://vmpincol.ou.edu/heritage/ranking_guide.html

Information regarding the Oklahoma Natural Areas Registry:
http://www.oknaturalheritage.ou.edu/registry_faq.htm

Todd Fagin
Oklahoma Natural Heritage Inventory
(405) 325-4700
tfagin@ou.edu

MARY ANN PRITCHARD
DIRECTOR



MARY FALLIN
GOVERNOR

STATE OF OKLAHOMA
DEPARTMENT OF MINES

June 15, 2017

Jennifer Bell
Senior Environmental Scientist
Burns & McDonnell
9785 Maroon Circle, Suite 400
Centennial, CO 80112

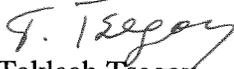
Re: Environmental Assessment
For Bridge Replacement Project #95531
Section 27 & 35, T13N, R08W
Canadian County, Oklahoma

Dear Ms. Bell:

The Oklahoma Department of Mines received your request on June 5, 2017 for environmental information concerning the replacement of two bridges located in Sections 27 & 35, T13N, R8W in Canadian, Oklahoma. After researching our existing and historical data file, ODM found no coal or non-coal permits or any other surface reclamation efforts on record that might affect your project.

Good luck on this project! Should you have any questions, please call me at (405)427-3859 ext. 225 or Darrell Shults at (405)427-3859 ext. 227.

Sincerely,

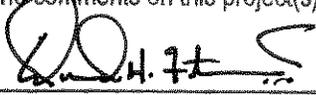

Tekleab Tsegay
Chief, Reclamation & Tech. Services

cc : file

BURNS MCDONNELL

June 1, 2017

Mr. Ed Fite
Administrator
Oklahoma Scenic Rivers Commission
15971 N. Hwy 10
Tahlequah, Oklahoma 74464

Grand River Dam Authority - Scenic Rivers Operations has no comments on this project(s).	
	6/7/2017
Director	Date

Re: USDA-ARS Grazinglands Research Laboratory, El Reno, Oklahoma
Environmental Assessment for Bridge Replacement Project
Burns & McDonnell Project #95531

Dear Mr. Fite,

On behalf of the U.S. Department of Agriculture, Agricultural Research Service (USDA-ARS), Burns & McDonnell is preparing an Environmental Assessment (EA) for the replacement of two bridges located at the USDA-ARS Grazinglands Research Laboratory, 7207 W. Cheyenne Street, El Reno, Oklahoma (see attached location map). The EA is being prepared for the USDA-ARS in accordance with National Environmental Policy Act (NEPA) requirements.

Two bridges (Bridge A and Bridge D) on the USDA-ARS property have been deemed structurally deficient as they have experienced a great deal of deterioration, including spalling, corrosion, and structural cracking. The USDA-ARS proposes to demolish and replace both bridges. In addition, the roadway approach to Bridge D experiences regular flooding. Raising the grade of the road approaching Bridge D slightly, as well as the elevation of the bridge itself, are also proposed as part of the project. Removal and replacement of both bridges is anticipated to begin in early 2018.

At this time, Burns & McDonnell is requesting your input to identify any issues or concerns your agency might have with respect to the proposed project. We are specifically asking for information on natural or social resources that should be considered in the EA. Input from your agency on any of the following resources in the project area will assist us in identifying potential impacts of the project.

- Land Use
- Aesthetics
- Water quality and wetlands
- Soils and geology
- Wildlife, vegetation and fisheries, including threatened and endangered species
- Socioeconomics (population, employment, growth, development)
- Hazardous materials sites
- Cultural resources (historic and archaeological sites, cemeteries)

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BY: 



Mr. Ed Fite
Administrator
June 1, 2017
Page 2

- Transportation and roads (airport and roadway expansions, construction, operations and maintenance)

We would also appreciate any comments or information on additional issues or concerns you feel would help the study team identify and understand the resources within the study area.

Please send your comments to me at:

jbelle@burnsmcd.com

-or-

Jennifer Bell
Burns & McDonnell
9785 Maroon Circle, Suite 400
Centennial, CO 80112

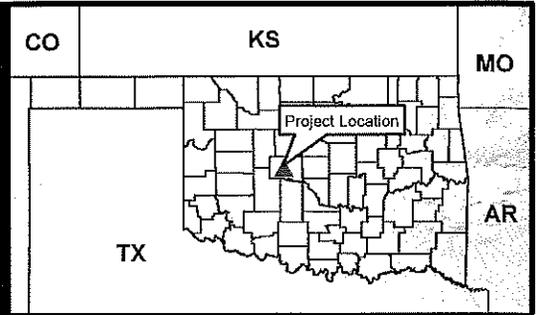
If you have any questions regarding the project or need additional information, please contact me at (303) 474-2229. We would appreciate your response by July 1, 2017. Thank you for your time and assistance in providing this information.

Sincerely,

A handwritten signature in black ink that reads "Jennifer Bell". The signature is written in a cursive, flowing style.

Jennifer Bell
Senior Environmental Scientist

Attachment
cc: C. Brian Green, USDA-ARS



Bridge A
 Long: -98.036306
 Lat: 35.56809

Bridge D
 Long: -98.025906
 Lat: 35.554889

Bridge



800 400 0 800



Scale in Feet



Grazinglands Research Laboratory
 Bridge Replacement
 El Reno
 Canadian County, OK

Path: \\bmcd\dfs\Clients\ANF\USDA\95531_ElReno\OK\Studies\Geospatial\Data\Files\ArcDocs\EI\Reno2.mxd apvoehler 4/28/2017
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DEPARTMENT OF WILDLIFE CONSERVATION

P.O. Box 53465 Oklahoma City, OK 73152 PH. (405) 521-3851

June 30, 2017

Ms. Jennifer Bell
Senior Environmental Scientist
Burns & McDonnell
9785 Maroon Circle, Suite 400
Centennial, CO 80112

Re: Solicitation for Input for USDA-ARS Grazinglands Research Laboratory Bridge Replacement, Canadian County

Dear Ms. Bell,

This letter is written in response to your request for information regarding the presence of threatened or endangered species and other potential effects on fish and wildlife for the USDA-ARS bridge replacement project in El Reno, Canadian County, OK. Based upon the site description of this project in Canadian County, there are no known species of state concern (threatened or endangered) at or near this location where improvements will be made. The Oklahoma Department of Wildlife Conservation does ask that all precautions and action be taken to limit the amount of disturbance to any stream corridor, and that caution and best practices are used when working around corridors where riparian zones are present.

Please understand that due to time and a personnel constraint, the Oklahoma Department of Wildlife Conservation has not performed an actual field survey of this specific project area; therefore, we can provide only limited site-specific information. The information sent to this office regarding the proposed project has been reviewed and compared against our current records for endangered and threatened species, and our response of no species of state concern is based on this review. I will make note that there is a difference between STATE and FEDERALLY listed species. The Oklahoma Department of Wildlife Conservation only oversees STATE listed species, whereas the U.S. Fish and Wildlife Service reserves authority FEDERALLY listed species. The Oklahoma Department of Wildlife Conservation is not the U.S. Fish and Wildlife Service and we have no authority over federally listed threatened or endangered species. For this reason, if you are concerned about species of federal interest, we urge you to consult with the Tulsa Ecological Service Office of the U.S. Fish and Wildlife Service (918-581-7458), as they may have additional information of which we are unaware.

We appreciate the opportunity to review this project and submit comments. If you have any questions or if I can be of any assistance, please contact me at either (405)325-7288 or kurt.kuklinski@odwc.ok.gov

Sincerely,

Kurt Kuklinski
Fisheries Research Supervisor
Oklahoma Fishery Research Laboratory
500 E. Constellation
Norman, OK 73072

Bell, Jennifer

From: Jon Roberts <Jon.Roberts@deq.ok.gov>
Sent: Friday, June 30, 2017 11:11 AM
To: Bell, Jennifer
Subject: Environmental Reviews

Dear Ms. Bell:

In response to your request, we have completed an environmental review of air, land and water records for the project listed below. Attached is a list of environmental recommendations that you should consider as you complete your project.

Project

Letter dated June 1, 2017 – USDA-ARS Grazinglands Research Laboratory Bridge Replacement Project, El Reno, OK

Comments

Prior to beginning any construction activity disturbing more than one acre, you must submit an NOI and obtain authorization under OKR10, construction stormwater.

If you have any questions or need clarification, please contact me.

Regards,

Jon A. Roberts, Senior Manager
Office of External Affairs
Oklahoma Department of Environmental Quality
P. O. Box 1677
707 N. Robinson Ave.
Oklahoma City, OK 73101-1677
Ph: (405) 702-7111; Cell: (405) 694-3401
<http://www.deq.state.ok.us/OEA/index.html>

Recommendations for General Construction, Safe Room and Storm Shelter Projects

The Oklahoma Department of Environmental Quality (DEQ) has completed its review of your general construction or safe room/storm shelter project and offers the following suggestions to ensure environmental compliance throughout the project.

- Removal or installation of water and/or sewer lines must conform to all relevant local and/or state plumbing codes.
- Removal of paint must conform to all relevant lead-based paint regulations.
- Handling and/or removal of asbestos must conform to all relevant asbestos regulations.
- Reasonable precautions should be taken to protect air quality by minimizing fugitive dust emissions.
- If the project will disturb more than one acre of land, a determination should be made as to whether an Oklahoma Pollutant Discharge Elimination System (OPDES) permit for storm water is required during the construction phase.
- Any solid or hazardous waste from the project must be recycled and/or disposed in accordance with all relevant solid waste and/or RCRA regulations.

If you need further assistance, please contact DEQ Customer Service at (800) 869-1400.



Bell, Jennifer

From: Marc Hader <haderm@canadiancounty.org>
Sent: Friday, June 23, 2017 12:18 PM
To: Bell, Jennifer
Subject: Dear Jennifer,

I wanted to follow up with your correspondence regarding your proposed bridge and roadway improvements for the USDA-ARC Grazing lands property. Your proposed improvements appear to be quite sound. I cannot think of any reason to not move forward with the project.

Feel free to contact me if you have any further questions or concerns.

Best regards,

*Marc Hader, District #1 Commissioner
Canadian County Government
201 N Choctaw
El Reno, OK 73036
405-474-9558 - Mobile
405-295-6200 – Office
405-262-4673 – Maintenance Yard
www.canadiancounty.org*

Bell, Jennifer

From: Jennifer Mitchell <mitchellj@canadiancounty.org>
Sent: Tuesday, June 06, 2017 8:52 AM
To: Bell, Jennifer
Subject: USDA Bridge Replacement Project

As for as Floodplain management for Canadian County we are good with the projects as long as the up and down streams are not affected.

Thank you,

*Jennifer Mitchell, CFM
Certified Floodplain Manager
1205 N Calumet Rd
Calumet, OK 73014*

*405-422-2428
405-262-3266 (FAX)*

APPENDIX E – MIGRATORY BIRDS SPECIAL PROVISION

**OKLAHOMA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISIONS
FOR
MIGRATORY BIRD NEST PREVENTION FOR BRIDGE STRUCTURES AND CULVERTS**

These Special Provisions revise, amend, and where in conflict, supersede applicable sections of the 2009 Standard Specifications for Highway Construction, English and Metric.

(Add the following:)

525.01 DESCRIPTION

A. General

Cliff Swallows and Barn Swallows are protected by the Federal Migratory Bird Treaty Act. These species commonly use the vertical faces of bridges and culverts for nesting. Once swallows have nested in a bridge, they will return every year with their young to nest again. If swallows are allowed to build nests on the bridge, construction activities which disturb the nests or prevent the parent birds from feeding the young will be prohibited until the young birds are out of the nests.

The nesting season for these species runs from April 1 to August 31. Measures used to prevent the birds from establishing nest in the bridges and culverts will have to be completed prior to the start of the swallow nesting season. In the event the Contractor fails to prevent nesting of migratory birds, the Engineer may suspend work until the end of the nesting season. Time charges will continue during this work suspension if the nesting occurred due to the negligence or inattentiveness of the Contractor in installing the nest prevention measures.

B. Contract Administration

In observance of the nesting season, the Contractor is required to protect the bridge structure(s) immediately upon issuance of the Notice to Proceed, and prior to April 1st. Contract time will not be assessed for this activity if done during this time frame. Time charges for the project will begin on the date the Contractor begins contract work (other than nest prevention), or the Effective Date specified in the Notice to Proceed.

525.02 MATERIALS

A. Netting

Provide corrosion resistant bird netting or mesh that will withstand UV ray degradation. Ensure the lengths and widths of the netting/mesh openings are $\frac{1}{2}$ to $\frac{3}{4}$ inch.

B. Lubricant

Provide a non-toxic, environmentally safe and ecologically sound lubricant which will adhere to the surface finish of the vertical face determined to be suitable for swallow nest establishment. While the Department does not specify a particular lubricant, products such as vegetable oil, Bird-X™ Bird Proof Bird Repellent, or equivalent environmentally safe, manufactured products are favorable considerations.

525.04 CONSTRUCTION METHODS

In order to be able to perform contract work which would normally disturb nesting swallows, use one of the following methods to prevent swallows from nesting in the bridge prior to the beginning of the nesting season:

A. Netting

Power wash the bridge of any empty swallow nests prior to the beginning of the nesting season.

Wrap and secure the netting material around the bridge abutments, underneath the bridge deck, and any other locations where cliff swallows could build their nests. Every two (2) to three (3) feet, nail wood-frame blocks (1" x 12") to the edges of the netting material to further secure its placement. The net should not have any loose pockets or wrinkles that could trap and entangle birds. If a plastic net is used, ensure the net is pulled taut in order to prevent flapping in the wind, which results in tangles or breakage at mounting points.

Maintenance of the netting is the responsibility of the Contractor. After the netting is installed, monitor the area for entry points and make adjustments as necessary.

B. Lubricating

Power wash the bridge of any empty swallow nests prior to the beginning of the nesting season. Create a slick surface on possible nesting sites by covering the areas with an approved lubricant.

If lubricating the surface with a manufactured product, coat the surface in accordance with the manufacturers recommendations. Continue such application throughout the nesting season, or until all nest disturbing construction activities have been completed, whichever comes first.

If lubricating the surface with vegetable oil, coat the surface sufficiently as to prevent the adherence of swallow nest to the bridge structure. Repeat the application every two (2) weeks throughout the nesting season, or until all nest disturbing construction activities have been completed, whichever comes first. Obtain approval from the Engineer before resuming nest disturbing activities prior to August 31 when it is observed that nesting activities have ceased. The Engineer will notify the Department's Biologist to confirm that nesting has ceased, and approve the resumption of nest disturbing activities.

525.06 BASIS OF PAYMENT

The Department will pay for this work at the contract unit price per the specified pay unit as follows:

Pay Item:	Pay Unit:
<i>(A) NEST PREVENTION - NETTING</i>	LSUM
<i>(B) NEST PREVENTION - LUBRICATING</i>	LSUM
<i>(C) NEST PREVENTION</i>	LSUM

Payment for *Nest Prevention - Netting* will be considered full compensation for all materials, labor, equipment, and incidentals to perform the work as specified in the plans and specifications.

Payment for *Nest Prevention - Oiling* will be considered full compensation for all materials, labor, equipment, and incidentals to perform the work as specified in the plans and specifications.

Payment for *Nest Prevention* will be considered full compensation for all materials, labor, equipment, and incidentals to perform the work as specified in the plans and specifications. Methods other than those specified herein must be approved by the Department's Biologist.

When nest prevention measures are put in place prior to beginning the Contract time, payment will be made on the first progressive estimate approved for payment by the Engineer.



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