

**FINAL
ENVIRONMENTAL ASSESSMENT**

**Luther Road
Oklahoma County, Oklahoma**

Section 14 Streambank Stabilization Project



September 2013



**US Army Corps
of Engineers®**
Tulsa District

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FINDING OF NO SIGNIFICANT IMPACT
Luther Road, Oklahoma County, Oklahoma
Section 14 Emergency Streambank Stabilization Project

In accordance with the National Environmental Policy Act of 1969, including the guidelines in 33 Code of Federal Regulations, Part 230, the Tulsa District has assessed the environmental effects of stabilizing approximately 3,000 to 3,500 linear feet of the North Canadian River stream bank near the town of Harrah, in Oklahoma County, Oklahoma. The stabilization is needed to protect public safety and facilities. Oklahoma County is the local, non-federal sponsor for this project which is proposed under Section 14 of the Flood Control Act of 1946 (P.L. 79-526), as amended.

The proposed plan consists of removing the existing concrete rubble previously placed along the left stream bank to a commercial landfill at an offsite location; establishing an on-site temporary staging area, unimproved permanent access road and drainage ditch; reshaping the banks to a 2-foot horizontal to 1-foot vertical ratio slope for a linear distance of approximately 3,000 to 3,500 linear feet; adding a layer of 6-inches of bedding and/or filter fabric; then adding 24 inches of riprap to the 1-year frequency discharge elevation. Appropriate native vegetation would be used above the riprap to stabilize the upslope area. An individual Department of the Army (DA) Permit will be required to authorize the placement of fill material into the North Canadian River. No wetlands would be impacted by this project; as such, no wetland mitigation is anticipated. All mitigation requirements as a result of the placement of fill material (riprap) below the ordinary high water mark of the North Canadian River, if any, will be determined during the regulatory review of the DA permit application and fulfilled by the permittee, Oklahoma County, as a condition of the permit issuance.

The enclosed environmental assessment (EA), which is incorporated by reference, indicates the above activities would have no significant adverse effects on the natural or human environment and is compliant with all applicable laws as described in Section 4 of the EA. Therefore, an environmental impact statement will not be prepared.

27 SEP 13
Date


Richard A. Pratt
Colonel, U.S. Army
District Commander

Enclosure:
Environmental Assessment

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ENVIRONMENTAL ASSESSMENT ORGANIZATION

This Environmental Assessment (EA) evaluates the effects of stabilizing the eroding streambanks of the North Canadian River adjacent to the west side of Luther Road bridge approach and bridge abutments, near Harrah, Oklahoma County, Oklahoma. This EA will facilitate the decision process regarding the proposed action and alternatives.

- SECTION 1* *INTRODUCTION, PURPOSE, NEED AND SCOPE* of the proposed action summarizes the purpose of a need for the proposed action, provides relevant background information and describes the scope of the EA.
- SECTION 2* *ALTERNATIVES INCLUDING PROPOSED ACTION* examines alternatives for implementing the proposed action and describes the recommended action.
- SECTION 3* *AFFECTED ENVIRONMENT* describes the existing environmental and socioeconomic setting
ENVIRONMENTAL CONSEQUENCES identifies the potential environmental and socioeconomic effects of implementing the proposed action and alternatives, including cumulative effects.
MITIGATION summarizes mitigation actions required to enable a Finding of No Significant Impact for the proposed alternative.
- SECTION 4* *APPLICABLE ENVIRONMENTAL LAWS, REGULATIONS, and POLICY* provides a listing of environmental protection statutes and other environmental requirements.
- SECTION 5* *FEDERAL, STATE AND LOCAL AGENCY COORDINATION* provides a listing of individuals and agencies consulted during preparation of the EA.
- SECTION 6* *LIST OF PREPARERS* identifies persons who prepared the document and their areas of expertise.
- SECTION 7* *REFERENCES* provides bibliographical information for cited sources
- APPENDICES* *A* NEPA Coordination and Scoping
 B Fish and Wildlife Coordination

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EXECUTIVE SUMMARY

The Corps of Engineers, Tulsa District, in partnership with Oklahoma County, proposes to address streambank erosion and bank slope instability by stabilizing a total of approximately 3,000 to 3,500 linear feet of streambank, most of which would be located along the left bank of the North Canadian River. A smaller area, approximately 250 to 300 feet on the right bank, on the north side of the bridge piers, also needs stabilizing. Stabilizing the left streambank would be expected to stop the eastward migration of the meander as it erodes the toe of the bank and causes bank sloughing. Stabilizing the right bank would protect the southern bridge pier. There is little to no vegetation along both banks of the river at this location. Oklahoma County is the local, non-federal sponsor for this project which is proposed under Section 14 of the Flood Control Act of 1946 (P.L. 79-526), as amended.

The stabilization is needed to protect public safety and facilities. In addition to Luther Road and bridge, there are electric utilities paralleling the west side of the road and electric transmission lines located along the left bank of the North Canadian River at the northern edge of the proposed streambank stabilization area.

The meander of the river has migrated eastward approximately 900 feet in the past ten years and is now located approximately 100 feet west of the roadway pavement. As shown in Figure 1-3 in the document, if the river continues eroding at its present rate and in its present direction, total failure of Luther Road and the bridge within the next year would be possible. Failure of the road and bridge would close the roadway and bridge, interrupt electric utilities, and become a life safety issue especially for ambulance, fire, and police protection by impeding access both north and south of the river.

The project, as proposed, includes stabilizing the eroding streambanks of the North Canadian River. As shown in Figure 1-6 in the document, approximately 3,000 to 3,500 linear feet of the left degrading bank needs to be stabilized and approximately 250 to 300 linear feet of the right degrading bank on the north side of the southern bridge pier.

Construction and maintenance requirements for this proposed project include acquisition of a perpetual and assignable easements and rights-of-way for an access road and drainage ditch (approximately 1.6 acres) for staging area and construction and approximately 4.9 acres for bank protection. As the Local Sponsor, Oklahoma County will be responsible for acquiring all lands, easements, and rights-of-way required for the staging, construction, operation, and perpetual maintenance of the project. Oklahoma County already owns approximately 1.34 acres which is part of the Luther Road right-of-way.

The scope of the project will include setting up a temporary staging area, an unimproved access road, removing approximately 1,800 tons of rubble currently in place on the

streambanks and transporting it to a commercial landfill at an off-site location, streambank reshaping, the placement of stabilization materials along the streambanks, and reseeding and/or planting vegetation. The staging area will be located within the proposed site area, between the proposed access road and Luther Road. The alternative selected would be the alternative that protects the streambank with minimal impact to the environment; one that prevents and/or reduces damages, thereby producing benefits, and is cost effective with regard to the benefits provided. Several alternatives were developed during the feasibility phase of this project:

- **Alternative 1** is the No-Action Alternative (or the Future Without Project Condition) that assumes no action is taken. Although this alternative does not meet the goal of stabilizing the streambank, the analysis of the no-action is required by the Council on Environmental Quality (CEQ) regulations for the National Environmental Policy Act (NEPA) to identify baseline conditions against which potential impacts in the EA can be identified.
- **Action Alternatives 2, 3, and 4** are similar in that they all propose to establish a temporary staging area, access road, and drainage ditch; remove the existing concrete rubble; grade the streambank at a 2h:1v slope; place a layer of 6-inches of bedding material or filter fabric; and placing riprap, 24 inches thick. They differ in the required quantity and up-slope elevation of riprap and planting areas. For the purposes of this EA, the analysis of impacts will group action alternatives 2, 3, and 4 together. Action Alternatives 2, 3, and 4 would require the acquisition of approximately 5.2 acres for the staging area, access road, drainage ditch, and construction.
- **Action Alternatives 5, 6, and 7** are similar in that they all propose to establish a temporary staging area, access road, and drainage ditch; remove the existing concrete rubble; grade the streambank at a 3h:1v slope; place a layer of 6-inches of bedding material or filter fabric; and placing riprap, 24 inches thick. They differ in the required quantity and up-slope elevation of riprap and planting areas. For the purposes of this EA, the analysis of impacts will group action alternatives 5, 6, and 7 together. Action Alternatives 5, 6, and 7 would require the acquisition of approximately 6.5 acres for the temporary staging area, access road, drainage ditch, and construction.

The **Tentatively Selected Plan (TSP)** is **Alternative 2**. This alternative consists of the common elements of the temporary staging area, access road, drainage ditch, removing the rubble along the left bank and disposing it at an off-site location. The streambanks would be reshaped to a 2h:1v slope for a distance of approximately 3,000 to 3,500 linear feet. A layer of 6-inches of bedding or filter fabric and riprap, 24 inches thick, would be placed starting at the toe of the slope of the river bed and continue upslope, stopping at the 1-year frequency discharge elevation. Approximately 8,440 tons of riprap would be needed; however, this quantity may change with final design of the project. Appropriate vegetation will be used to stabilize approximately 6 acres above the riprap to the top of slope.

To proceed with the proposed plan, various permits will be required from federal and state agencies. Authorization to discharge of dredged or fill material into waters of the United States, under Section 404 of the Clean Water Act, as amended, is required from the Regulatory Office of the USACE. It has been determined that an Individual Department of the Army (DA) Permit would be required for the streambank stabilization. Given that the Corps does not issue permits to itself and Local Sponsor will be responsible for the Operation, Maintenance, Repair, Rehabilitation, and Replacement once construction is complete, Oklahoma County will be the appropriate applicant for the Department of the Army (DA) permit. The DA permit will be secured prior to construction.

A Section 401 Water Quality Certification must also be obtained from the State of Oklahoma prior to issuance of the DA permit. Also, a storm water discharge permit in accordance with the National Pollution Discharge Elimination System (NPDES) program from the Oklahoma Department of Environmental Quality is required for construction activities exceeding one (1) acre. For that permit, the contractor selected to construct the project would be the appropriate applicant. As with the DA permit and Water Quality Certification, the NPDES discharge permit will be secured prior to construction.

The Tentatively Selected Plan, Alternative 2, may affect, but is not likely to adversely affect the three federally-listed species that occur along the North Canadian River. Confirmation of the Corps' determination has been received from the US Fish and Wildlife Service. The preferred action would not impact Historic properties, soils, floodplains, vegetation, wetlands, transportation, utilities, geology, topography, groundwater, land use, aesthetics and visual resources, hazardous materials and wastes, and/or climate.

Only minor temporary impacts to the natural and human environments with regard to water quality, fish and wildlife resources, noise, physical disturbance to the river banks, and socioeconomics are expected. The Tentatively Selected plan meets the purpose and need of the proposed action by protecting Luther Road and associated utilities. It would not result in any significant, long term, adverse impacts to the human environment. A summary comparison of the environmental consequences is presented in Table ES-1.

The No-Action Alternative has the greatest negative impact to the human environment. If no action is taken to prevent the North Canadian River from eroding Luther Road, then the roadway and bridge failure would cause closures that could last indefinitely, until funding became available to reconstruct the bridge. Utilities serving the rural area and transmitting electric power to the metropolitan Oklahoma City urban centers would be interrupted should the river erode the power poles and pylons adjacent to the left bank of the river. Bridge failure could also adversely and disproportionately affect children, since the majority of the Harrah school district lies on the north side of the river and the bridge is only one of two that connects the schools in Harrah to the majority of its school district.

Table ES-1 – Summary of Environmental Consequences

Resource Area	Alternative 1 (No-Action)	Alternative 2 (Proposed Action)	Alternative 3	Alternative 4	Alternative 5	Alternative 6	Alternative 7
Soils	Δ Erosion Continues	= No Change					
Surface Water	= No Change	○ Flow Rate					
Floodplains	= No Change	= No Change	= No Change	= No Change	= No Change	= No Change	= No Change
Water Quality	= No Change	○ Increased Turbidity + Reduced Turbidity					
Terrestrial Resources	= No Change	= No Change	= No Change	= No Change	= No Change	= No Change	= No Change
Wetlands	= No Change	= No Change	= No Change	= No Change	= No Change	= No Change	= No Change
Waters of the US	= No Change	○ Bank Reshaping + Stops Erosion					

Resource Area	Alternative 1 (No-Action)	Alternative 2 (Proposed Action)	Alternative 3	Alternative 4	Alternative 5	Alternative 6	Alternative 7
T&E Species	= No Change	= No Change	= No Change	= No Change	= No Change	= No Change	= No Change
Historic Properties	= No Change	= No Change	= No Change	= No Change	= No Change	= No Change	= No Change
Air Quality	= No Change	○ Emissions from Construction Equipment					
Noise	= No Change	○ Noise from Construction Equipment					
Transportat ion	Δ Road/Bridge Closure	= No Change					
Utilities	Δ Utility Poles/Pylons Fail from Erosion	= No Change					

Impact Key:

+ denotes a beneficial impact from stream stabilization post construction

○ denotes minor, temporary impact during construction

= denotes no change to site conditions and/or no impact anticipated from present on-site conditions

Δ denotes significant impacts

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Panorama of the Proposed Project Site

1.0 INTRODUCTION, PURPOSE, NEED, AND SCOPE

1.1 Introduction

The U.S. Army Corps of Engineers (USACE) - Tulsa District proposes an emergency streambank stabilization project under the authority of Section 14 of the Flood Control Act of 1946 (Public Law 79-526), as amended. Section 14 provides the authority for the USACE to plan and construct emergency streambank and shoreline protection projects to protect endangered highways, highway bridge approaches, and public facilities, such as water and sewer lines, churches, public and private non-profit schools and hospitals, and other non-profit public facilities. A Section 14 project may include new streambank or shoreline protection works, or may repair, restore, or modify existing works. Oklahoma County is the Local Sponsor in this effort.

1.2 National Environmental Policy Act

The National Environmental Policy Act (NEPA) of 1969 (Public Law 91-190) requires all Federal agencies to address environmental consequences of Federal actions on the natural and human environment. Compliance guidance for NEPA is contained in Title 40 of the Code of Federal Regulations (CFR), Parts 1500 through 1508, and in the U.S. Army Corps of Engineers regulations 33 CFR 230, *Procedures for Implementing NEPA* (ER 200-2-2). The primary intent of NEPA is to ensure that environmental information is made available to public officials and citizens regarding actions taken by Federal agencies.

1.3 Project Location

As shown on the Vicinity Map in Figure 1-1, Luther Road is a rural north-south collector route in eastern Oklahoma County, with an average daily traffic count of 3000 vehicles. It provides residents with direct access to Interstate 40 and US Route 62 to the south of the project area and Interstate 44 to the north. The proposed project is located in rural eastern Oklahoma County, Oklahoma.

The North Canadian River flows eastward from northwest Oklahoma, eastward and northeastward through Oklahoma City, north of Midwest City, then southeastward, meandering across its floodplain through more rural areas toward Harrah, in eastern Oklahoma County. The Luther Road Bridge spans both the North Canadian River and the Arkansas/Oklahoma Railroad, west-northwest of Harrah, Oklahoma. The city limits of Harrah begin on the south side of the railroad easement.

The study area is located along the left bank of the North Canadian River immediately west of the Luther Road bridge approach. A meander of the North Canadian River has migrated eastward approximately 900 feet by eroding its left streambank. As shown in Figures 1-4, 1-5, 1-6, and 1-7, this meander has moved such that it is now nearly 100 feet west of the Luther Road bridge approach and the bridge spanning the river and railroad.



Figure 1-1: Vicinity Map



Figure 1-2: Proposed Project Area.

The proposed project area is located adjacent to the west side of Luther Road, approximately 350 feet north of the Arkansas-Oklahoma Railroad, 0.5-miles north of US Highway 62 (NE 23rd Street) and approximately 2 miles west-northwest of the business district of Harrah, Oklahoma. The heavy green line is the approximate location of the eroded streambanks that would be stabilized with this proposed project.

1.4 Purpose and Need for the Action

The purpose of this project is to address streambank erosion and bank slope instability by stabilizing a total of approximately 3,000 to 3,500 linear feet of streambank, most of which would be located along the left bank. A smaller area, approximately 250 to 300 feet on the right bank, on the north side of the bridge piers, also needs stabilizing. Stabilizing the left streambank would be expected to stop the eastward migration of the meander as it erodes the toe of the bank and causes bank sloughing. Stabilizing the right bank would protect the

southern bridge pier. There is little to no vegetation along both banks of the river at this location.

The stabilization project is needed to protect public safety and facilities. In addition to Luther Road and bridge, there are electric utilities paralleling the west side of the road and electric transmission lines located along the left bank of the North Canadian River at the northern edge of the proposed streambank stabilization area.

The meander of the river has migrated approximately 900 feet eastward in the past ten years and is now located approximately 100 feet west of the roadway pavement. As shown in Figure 1-3, if the river continue eroding at its present rate and in its present direction, total failure of Luther Road and the bridge within the next year would be possible. Failure of the road and bridge would close the roadway and bridge and interrupt the electric utilities.

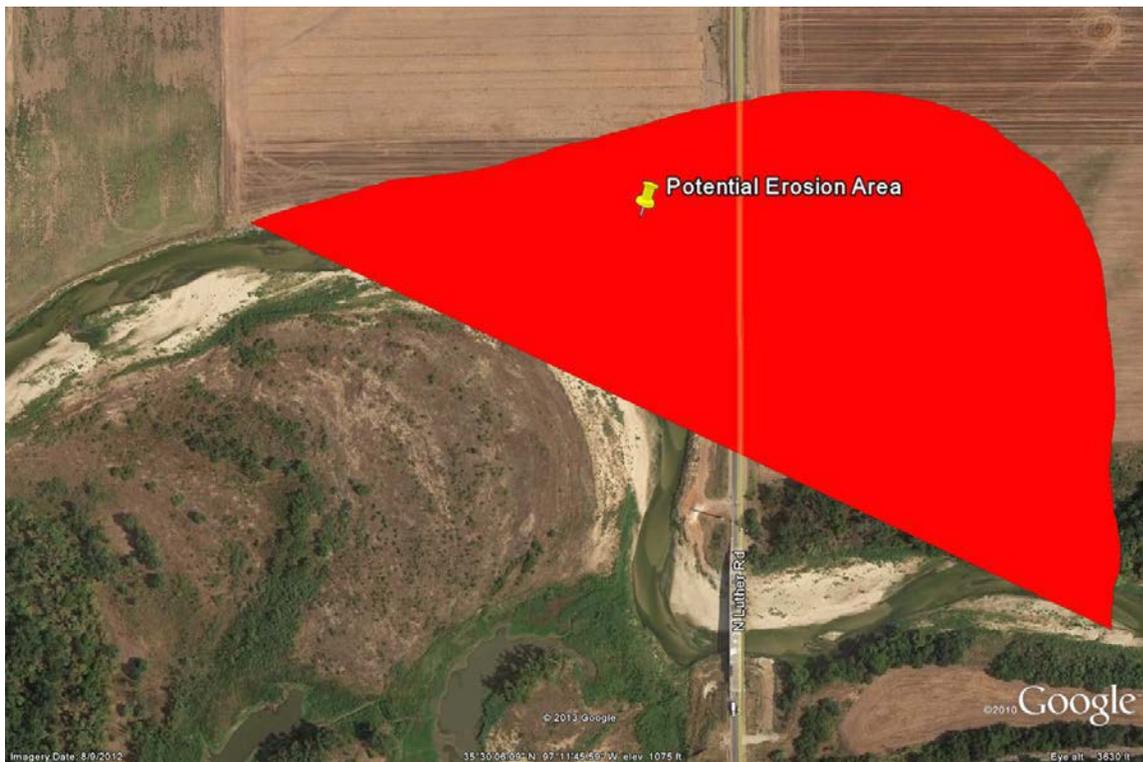


Figure 1-3: Potential direction of future erosion.



Figure 1-4: North Canadian River Meander 2003



Figure 1-5: North Canadian River Meander 2008



Figure 1-6: North Canadian River Meander 2011



Figure 1-7: North Canadian River Meander 2012

1.5 Scope

The project, as proposed, includes stabilizing the eroding streambanks of the North Canadian River. As shown in Figure 1-2, approximately 3,000 to 3,500 linear feet of the left degrading bank needs to be stabilized and approximately 250 to 300 linear feet of the right degrading bank on the north side of the southern bridge pier. Construction and maintenance requirements for this proposed project include acquisition of a perpetual and assignable easements and rights-of-way for a temporary staging area, access road and drainage ditch (approximately 1.6 acres) for the temporary staging area and construction and approximately 4.9 to 5.1 acres for bank protection depending upon the alternative. As the Local Sponsor, Oklahoma County will be responsible for acquiring all lands, easements, and rights-of-way required for the staging, construction, operation, and perpetual maintenance of the project. Oklahoma County already owns approximately 1.34 acres which is part of the Luther Road right-of-way.

The scope of the project will include building a temporary staging area, an unimproved access road, removing the rubble currently in place on the streambanks and transporting it to a commercial landfill at an off-site location, streambank reshaping, and the placement of stabilization materials along the streambanks. The temporary staging area will be located within the proposed site area, between the proposed access road and Luther Road.

This EA will evaluate the impacts of the proposed action and alternatives, as presented in the Planning and Design Analysis Report, dated July 2012 and last revised in March 2013. That report is incorporated by reference in this EA. The proposed action and alternatives are presented in Section 2 of this EA.

1.6 Decisions to Be Made

In compliance with the NEPA, USACE is charged with determining the impacts of the alternatives and whether or not they meet or exceed the threshold of significance. The Tulsa District Commander would decide whether the impacts are such that a Finding of No Significant Impact (FONSI) is the appropriate end to the NEPA process or if an Environmental Impact Statement should be prepared. The decision would include:

- The location, design, and scheduling for the proposed project;
- Potential mitigation;
- The intensity of the effects; and
- If a FONSI can be prepared and approved.

The alternative selected would be the alternative that protects the streambank with minimal impact to the environment; one that prevents and/or reduces damages, thereby producing benefits, and is cost effective with regard to the benefits provided.

1.7 Public Involvement

Although the CEQ Regulations do not require a specific scoping meeting for the preparation of an EA, the Tulsa District recognizes the value of agency and public input in the process. As such, the Tulsa District mailed scoping letters concerning the urgent nature of this proposed project and invited comments from other federal and state agencies, Native American tribes, and other interested parties in June 2013. The mailing list and coordination letters can be found in Appendix A of this document. Appendix B contains the coordination with the US Fish and Wildlife Service (USFWS) regarding Threatened and Endangered species coordination. A draft EA was made available to these agencies, tribes, and individuals for a public review from 22 August to 23 September 2013. A copy of this draft document was also posted on the Tulsa District website. Additionally, officials with Oklahoma County have consulted with the local landowners in this rural agricultural area of the county. Given that the river has eroded much of their property, there is local consensus to support the effort and fix the problem.

All of the proposed action alternatives would require individual authorization under Section 404 of the Clean Water Act. As such, a second public review of the proposed project would take place at that time.

The public comment period closed on September 23, 2013. No comments were received from the general public. The Oklahoma Archaeological Survey confirmed the Corps determination that a field survey was not necessary. One Native American tribe, the Kickapoo Nation, responded to consultation with a letter of no objection to the proposed project. Those letters may be found in Appendix A of this document. Coordination with the USFWS was completed prior to the release of the draft EA, with the USFWS concurrence with the Corps' determination to close the consultation process. That correspondence may be found in Appendix B of this document.

1.8 Federal and State Permits, Licenses, and Certifications

To proceed with the proposed plan, various permits will be required from federal and state agencies. Authorization to discharge of dredged or fill material into waters of the United States, under Section 404 of the Clean Water Act, as amended, is required. The Regulatory Office of the USACE has preliminarily reviewed the proposed project and determined that the length of the proposed construction is such that it cannot be authorized under the Nationwide Permit Program. As such, an Individual Department of the Army (DA) Permit would be required for the streambank stabilization since the magnitude of the proposed fill material below the ordinary high water mark of a "Waters of the United States" exceeds the 500-foot limit for authorization with a Nationwide Permit.

A Section 401 Water Quality (WQ) Certification must also be obtained from the State of Oklahoma. Interagency coordination with the Oklahoma Department of Environmental Quality is conducted during the 30-day public notice period for the DA permit. However, it

is critical to understand that the DA Permit cannot be issued until the Section 401 Water Quality Certification is issued.

Given that the Corps does not issue permits to itself and the Local Sponsor will be responsible for the Operation, Maintenance, Repair, Rehabilitation, and Replacement once construction is complete, Oklahoma County would be the appropriate applicant for the Department of the Army (DA) permit and WQ certification. These permits/certifications will be secured prior to construction.

A storm water discharge permit, in accordance with the National Pollution Discharge Elimination System (NPDES) program, from the Oklahoma Department of Environmental Quality is required for construction activities exceeding one (1) acre. For that permit, the contractor selected to construct the project would be the appropriate applicant. The NPDES discharge permit will be secured prior to construction.

1.9 Applicable Laws and Executive Orders and USACE Environmental Operating Principles

The list of applicable federal laws and executive orders pertaining to project specific planning and environmental analysis on federal lands is included Section 4. Compliance with USACE Environmental Operating Principles is also highlighted in this section. Disclosures and findings required in accordance with these laws and orders are contained in Chapter 3 of this EA.

2.0 ALTERNATIVES INCLUDING THE PROPOSED ACTION

This Section discusses the measures considered and the range of alternatives developed during the planning analysis and compares the alternatives with respect to the anticipated impacts and achievement of the goal of stabilizing the streambank of the North Canadian River.

2.1 Measures

During the planning and design analysis study, individual measures were considered to define the action alternatives evaluated. Measures can be combined to form alternatives or they can become stand-alone alternatives. Several construction materials were evaluated as measures to stabilize the streambanks. Those measures include:

- **Drop Structures:** Drop structures are used as grade controls. They are also known as weirs or sills and are used to lower river elevations while controlling the energy and velocity of the water as it passes over the top of the structure. Drop structures are mostly used on watercourses with step gradients to alleviate head cutting and slow the velocity of flow through the channel.
- **Bendway Weirs:** Bendway weirs are rock sills that control velocities and direct current in watercourses and are an important tool in erosion control, stream restoration, and habitat improvements. Bendway weirs consist of a series of

upstream-angled, low elevation stone sills, keyed into the outer streambank, and are high enough and long enough to direct water current perpendicular to the angle of the weir and away from the degrading bank. They are spaced close enough to interrupt the outward flow of the water and redirect it more towards the center of the watercourse. Bendway weirs can reduce outer bank erosion and redirect both the primary concentrated flow and the secondary stream currents

- **Hydraulic Jacks:** Hydraulic jacks are pre-cast concrete or steel structures that resemble 3-dimensional crosses that are essentially two concrete T-shaped pieces joined perpendicularly at the middle with six outward projections. Hydraulic jacks resemble the children's toy commonly known as "jacks". Jacks can be used as bank stabilization, flow and grade control, and scour protection for in-stream bridge structures by increasing the relative roughness of a channel bank. Jacks are placed perpendicular to the flow of a watercourse. Often, wires are attached to the beams to increase trapped sediment and increase debris catch.
- **Riprap:** Riprap is stone material of varying sizes used to armor stream banks, bridge abutments, pilings, or other structures to prevent erosion. Limestone and/or granite are the common sources of riprap, but it can also be composed rubble from building and paving demolition. Armoring with riprap can be used for water containment in a variety of situations and functions to absorb the energy from the flow of water flowing in a watercourse. Riprap is versatile in its application and can accommodate a wide range of bank slope configurations both vertically and horizontally.
- **Live Plantings:** Vegetation can be used to stabilize streambanks, especially vegetation with rhizomatous or fibrous root systems. Live plantings are most successful when streambank grading is gently sloped and terraced.

Of these five measures, four were determined to be inappropriate for the river size, flow, and/or feasibility. As such, these measures were not advanced to be considered as alternatives for the reasons detailed below.

- **Drop Structures.** Initially, the use of a drop structure was considered for use at the upstream end of the migrating meander since these weirs can alleviate head cutting. However, on site investigations confirmed that there is no evidence of headcut migration. In addition with the volume of sediment being transported by the stream, flow would be slowed such that sediment would be expected to be deposited along the downstream face of the structure and fill the downstream channel, possibly to the height of the structure. Should the elevation of the riverbed be raised through deposition of sediment to the height of the drop structure, then the surface elevation of the stream would be expected to rise proportionally. The result could cause more erosion to occur. For these reasons, a drop structure was eliminated from further consideration.
- **Bendway Weirs.** This option was considered as a method of redirecting stream flow away from the eroding streambank and reducing the flow velocity during high flow events. However, the North Canadian River in this area is considered a small stream with typically low flow velocities. Additionally, the highly erodible soils of the area, when combined with the geomorphic dynamics, are such that rerouting channel flow, even slightly, could have damaging effects downstream of the

constructed bendway weirs. As such, constructing bendway weirs was eliminated from further consideration. The bendway weir theory was originally developed to address erosion issues associated with large, navigable waterways, such as the Mississippi River, that rarely experience low flow velocities. The normal flow velocities in the North Canadian River were deemed too low for this measure.

- **Hydraulic Jacks.** Hydraulic jacks were commonly used in the 1940s and 1950s, but as more versatile streambank erosion control methods have been developed, the use of hydraulic jacks has diminished. Currently, the use of jacks is not recommended for effective erosion control in small stream systems.
- **Live Plantings.** This measure was not carried forward as stand-alone alternative; however, the use of live plantings is combined with the action alternatives as a component of that alternative. Generally, live plantings alone as bank stabilization result in a high probability of failure, especially during the establishment phase. Bank shaping is a critical component of using live plantings and requires greater area to terrace the banks so as to best use the fibrous root systems to hold the bank soils. Vegetation generally requires at least two years to become established, during which there would be higher chance of bank failure if vegetation is the only material used. The stream velocities, especially during high flow events, were deemed too great for this non-structural measure to be used as a stand-alone alternative.

2.2 Action and No-Action Alternatives

2.2.1 No-Action Alternative (Alternative 1)

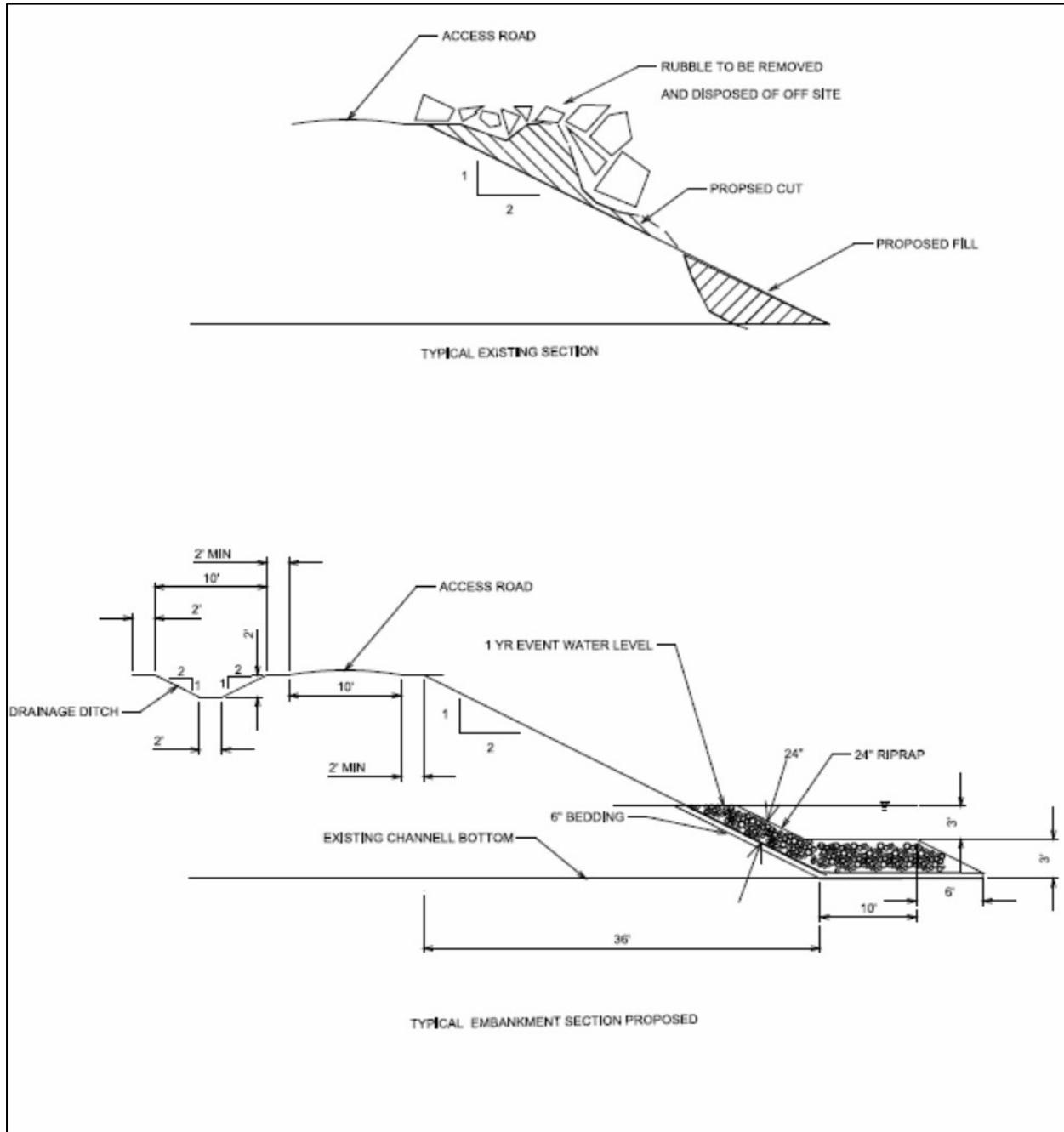
The No-Action Alternative (or the Future Without Project Condition) is the alternative that assumes no action is taken. Although this alternative does not meet the goal of stabilizing the streambank, the analysis of the No-Action Alternative is required by the Council on Environmental Quality (CEQ) regulations for NEPA to identify baseline conditions against which potential impacts can be identified. The No-Action is presented as Alternative 1.

2.2.2 Action Alternatives (Alternatives 2 – 7)

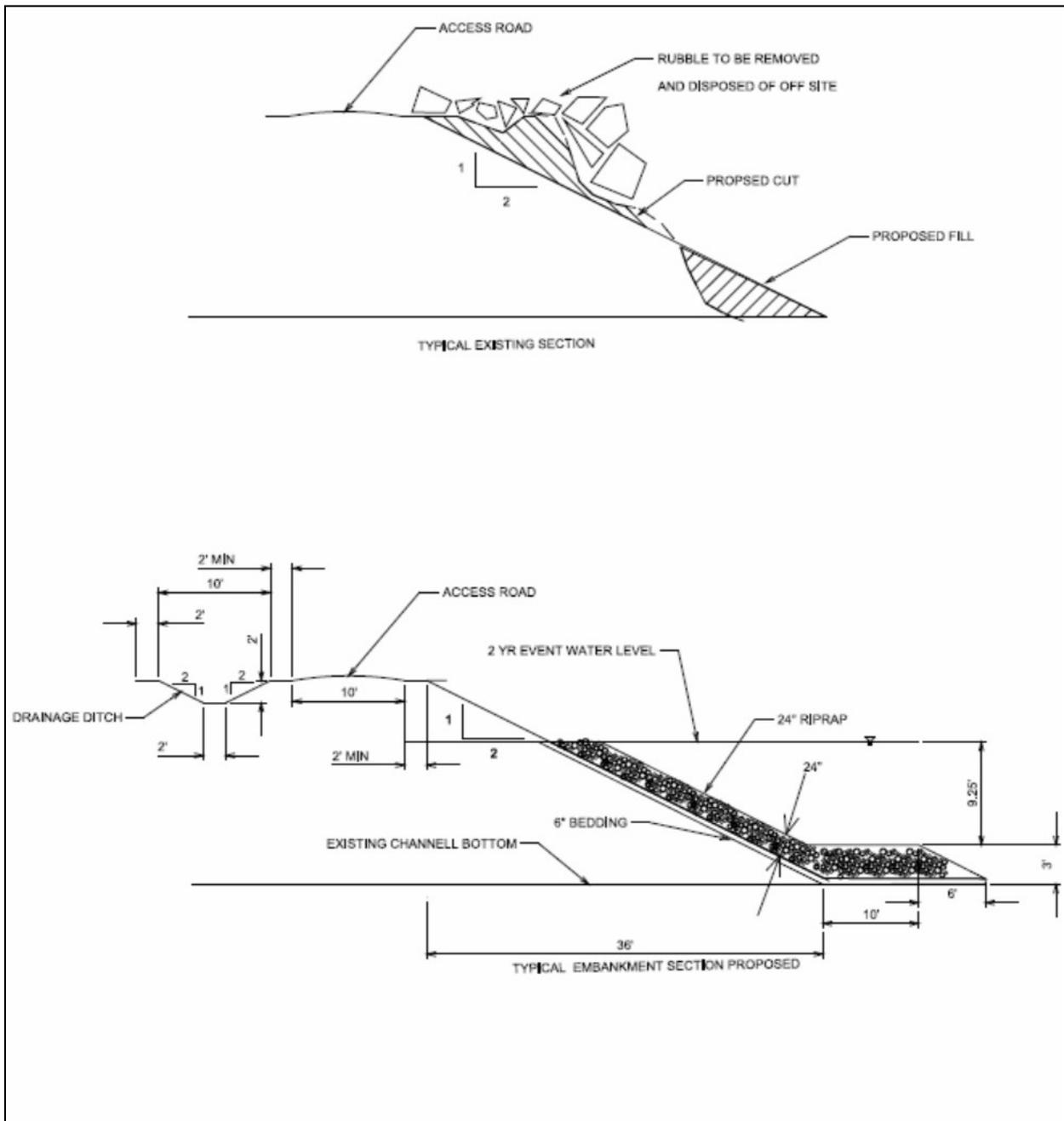
There are six action alternatives. All of the action alternatives are similar in that they include minimal clearing and grading, a temporary staging area, permanent unimproved access road and associated drainage ditch, the removal of approximately 1,800 tons of concrete rubble and disposing of it offsite at a commercial landfill, bank reshaping, emplacement of 6-inches of bedding/filter fabric and riprap 24-inches thick along approximately 3,000 to 3,500 linear feet of the left streambank and approximately 250 to 300 feet on the right bank, and stabilization of soils above the riprap with vegetation.

The action alternatives differ in the slope steepness and the upslope elevation of the riprap placement and the planting area on the bank above the riprap. Slope steepness would either be at a ratio of 2-horizontal to 1-vertical (2h:1v) or to a 3-horizontal to 1-vertical (3h:1v) slope. The upslope elevation of riprap would correspond to the 1-year, 2-year, and

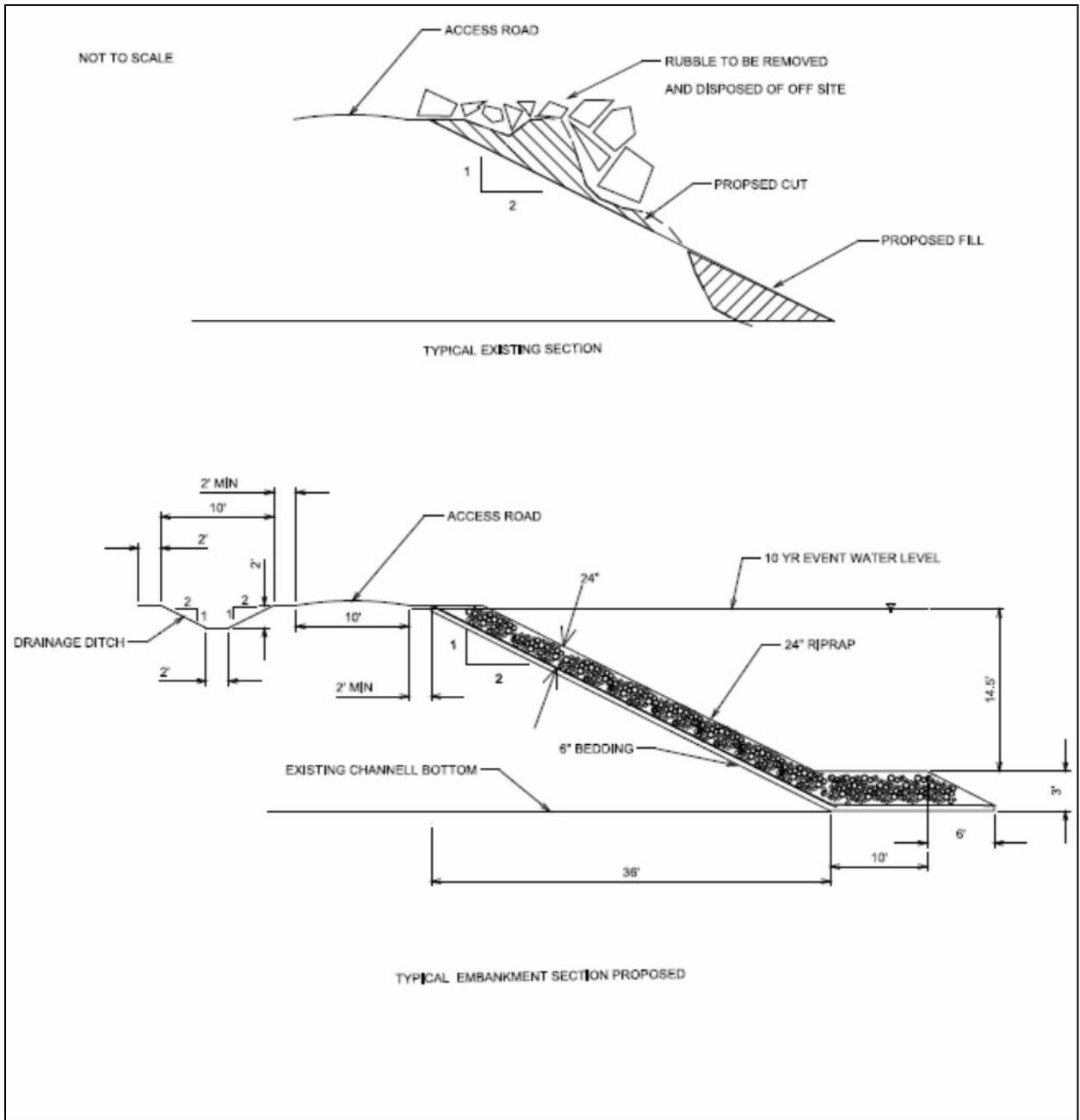
10-year frequency discharge levels of protection. Figures 2-1, 2-2, 2-3, 2-4, 2-5, and 2-6 are schematic drawings depicting each of the action alternatives.



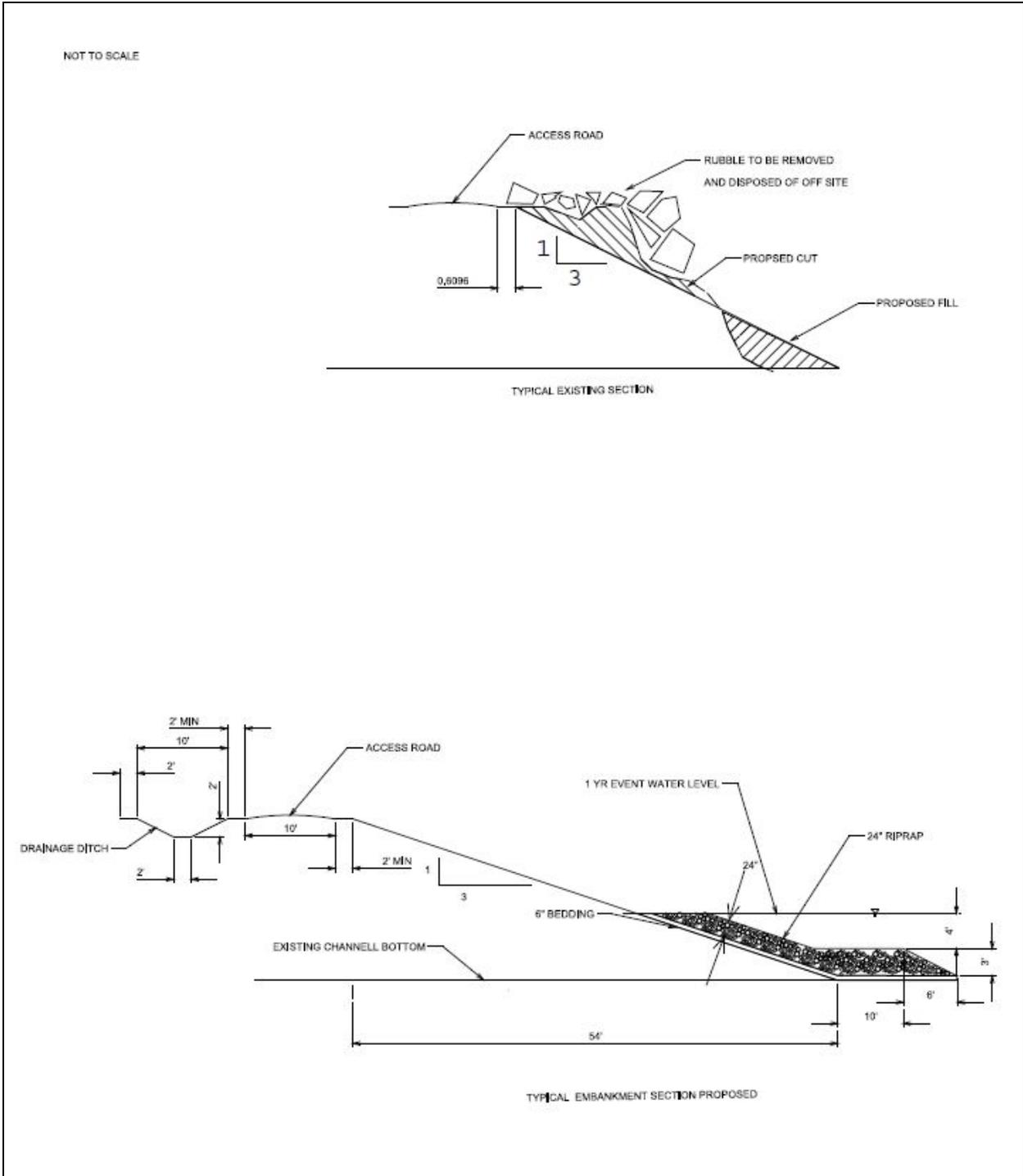
**Figure 2-1: Alternative 2
Riprap at 2h:1v Slope, 1-Year Frequency Elevation**



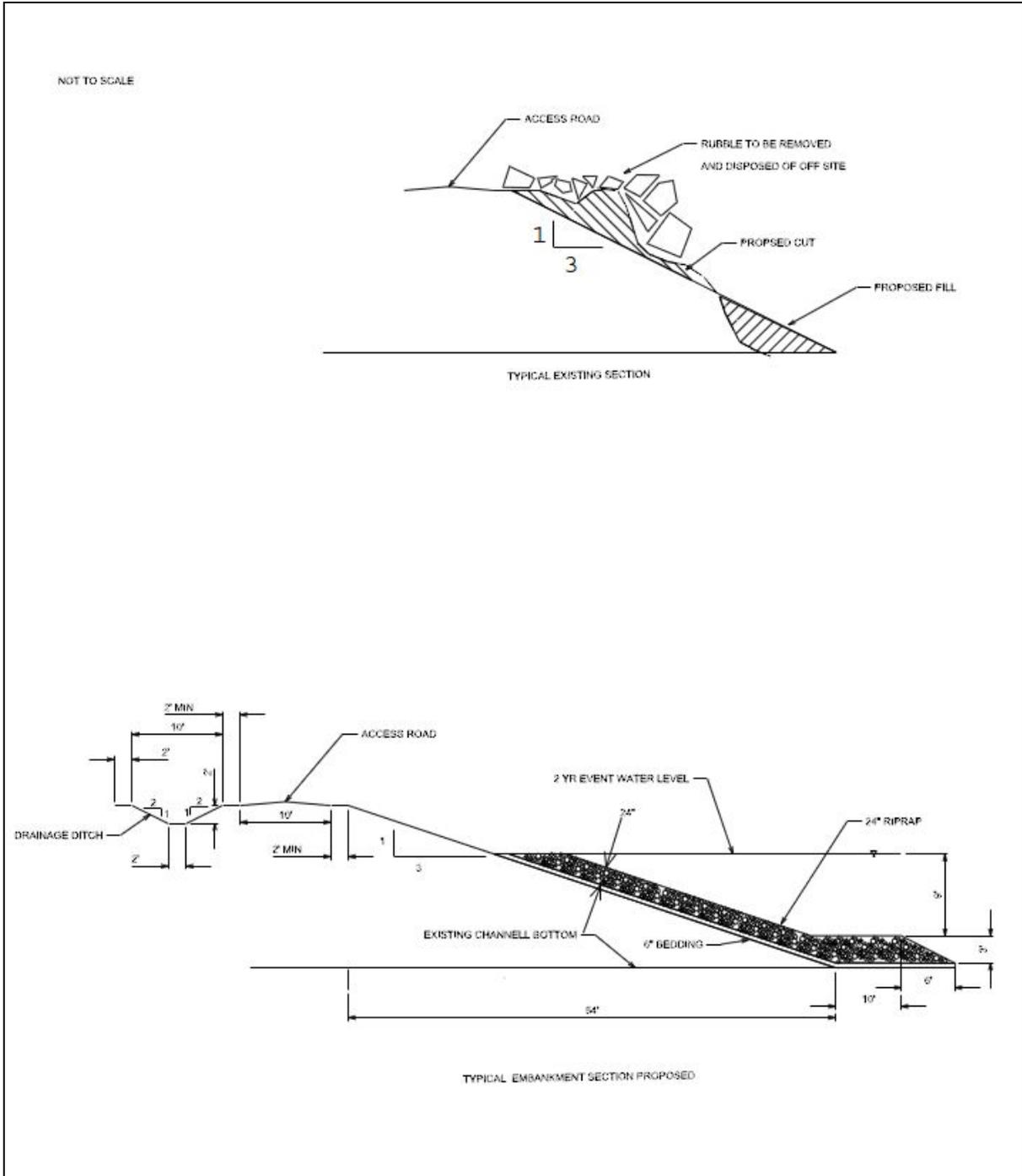
**Figure 2-2: Alternative 3
Riprap at 2h:1v Slope, 2 Year Frequency Elevation**



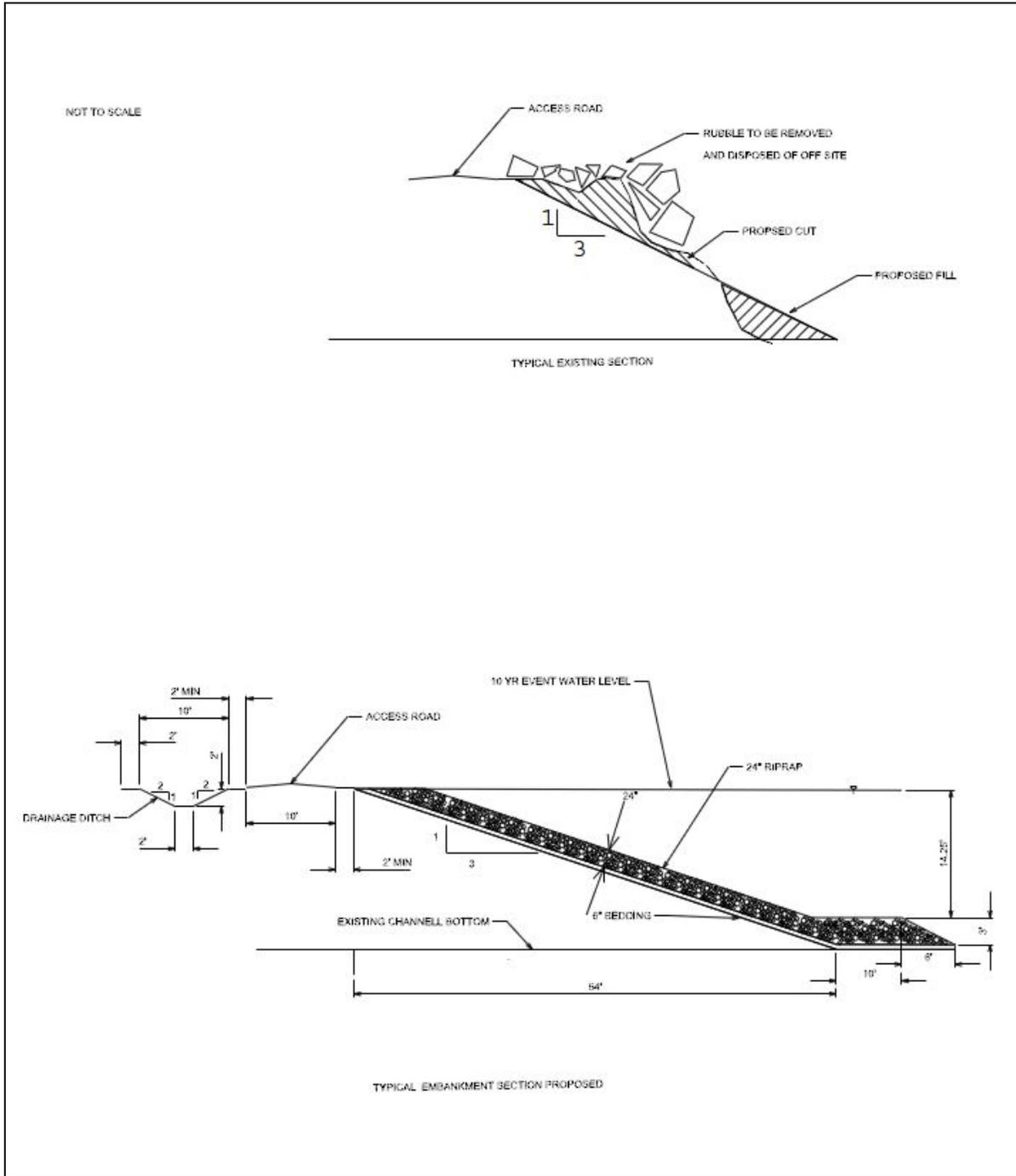
**Figure 2-3: Alternative 4
Riprap at 2h:1v Slope, 10 Year Frequency Elevation**



**Figure 2-4: Alternative 5
Riprap at 3h:1v Slope, 1 Year Frequency Elevation**



**Figure 2-5: Alternative 6
Riprap at 3h:1v Slope, 2 Year Frequency Elevation**



**Figure 2-6: Alternative 7
Riprap at 3h:1v Slope, 10 Year Frequency Elevation**

2.2.2.1 *Alternative 2: Riprap streambanks to the 1-year frequency discharge elevation at a 2h:1v slope (Figure 2-1)*

This alternative consists of the common elements of the temporary staging area, access road, drainage ditch, removing approximately 1,800 tons of rubble along the left bank and disposing it at a commercial landfill at an off-site location. The streambanks would be reshaped to a 2h:1v slope for a distance of approximately 3,000 to 3,500 linear feet. A layer of 6-inches of bedding/filter fabric and riprap, 24 inches thick, would be placed starting at the toe of the slope of the river bed and continue upslope, stopping at the 1-year frequency discharge elevation. Approximately 8,440 tons of riprap would be needed; however, this quantity may change with final design. Appropriate vegetation will be used to stabilize approximately 6 acres above the riprap to the top of slope.

2.2.2.2 *Alternative 3: Riprap streambanks to the 2-year frequency discharge elevation at a 2h:1v slope (Figure 2-2)*

This alternative consists of the common elements of the temporary staging area, access road, drainage ditch, removing approximately 1,800 tons of rubble along the left bank and disposing it at a commercial landfill at an off-site location. The streambanks would be reshaped to a 2h:1v slope for a distance of approximately 3,000 to 3,500 linear feet. A layer of 6-inches of bedding/filter fabric and riprap, 24 inches thick, would be placed starting at the toe of the slope of the river bed and continue upslope, stopping at the 2-year frequency discharge elevation. Approximately 13,880 tons of riprap would be needed; however, this quantity may change with final design. Appropriate vegetation will be used to stabilize approximately 3.6 acres above the riprap to the top of slope.

2.2.2.3 *Alternative 4: Riprap streambanks to the 10-year frequency discharge elevation at a 2h:1v slope (Figure 2-3)*

This alternative consists of the common elements of the temporary staging area, access road, drainage ditch, removing approximately 1,800 tons of rubble along the left bank and disposing it at a commercial landfill at an off-site location. The streambanks would be reshaped to a 2h:1v slope for a distance of approximately 3,000 to 3,500 linear feet. A layer of 6-inches of bedding/filter fabric and riprap, 24 inches thick, would be placed starting at the toe of the slope of the river bed and continue upslope, stopping at the 10-year frequency discharge elevation. Approximately 21,300 tons of riprap would be needed; however, this quantity may change with final design. Appropriate vegetation will be used to stabilize approximately 2.4 acres above the riprap to the top of slope.

2.2.2.4 *Summary of Alternatives 2, 3, and 4*

Alternatives 2, 3, and 4 are similar in that they all propose grading the streambank at a 2h:1v slope. They differ in the required quantity and up-slope elevation of riprap and reseeding areas. For the purposes of this EA, the analysis of impacts will group action alternatives 2, 3, and 4 together. Action Alternatives 2, 3, and 4 would require the

acquisition of approximately 5.2 acres for the temporary staging area, access road, drainage ditch, and construction.

2.2.2.5 *Alternative 5: Riprap streambanks to the 1-year frequency discharge elevation at a 3h:1v slope (Figure 2-4)*

This alternative consists of the common elements of the temporary staging area, access road, drainage ditch, removing approximately 1,800 tons of rubble along the left bank and disposing it at a commercial landfill at an off-site location. The streambanks would be reshaped to a 3h:1v slope for a distance of approximately 3,000 to 3,500 linear feet. A layer of 6-inches of bedding/filter fabric and riprap, 24 inches thick, would be placed starting at the toe of the slope of the river bed and continue upslope, stopping at the 1-year frequency discharge elevation. Approximately 10,890 tons of riprap would be needed; however, this quantity may change with final design. Appropriate vegetation will be used to stabilize approximately 4.7 acres above the riprap to the top of slope.

2.2.2.6 *Alternative 6: Riprap streambanks to the 2-year frequency discharge elevation at a 3h:1v slope (Figure 2-5)*

This alternative consists of the common elements of the temporary staging area, access road, drainage ditch, removing approximately 1,800 tons of rubble along the left bank and disposing it at a commercial landfill at an off-site location. The streambanks would be reshaped to a 3h:1v slope for a distance of approximately 3,000 to 3,500 linear feet. A layer of 6-inches of bedding/filter fabric and riprap, 24 inches thick, would be placed starting at the toe of the slope of the river bed and continue upslope, stopping at the 2-year frequency discharge elevation. Approximately 16,920 tons of riprap would be needed; however, this quantity may change with final design. Appropriate vegetation will be used to stabilize approximately 3 acres above the riprap to the top of slope.

2.2.2.7 *Alternative 7: Riprap streambanks to the 10-year frequency discharge elevation at a 3h:1v slope (Figure 2-6)*

This alternative consists of the common elements of the temporary staging area, access road, drainage ditch, removing approximately 1,800 tons of rubble along the left bank and disposing it at a commercial landfill at an off-site location. The streambanks would be reshaped to a 3h:1v slope for a distance of approximately 3,000 to 3,500 linear feet. A layer of 6-inches of bedding/filter fabric and riprap, 24 inches thick, would be placed starting at the toe of the slope of the river bed and continue upslope, stopping at the 10-year frequency discharge elevation. Approximately 25,950 tons of riprap would be needed; however, this quantity may change with final design. Appropriate vegetation will be used to stabilize approximately 2 acres above the riprap to the top of slope.

2.2.2.8

Summary of Alternatives 5, 6, and 7

Alternatives 5, 6, and 7 are similar in that they all propose grading the streambank at a 3h:1v slope. They differ in the required quantity and up-slope elevation of riprap and reseeding area above the riprap. For the purposes of this EA, the analysis of impacts will group action alternatives 5, 6, and 7 together. Action Alternatives 5, 6, and 7 would require the acquisition of approximately 6.5 acres for the temporary staging area, access road, drainage ditch, and construction.

2.2.3 *The Proposed Action and Tentatively Selected Plan*

The Tentatively Selected Plan is Alternative 2. This alternative consists of the common elements of the temporary staging area, access road, drainage ditch, removing the rubble along the left bank and disposing it at a commercial landfill at an off-site location. The streambanks would be reshaped to a 2h:1v slope for a distance of approximately 3,000 to 3,500 linear feet. A layer of 6-inches of bedding/filter fabric and riprap, 24 inches thick, would be placed starting at the toe of the slope of the river bed and continue upslope, stopping at the 1-year frequency discharge elevation. Approximately 8,440 tons of riprap would be needed; however, this quantity may change with final design

Appropriate vegetation will be used to stabilize approximately 6 acres above the riprap to the top of slope. Replanting could involve using woody species similar to those species found in the surrounding area, such as willow (*Salix nigra*), rough-leaf dogwood (*Cornus drummondii*) and Mexican plum (*Prunus mexicana*).

A variety of mixed cool season and warm season grasses adapted to sandy soils could be used to stabilize the upslope areas above the riprap elevation. Such grass mixtures could include weeping lovegrass, sand lovegrass, bermudagrass, and sideoats grama. The species would be determined during the design phase of this project. Since the unimproved access road would be permanent so as to accommodate maintenance, no vegetation is expected to be planted above the top of bank.

3.0 AFFECTED ENVIRONMENT, ENVIRONMENTAL CONSEQUENCES, CUMULATIVE EFFECTS, AND MITIGATION

3.1 INTRODUCTION

This Section describes the existing conditions for each resource area. For each resource section, the resource is generally defined, assigned an appropriate region of influence (ROI), and described for each area. For this EA, the ROI is defined as the geographic area generally within approximately 0.5-mile of the streambank stabilization study area. This ROI would be the most likely area within which the alternatives may exert some influence.

The affected environment depicts conditions, as they exist, in accordance with the most recent available data for each resource. The level of detail provided is commensurate with the intensity, context, and duration of the potential impacts to a given resource.

3.1.1 Environmental Resources Not Carried Forward for Detailed Analysis

The determination of environmental resources to be analyzed versus those not carried forward for detailed analysis is part of the EA scoping process. The Council on Environmental Quality (CEQ) Regulations (40 CFR 1507.7(a)) encourage project proponents to identify and eliminate from detailed study the resource areas that have no potential to be impacted through implementation of their respective proposed actions.

This project does involve construction-related surface disturbance activity. However, no clearing and grubbing, building construction requiring excavation or subsurface investigations will occur. As such, the following environmental resource areas were found to have no applicability to the No-Action or any of the proposed Action Alternatives. Therefore, these environmental resources areas are not carried forward for detailed analysis in this EA.

- **Geology**: Implementation of either the proposed action or alternatives does not require deep excavation. Although streambank reshaping will involve some cut and fill activities, no major excavation would be required. Therefore, detailed analysis of geology is not required.
- **Topography**: None of the action alternatives require excavation. Although streambank reshaping will involve some cut and fill activities, no widespread reshaping of the floodplain or altering of the existing stream hydrography is required. Therefore, detailed analysis of topography is not required.
- **Groundwater**: Neither the proposed action nor alternatives involves significant excavation or rerouting of the riverbed. Although an alluvial aquifer sustains streamflow in the North Canadian River, no changes to the hydrology of the river system are proposed. As such, a detailed analysis of groundwater resources is not required.
- **Land Use**: Land use classifications would not change with implementation of the proposed action. The proposed site and agricultural fields to the north are situated in the 100-year floodplain. Therefore detailed analysis of land use is not warranted.
- **Aesthetics and Visual Resources**: No construction activities for new structures are planned as part of this action. The surrounding area is either floodplain or rural residential farmland. As such, detailed analysis of aesthetics and visual resources was determined to be unnecessary.
- **Hazardous Materials and Wastes**: No new or additional chemicals or other hazardous materials will be utilized as part of the proposed action, and thus, no

additional waste will be generated. Only one known and EPA-regulated facility (EPA Facility ID: 110037437985), American Oil Recyclers, LLC, is located approximately one mile southwest of the site, on NE 23rd Road (US Highway 62). This project area is rural and has never been developed. Therefore, detailed analysis of hazardous materials and wastes is not warranted.

- **Climate Change:** As currently understood, projected climate change for Oklahoma would not be expected to affect the design or functioning of this project. In general, to the extent climate change affects rainfall, heavier rainfall events would be expected to produce greater runoff in urban areas upstream of this proposed site. The proposed site is located approximately 31 river miles downstream from the nearest urban developments in the eastern portions of the Oklahoma City Area. Greater runoff could cause flashier flows through this segment of the North Canadian River, which could be expected to increase erosion in general as the river meanders across its floodplain. Little data exists at this local level to aid in determining with confidence how climate change may affect stabilization efforts in this relatively small segment of the river. At this time, there is no widely-accepted method of downscaling global climate change data with local data. As such, a detailed analysis of climate change and its effects are not warranted.

3.2 SOILS

Geological resources are defined as the topography, bedrock and minerals, and soils of a given area. Soils are the unconsolidated earthen materials overlying bedrock or other parent materials. Soils are composed of particles of broken rock which have been altered by physical, chemical, and biological processes that include erosion. The ROI for soils is the proposed stabilization and construction areas along the left and right banks of the river.

According to the Natural Resource Conservation Service (NRCS), prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and that is available for these uses. It has the combination of soils properties, growing season, and moisture supply needed to produce sustained high yields of crops if it is managed according to acceptable farming methods.

The Farmland Protection and Policy Act (7 USC 4201) was enacted to minimize the loss of prime and unique farmland as a result of federal actions through conversion of these lands to non-agricultural uses.

3.2.1 Affected Environment

In this central area of Oklahoma, stream valleys are generally composed of sandy soils that reflect the primary parent materials. Historically, the areas adjacent to the left bank of the river were farmed. As the meander has advanced in the last ten years, efforts have been made to impede its advancement by placing construction rubble along the streambank. To accomplish that task, soils have been brought from offsite locations along with the rubble

used in previous bank stabilization efforts. As heavy trucks entered and exited the site, the soils were compacted. Figure 3-1 shows some of the soil compaction along the top of the left bank. As rubble has been added to the left streambank, compaction of the existing native and non-native soils has continued.



Figure 3-1: Soil compaction on the existing site access

The soils mapped for this area are shown in Figure 3-2. The soils mapped in the ROI include:

- Amber very fine sandy loam (AmbE), 5-15-percent slopes, rarely flooded
- Keokuk very fine sandy loam (KeoA), 0 to 1-percent slopes, occasionally flooded;
- Yahola fine sandy loam (YahA), 0 to 1-percent slopes, occasionally flooded;
- Gaddy-Gracemore complex (GaGA), 0 to 1-percent slopes, frequently flooded; and
- Gracemont fine sandy loam (GmtA), 0 to 1-percent slopes, occasionally flooded.

Of these soils, the Keokuk and Yahola soils along the top of the left bank and in the proposed stabilization area on the right bank at the bridge abutment are classified as prime farmland.



The orange line denotes the boundary between soil types.

Figure 3-2: Soils Map

3.2.2 Environmental Consequences

Alternative 1 – No-Action: Adverse impacts to the sandier, streambank soils would continue as bank sloughing and erosion continues. Since some of these areas are classified as prime farmland, those areas would continue to be removed from farming through the erosion process.

Alternatives 2, 3, 4, 5, 6, and 7: All of these alternatives would result in permanent impacts to soils; however, many of those impacts occurred prior to this project. The proposed bank stabilization efforts would use existing, on-site streambank soils for the reshaping. All of the Alternatives would have minor, temporary impacts to streambank soils during bank reshaping. Those soils would be protected with the addition of stabilization materials of bedding and/or filter fabric and riprap. Vegetation would be added to the slope areas above the riprap to stabilize the top of slope. No impacts would be expected from the unimproved access road and ditch, since they would be located where the soils are already compacted. Best management practices will be utilized to ensure soil stability and reduce the erosion potential during construction and after site work is complete.

Soils classified as prime farmlands have also sustained damage both from erosion caused by the movement of this meander and soil compaction from earlier efforts to stabilize the streambank. Additionally, non-native soils have been placed throughout this site, on top of the native soils. Between 2003 and 2008 the meander advanced over 700 feet. Those areas that were part of a larger farm were severed and farming ceased. As such, these prime farmlands were removed from farming through natural processes and previous compaction. Therefore, no impacts to prime farmland beyond those that have already occurred are expected.

3.3 WATER RESOURCES

Water resources include both surface and groundwater resources and associated water quality. Surface water includes all lakes, ponds, rivers, impoundments, and wetlands within a defined area or watershed. Since no activities that would affect groundwater are expected, this resource is not part of the detailed evaluation. Water quality describes the chemical and physical composition of water as affected by natural conditions and human activities. The ROI for water resources includes the proposed construction site and a 0.5-mile buffer on surrounding the site.

3.3.1 Affected Environment

3.3.1.1 Surface Water

The North Canadian River originates in the high plateau of New Mexico and flows eastward through the plains of central Oklahoma. Surface flows are moderated by three USACE dams at Optima, Ft. Supply, and Canton. Additionally, there are numerous

municipal and NRCS structure that have some influence on flows. A US Geologic Survey (USGS) gage is located at the Luther Road bridge and its flow records were analyzed by the Tulsa District to develop the frequency discharges for the 1-, 2-, and 10-year events. These are the frequency discharges that are considered the channel forming events. Supporting documentation of the hydrologic and hydraulic analyses is included in the engineering supplement of the Planning and Design Analysis Report.

3.3.1.2 Floodplains

Executive Order (EO) 11988: Floodplain Management requires federal agencies to avoid “to the extent possible the long and short term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development whenever there is a practicable alternative.” USACE Engineering Regulation (ER) 1165-2-26 contains the USACE policy and guidance for implementing EO 11988. Per ER 1165-2-26, the USACE must first determine whether there are practicable alternatives to placing a proposed project in a floodplain. In addition, ER 1165-2-26 specifies that all reasonable factors should be taken into consideration when determining practicability.

The floodplain of the North Canadian River surrounding the site includes agricultural areas and has never been developed. The only vertical structures in the floodplain are power poles and power transmission lines. There are no farm buildings, homes, or other structures in the floodplain.

3.3.1.3 Water Quality

Regulations implementing Section 303(d) of the Clean Water Act require states to develop lists of water bodies that do not meet water quality standards, and to submit updated lists to the Environmental Protection Agency (EPA) every two years. Oklahoma’s Water Quality Standards (OWRB, 2011), set forth under statutory authority by the Oklahoma Water Resources Board (OWRB), are designed to enhance the quality of waters, protect beneficial uses, and to aid in the prevention and abatement of water pollution in the state.

Designated beneficial uses for the North Canadian River between the State Highway 99 Bridge (south of Prague, OK) and the Portland Street Bridge in Oklahoma City include Aesthetics, Agriculture (livestock and irrigation), Fish and Wildlife Propagation/Warm Water Aquatic Community, Fish Consumption, Primary Body Contact Recreation, and Emergency Water Supply. Based on the Oklahoma Department of Environmental Quality’s (ODEQ) 2010 Oklahoma Integrated Report (2010a), satisfying Section 303(d) of the amended Clean Water Act, Waterbody ID OK52052000010_00, which identifies 3.9 river miles of the North Canadian River encompassing the proposed project area (Figure 3-3), the overall status of this portion of the North Canadian River is ‘Impaired’. As indicated in the 2010 Report (ODEQ, 2010a), beneficial uses Agriculture, Fish and Wildlife Propagation/Warm Water Aquatic Community, Fish Consumption, and Primary Body Contact Recreation are ‘Not Supporting’.

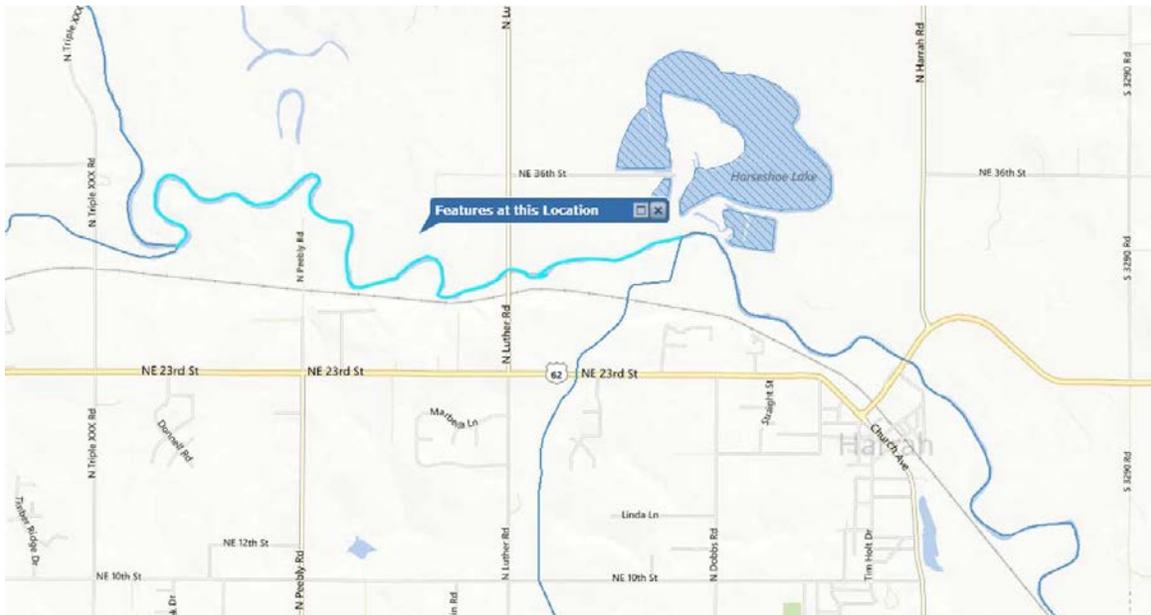


Figure 3-3: River Segment.

The highlighted river segment above is Waterbody ID OK52052000010_00, North Canadian River. This map was generated using EPA’s ‘My WATERS Mapper’ accessible through <http://water.epa.gov/scitech/datait/tools/waters/index.cfm>.

The Agriculture beneficial use status is ‘Impaired’ due to excessive total dissolved solids levels. The Fish and Wildlife Propagation/Warm Water Aquatic Community beneficial use status is ‘Impaired’ due to concentrations of the insecticide dieldrin, and elevated turbidity. Fish Consumption is ‘Impaired’ due to dieldrin concentrations and elevated concentrations of thallium. Primary Body Contact Recreation is ‘Impaired’ due to elevated bacterial levels of *Enterococcus* and fecal coliform bacteria.

While not definitive, the 2010 Report attempts to identify potential sources for the causes of impairment. Elevated total dissolved solids concentrations are attributed to urban-related highway/road/bridge storm water runoff, petroleum and natural gas resource extraction activities, and ‘sources unknown’. Dieldrin concentrations are attributed to both irrigated and non-irrigated crop production and ‘sources unknown’. Elevated turbidity levels are attributed to animal grazing in riparian and shoreline zones, municipal point source discharges, non-irrigated crop production, rangeland grazing, and ‘sources unknown’. Elevated thallium concentrations are attributed to atmospheric deposition and ‘sources unknown’. And finally, elevated *Enterococcus* and fecal coliform levels are attributed to animal grazing in riparian and shoreline zones, impacts from the land application of wastes, municipal point source discharges, septic and similar decentralized waste systems, rangeland grazing, residential districts, wastes from pets, wastes from wildlife other than waterfowl, and ‘sources unknown’.

States are required to establish priority rankings for waters on the Section 303(d) lists and develop strategies to allow attainment of water quality standards. Required strategies include Total Maximum Daily Load (TMDL) calculations to determine maximum amounts of a pollutant that a waterbody can receive while still safely meeting water quality standards. TMDLs are yet needed to address most impairments listed above, but an EPA approved final TMDL has been established for bacteria levels for the North Canadian River Area (ODEQ, 2010b).

Streamflow at USGS gage 07241550, North Canadian River near Harrah, OK (N. Luther Road) is partially regulated by releases from Canton Lake and Lake Overholser where diversions are made into the Lake Hefner Canal. Low flow at this location is sustained in part by sewage effluent from Oklahoma City. Mean annual discharge is 491 cfs with highest monthly mean flows occurring between March and June, and lowest monthly mean flows in September, December, and January (USGS StreamStats Data; <http://streamstatsags.cr.usgs.gov/gagepages/html/07241550.htm>). Assessing data gathered by the USGS for water years 2002 through 2012, average annual water temperature ranges from 17.29 to 21.99 °C, annual average specific conductance ranges from 719.5 to 1,011 µS/cm, and annual average dissolved oxygen concentration ranges from 7.5 to 10.52 mg/l (USGS NWIS Web Interface; http://waterdata.usgs.gov/nwis/dv?referred_module=sw&site_no=07241550).

The OWRB, through the Beneficial Use Monitoring Program (BUMP), has collected water quality data from the North Canadian River at Harrah (at Highway 62 Bridge), just downstream from the proposed project site, from 1998 through 2007 (OWRB, BUMP 2012, Stream Site Data;

http://www.owrb.ok.gov/quality/monitoring/bump/pdf_bump/Current/Sites_AtoZ.html).

Based on this data, 12% of turbidity observations exceed the Oklahoma Water Quality Standard of 50 NTUs. 25.3% of total dissolved solids observations exceed the Oklahoma Water Quality Standard, and Enterococcus levels (geometric mean) exceed the Oklahoma Water Quality Standard of 33/100ml.

3.3.2 Environmental Consequences

3.3.2.1 Surface Water

Alternative 1 – No-Action: No change to surface water elevations would be expected. The North Canadian River would continue to meander across its floodplain as it modifies its channel. Should the meander continue to advance eastward, it could cause total failure to the Luther Road bridge approach and the bridge.

Alternatives 2, 3, 4, 5, 6, and 7: All of these alternatives could temporarily impact the surface water flow rates during construction. Post construction, flow rates and elevations would return to normal and the level of protection provided would be expected to protect against further stream toe cutting and bank sloughing.

3.3.2.2 Floodplains

Alternative 1 – No-Action: Continued erosion of the floodplain would be expected with the No-Action Alternative. The North Canadian typically meanders across its floodplain as it flows eastward out of the urban areas of Oklahoma City.

Alternatives 2, 3, 4, 5, 6, and 7: No impact to floodplains is expected with any of the proposed alternatives. No structures, increase in impervious areas, and/or changes in elevation are proposed with this streambank stabilization project.

3.3.2.3 Water Quality

Alternative 1 – No-Action: With no action, there would be no change in the existing, degraded water quality now present in this segment of the North Canadian River. Erosion would be expected to continue, typical sediment loads in the river would be expected to continue, and water quality would remain unchanged. Historically, erosion has removed much of the existing vegetation that could be a beneficial influence on water quality.

Alternatives 2, 3, 4, 5, 6, 7: Minor, short-term and temporary impacts to water quality would be expected with construction activities in the river channel that temporarily increase turbidity and suspended solids. A long term, minor, positive benefit to water quality would be expected by utilizing vegetation as a component of the streambank stabilization. Vegetation plays a vital role in stream bank protection and improving water quality by reducing erosion and trapping sediments, wastes, and pollutants. As such, there could be a slight improvement in the water quality at this location.

3.4 BIOLOGICAL RESOURCES

Biological resources include plants and animals and the habitats in which they occur. Biological resources are important because 1) they influence ecosystem functions and values; 2) they have intrinsic value and contribute to the human environment; and 3) they are the subject of a variety of statutory and regulatory requirements. The ROI for biological resources is the proposed project area surrounded by a 1,000-foot buffer.

3.4.1 Affected Environment

3.4.1.1 Terrestrial Resources

Oklahoma County is located in the northern cross timbers ecoregion, an area characterized by gently rolling hills and ridges. In undisturbed areas, the typical vegetation includes Post Oak-Blackjack Oak Forest associations and Tallgrass Prairies (Hoagland 2008). Upland vegetation in the study area consists of post oak/blackjack oak forests found along hills and ridges throughout the study area. The dominant tree species in this habitat include post oak (*Quercus stellata*), blackjack oak (*Quercus marilandica*), black hickory (*Carya texana*), and eastern red cedar. Prominent understory species include Eastern redbud (*Cercis canadensis*), Mexican plum (*Prunus mexicana*), and winged sumac (*Rhus*

copallinum). Herbaceous and vine species include poison oak (*Toxicodendron pubescens*) and saw greenbriar (*Smilax bona-nox*).

Generally, bottomland hardwood forest is the most common habitat type within the floodplains and riparian corridors of eastern rural Oklahoma County. Dominant tree species include pecan (*Carya illinoensis*) and green ash (*Fraxinus pennsylvanica*). Black willow (*Salix nigra*) is also common along the forest edge. Dominant vegetation in the understory includes roughleaf dogwood (*Cornus drummondii*) and poison ivy (*Toxicodendron radicans*). There are no forested areas in the project area. There are forest fragments interspersed in the agricultural areas and areas west of the project area.

In the ROI, erosion and farming have removed most of the native vegetation from the proposed site area. Only limited herbaceous species, such as Giant Ragweed (*Ambrosia trifida*), Cocklebur (*Xanthium strumarium*), and Horseweed (*Conyza Canadensis*) can be found in voids in the rubble. Grass species such as Johnsongrass (*Sorghum halepense*) and Bermuda grass (*Cynodon dactylon*), are the dominant species along both banks of the North Canadian.

Just outside the ROI, some woody vegetation has begun to re-establish in the previously eroded areas behind the right bank. Where woody vegetation occurs, Black willow (*Salix nigra*) and Hackberry (*Celtis sp.*) are the dominant woody vegetation in the ROI around the two oxbows that were cut off from the main channel. A majority of this area is or has been farmed with typical row crops such as corn, wheat, and soybeans. Some of these areas have also been cut and baled for livestock forage.

3.4.1.1.1 Invasive Species

EO 13112, *Invasive Species*, directs federal agencies to expand and coordinate their efforts to combat the introduction and spread of “invasive species” (i.e., noxious plants and animals not native to the U.S.). Non-native flora and fauna can cause significant changes to ecosystems, upset ecological processes and relationships, and cause harm to our nation’s agricultural and recreational sectors. Those species that are likely to harm the environment, human health, or economy are of particular concern. Johnsongrass is the only known invasive species on the site.

3.4.1.2 Wetlands

The *USACE Wetland Delineation Manual* (USACE 1987) defines wetlands as areas that have positive indicators for hydrophytic vegetation, wetland hydrology, and hydric soils or as “areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.” Wetlands that are waters of the U.S. or that have a significant nexus to waters of the U.S. are regulated under the CWA as jurisdictional wetlands. The ROI for wetlands is the study area with a 1,000-foot buffer.

A site specific, formal wetland delineation was not performed for this EA. However, a reconnaissance-level site visit was conducted on 19 July 2013 to determine the presence or absence of wetland areas. No wetlands were identified in the study area or adjacent to the left bank of the North Canadian River. However, the two oxbows formed by the river previously severing two meanders as it moved eastward would most likely be classified as wetlands. These areas will not be disturbed with the proposed activity.

3.4.1.3 Wildlife

The species of wildlife expected to use or be present in this ROI include the white-tailed deer (*Odocoileus virginianus*), squirrels (*Sciurus spp.*), Virginia opossum (*Didelphis virginiana*), nine-banded armadillo (*Dasypus novemcinctus*), Eastern cottontail (*Sylvilagus lovidanus*), striped skunk (*Mephitis mephitis*), raccoon (*Procyon lotor*), coyote (*Canis latrans*), and several species of rodents.

Common reptile and amphibian species within the study area include ornate box turtle (*Terrapene carolina*), snapping turtle (*Chelydra serpentina*), common garter snake (*Thamnophis sirtalis*), fence lizard (*Sceloporus undulatus*), ground skink (*Scincella lateralis*), Northern cricket frog (*Acris crepitans crepitans*), American toad (*Bufo americanus*), and smallmouth salamander (*Ambystoma texanum*).

Oklahoma is located within the central migratory bird flyway. The Migratory Bird Treaty Act (MBTA) prohibits, or if necessary, regulates the taking, killing, possession of, or harm to migratory bird species listed in 50 CFR 10.13. The study area may be used by birds during migratory season (the fall). Waterfowl, both migratory and perennial, can be found along stream corridors in Oklahoma. Mallards (*Anas platyrhynchos*) and Canada geese (*Branta Canadensis*) are commonly observed throughout the area. Various egret and heron species, such as the great egret (*Ardea alba*) and great blue heron (*Ardea herodias*), are other types of waterfowl common to the region. Avian species include red-shouldered hawks (*Buteo lineatus*), killdeer (*Charadrius vociferous*), and a variety of song birds.

The bald eagle (*Haliaeetus leucocephalus*) is a regular migrant and winter resident in Oklahoma. The bald eagle was delisted under the Endangered Species Act (ESA) (50 CFR 17) but remains a protected species under the MBTA and, more specifically, under the Bald and Golden Eagle Protection Act (16 USC 668). Although not known as a species that is known to occur in this section of Oklahoma County, it is known as a winter inhabitant at Lake Thunderbird, approximately 19 straight-line miles southwest of the project site and Lake Eufaula, approximately 93 straight-line miles to the east.

Fish species common to streams in central Oklahoma streams include common carp (*Cyprinus carpio*), small mouth buffalo (*Ictiobus bubalus*), big mouth buffalo (*Ictiobus cyprinellus*), river carp sucker (*Carpionodes carpio*), fresh water drum (*Aplodinotus grunniens*), red shiner (*Cyprinella lutrensis*), blunt nose minnow (*Pimephales notatus*) and mosquito fish (*Gambusia affinis*).

3.4.1.4 Threatened and Endangered Species

The Endangered Species Act (ESA) prohibits the unauthorized taking, possession, sale, and transport of species listed as endangered, threatened, or candidates for listing as endangered or threatened. The USFWS Ecological Services internet database, known as the Information, Planning, and Conservation (IPAC) system, the Oklahoma Department of Wildlife Conservation (ODWC) website, and the response to the scoping request from the Oklahoma Natural Heritage Inventory (ONHI) were reviewed prior to a site visit on 19 July 2013 to determine if any federally listed endangered, threatened, or candidate species (species of concern) have the potential to occur in the ROI. An assessment of existing habitat was also conducted to determine the presence or absence of appropriate habitat for any of the listed species. The Tulsa District also coordinated with the USFWS before and subsequent to the site visit.

The database search and coordination effort identified three listed species (all birds): the Interior least tern, piping plover, and whooping crane that have the potential to occur in this part of Oklahoma County. No critical habitat for listed species, as defined by the ESA, is located in or near the study area and/or ROI.

Although Oklahoma does not have an endangered species act, the state has several provisions for species of special state concern. A search of the ODWC web site confirmed that there are no species of state concern listed for Oklahoma County.

- **Interior least tern.** Interior least terns select sparsely vegetated islands and sandbars in wide unobstructed river channels on which to nest and rear their young. Typical nesting sites are usually void of tall trees and typically not within several hundred feet of trees or structures that may provide roosting sites for avian predators. They may occasionally nest on the edges of streams if no other suitable habitat is available. According to the Oklahoma Biological Survey, there are only a small number of records and/or documented occurrences of least terns, nesting or otherwise, in this segment of the North Canadian River.
- **Piping plover.** The piping plover prefers open, sparsely vegetated sand or gravel beaches. The flat and somewhat eroded area along and behind the right bank could provide suitable habitat for piping plovers. There are no documented occurrences of piping plovers in this segment of the North Canadian River.
- **Whooping crane.** Whooping cranes primarily use shallow, seasonally and semi-permanently flooded palustrine wetlands for roosting, and various cropland and emergent wetlands for feeding. Areas characterized by wetland mosaics appear to be the most suitable stopover habitat during their migration.

3.4.2 Environmental Consequences

3.4.2.1 Terrestrial Resources

Alternative 1 – No-Action: Since little to no vegetation exists, erosion would be expected to continue and scour the area such that vegetation would not be able to become established. Only the more aggressive species, such as Johnsongrass, an invasive species, would be expected to colonize the eroded areas.

Alternatives 2, 3, 4, 5, 6, and 7: Since the study area is devoid of vegetation, no direct impact is anticipated. No clearing and grubbing of the site is required. A beneficial, long-term impact would be expected from the use of appropriate native species typically found in central Oklahoma. Such woody species would be similar to those found in the surrounding area, and include willow (*Salix nigra*), rough-leaf dogwood (*Cornus drummondi*), hackberry (*Celtis sp.*), and Mexican plum (*Prunus mexicana*).

A variety of mixed cool season and warm season grasses adapted to sandy soils could be used to stabilize the upslope areas above the riprap elevation. Such grass mixtures could include weeping lovegrass, sand lovegrass, bermudagrass, and sideoats grama. The species would be determined during the design phase of this project. Since the unimproved access road would be permanent, no vegetation is expected to be planted above the top of bank.

The addition of vegetation could create riparian areas that are presently non-existent. None of the Alternatives would be expected to impact terrestrial resources along the right streambank in the ROI. The small area requiring stabilization along the right streambank is under the bridge and is generally bare soil and rubble, with colonies of Johnsongrass prevalent within the right-of-way.

3.4.2.1.1 Invasive Species

Alternative 1 – No-Action: Given that the seed source for Johnsongrass is prevalent in the surrounding area, especially in the adjacent farmland; its spread would be expected to continue.

Alternatives 2, 3, 4, 5, 6, 7: A direct, temporary beneficial effect would be expected during construction of the streambank stabilization, since the existing Johnsongrass would be removed with the existing concrete rubble. Native vegetation would be used to stabilize the streambank above the upslope elevation of the riprap. However, it should be noted that Johnsongrass is dominant in the road right-of-way and surrounding areas. As such, the seed source is in the area both on private property and on the previously eroded areas adjacent to the right bank. As such, it could compete with and eventually overtake the any vegetation in the area.

3.4.2.2 Wetlands

As previously stated, no wetlands were identified in the study area or adjacent to the left bank of the North Canadian River. Also, the two naturally-formed oxbows would not be

disturbed with the proposed activity, since they are protected by the newly-formed streambank. The North Canadian River is classified as a jurisdictional Water of the United States. As such, any activity that places dredged or fill material below the ordinary high water mark must be authorized under a Department of the Army permit.

The distance or length of the proposed streambank stabilization is beyond the maximum activity that could be authorized under the Nationwide Permit Program (NWP), specifically NWP 13. To utilize that NWP, the activity would authorize the placement of 1-cubic yard of fill below the ordinary high water mark for no more than 500 linear feet.

All of the action alternatives involve the placement of fill (riprap) below the ordinary high water mark for a linear distance of approximately 3,000 to 3,500 feet total. As such, the NWP would not be applicable and an Individual Department of the Army (DA) permit would need to be secured prior to construction. Since the Corps does not issue permits to itself and the Local Sponsor will be responsible for the operation, maintenance, repair, rehabilitation, and replacement of this project, they will need to be the applicant for the DA permit.

The application for the DA permit will be completed once plans are finalized and more detail regarding construction materials, i.e., quantities of fill materials, riprap, etc., estimated. The DA permit application will also detail the avoidance to wetlands, the minimization of impacts, and also propose mitigation, as required, for the activity. Mitigation could be presented in the form of native materials planted along the streambank upslope of the riprap to further aid in erosion protection.

Alternative 1 – No-Action: No action would indicate that site conditions would continue to be eroded. Although the river would continue to meander, is anticipated with this alternative. Given the existing constraints of Luther Road, the bridge, and the Arkansas-Oklahoma railroad to the south, it is unlikely that the river movement would create other oxbows.

Alternatives 2, 3, 4, 5, 6, 7: All of the Action Alternatives would have a direct temporary impact to Waters of the US in stabilizing the streambank of the North Canadian River during bank shaping and placement of riprap.

No impact to wetlands from any of the action Alternatives is anticipated. Sediment deposited naturally on the right bank just west of the bridge piers has created a new streambank approximately 5-feet in height, which in turn created the newest oxbow. Johnsongrass has become established along the top of the newest portion of the right streambank, immediately west of the eroded area under the bridge and around the bridge piers. Therefore, no direct or indirect impacts to these oxbows are anticipated.

3.4.2.3 Wildlife

Alternative 1 – No-Action: No impact anticipated.

Alternatives 2, 3, 4, 5, 6, 7: A short term, temporary, direct impact is expected from the action Alternatives. Species normally found in the surrounding farmlands and natural areas, such as birds and small mammals, as well as aquatic resources, would most likely be temporarily displaced during streambank shaping and associated construction. Wildlife would be expected to return to the areas once construction is complete.

A beneficial, long term impact to aquatic biota would be expected. Riprap generally favors benthic species that utilize the interstitial voids in the rocks for shelter and cover. The additional of riprap generally results in an increase in macroinvertebrate populations.

3.4.2.4 Threatened and Endangered Species

A site visit was performed on 19 July 2013 to determine the presence of suitable habitat for either the Interior least tern and/or the piping plover. Aerial maps were used to determine if suitable habitat occurs within the proposed project boundaries by locating the sandbars in the proposed site area. Once on site, the upstream and downstream sandbars within one-quarter of the proposed site were also visited. Interior least terns have historically nested along segments of the North Canadian River (Crawford, personal communication, 2013), but the existing data bases are limited. No interior least tern adults, nests, chicks, and fledglings were observed within the project site or in the upstream and downstream areas surveyed.

While the sandbars in the North Canadian River do provide suitable habitat substrate for nesting least terns, the encroachment of vegetation on the exposed sandbars, the narrow width of the river within the proposed project area, and the close proximity of tall trees and man-made structures (i.e. Luther Road bridge and power line towers within one foot of the streambank) that could be used as roosting sites for avian predators, would indicate the sandbars that are present in or around the project area would be less than optimal nesting habitat for the migratory species.

Both the piping plover and whooping crane may be transient migrants through the project area. While these species could briefly occupy habitat in the project area, no life-history requirements are known to be significant or unique to the area and presence of the species would very likely be infrequent and of short duration. Nesting of either species in the project area would also not be anticipated.

Accordingly, it is the determination of the Corps that the proposed activities result in a “may affect, not likely to adversely affect” finding for the interior least tern, piping plover, or the whooping crane. The USFWS has concurred with this determination, as evidenced by the coordination correspondence found in Appendix B of this EA. As such, the concurrence of the USFWS completes the requirements for Section 7 consultation under the Endangered Species Act.

At this time, there is no definitive schedule for constructing the streambank stabilization. When the proposed construction activity is scheduled, especially if that construction period falls within the migratory, breeding, or nesting seasons, the project area would be surveyed by Corps biologists prior to construction to ensure that no nesting terns are present in or near the construction area on the North Canadian River.

3.5 CULTURAL RESOURCES

Cultural resources typically include archaeological, historic architectural, and Traditional Cultural Properties (TCPs) associated with Native Americans or other groups. The ROI for Cultural Resources extends from the proposed Project Area eastward to the Luther Road Right-of-Way. A description of each of these resource types, in addition to TCPs follows:

- Archaeological resources are locations where human activity measurably altered the earth or left deposits of physical remains (e.g., stone flakes, arrowheads, or bottles). Archaeological resources are either sites or isolates, and may be either prehistoric or historic in age. Isolates often contain only one or two artifacts, while sites are usually larger and contain more artifacts. These resources can include campsites, roads, trails, dumps, battlegrounds, mines, and other features.
- Architectural resources are standing buildings, dams, canals, bridges, and other structures of historic or architectural significance.
- TCPs are resources associated with the cultural practices and beliefs of a living community that link that community to its past and help maintain its cultural identity. These resources can encompass a variety of subjects including archaeological resources and architectural resources, as well as sacred areas or objects, sources of raw materials, and traditional hunting and gathering areas. TCPs are generally associated with Native American groups and are evaluated for National Register of Historic Places as well.

3.5.1 Affected Environment

Archaeological sites representative of the Early Archaic Period through the Middle and Late Archaic, Woodland, Late Prehistoric, Protohistoric, and Historic Periods are known in the larger vicinity of Luther Road and the North Canadian River in Oklahoma County. This culture-historical sequence falls generally within the overall sequence that has been established for central Oklahoma. Some sites in this area are comprised of multi-component prehistoric and/or historic occupations. A number of small archaeological surveys have been conducted in Oklahoma County generally in association with proposed construction projects. In short, there are hundreds of archaeological sites and historic standing structures in the larger Oklahoma County project area vicinity that are on record with the Oklahoma State Historic Preservation Office (SHPO) and the Oklahoma Archeological Survey (OAS).

The proposed project area has been heavily modified, both by natural erosive events and previous attempt to stabilize the streambanks, thereby eliminating the potential for in situ cultural horizons. Aerial photographs illustrate that between 2008 and 2011 the project area was reshaped by cut and fill activities (the bank was sloped) and concrete debris was emplaced in order to protect the bank. Therefore, the project area has already sustained impacts of the same type as those proposed for the proposed federal project. Additional proposed cut and fill activities will be insignificant in nature, and emplacement of additional riprap to protect the bank will result in extremely minor, if any, impacts of a ground-disturbing nature.

Aerial photographs show that between 2006 and 2008 the active channel eroded several hundred feet laterally to the east, illustrating the dynamic character of the river in high flow events. In fact, during this time period a standing structure, most likely a barn/utility shed was lost or removed because of the erosion. Channel movement including lateral migration within the active floodplain is therefore demonstrably significant, which is indicative of a very low potential for in situ archaeological deposits. This low potential is further corroborated by consulting the USDA Soil Survey for the area, indicating that the soils in the project area consist of Canadian and Crevasse Series, which essentially are soils with thin A horizons and B horizons consisting of unstructured sandy loams. The presence of these soils is more evidence that thin A horizons have built over short spans of time on top of fluvial sand deposits. Cultural horizons are likely to either be not present because of lateral stream migration or deeply buried. In contrast, cultural horizons within the proposed project vertical zone are likely very recent.

3.5.1.1 Tribal Consultation

When conducting Section 106 consultation with Native American tribes, the Tulsa District identifies groups to be contacted based on several criteria, including (1) pre-Contact geographical range; (2) Treaty Lands; (3) aboriginal lands established by the Indian Claims Commission of 1978; (4) historical geographical range; and (5) interest in an area expressed through general consultation.

Eleven Native American tribes were identified through the aforementioned criteria, and were accordingly sent scoping letters. A sample of those letters and the mailing list is included in Appendix A. These tribes included: the Absentee-Shawnee Tribes of Indians of Oklahoma; the Shawnee Tribe of Oklahoma; the Citizen Potawatomi Nation of Oklahoma; Seminole Nation of Oklahoma; Kialegee Tribal Town of Oklahoma; Muscogee (Creek) Nation of Oklahoma; Thlopthlocco Tribal Town of Oklahoma; Iowa Tribe of Oklahoma; Osage Nation of Oklahoma; Wichita and Affiliated Tribes of Oklahoma; and the Kickapoo Tribe of Oklahoma.

Section 106 consultation letters specifically address the action for which Section 106 might be triggered, but each also asks the Native American group to review the general area and share, if willing, information on archaeological or historic sites, sacred sites, and traditional cultural properties of importance.

To date, none of the tribes have responded to the scoping letters sent. Generally, the tribes prefer scoping periods for a minimum of 30 days. Should comments be forthcoming from any Native American group during the public comment period, the Tulsa District will respond accordingly.

3.5.2 Environmental Consequences

Cultural resources requirements for federal projects are identified in Section 106 of the National Historic Preservation Act of 1966 (as amended) and its implementing regulation 36 CFR Part 800. Part 800.3 (a)(1) states, "If the undertaking is a type of activity that does not have the potential to cause effects on historic properties, assuming such historic properties were present, the agency official has no further obligations under section 106 or this part." Considering Part 800.3(a)(1), the proposed project is an undertaking under Section 106; however, it is one with no potential to affect historic properties. Therefore, the Section 106 process is concluded and there is no requirement for Section 106 consultation with the Oklahoma State Historic Preservation Office (SHPO), Oklahoma Archeological Survey (OAS), or Native American Tribes. This determination is consistent with 36 CFR Part 800.3(a)(1).

In summary, the Luther Road Emergency Streambank Stabilization Project is determined to be a federal undertaking with "no potential to affect" historic properties. This determination is based on the fact that the project area has a very low potential for in situ archaeological deposits, there are no standing structures, and the area has already been impacted significantly (e.g., cut and fill, riprap emplacement, soil compaction) with the same types of impacts that would result from the proposed federal project. Because this undertaking has been determined to be "no potential to affect," the Section 106 process is complete for the project and no further coordination under Section 106 of the National Historic Preservation Act (NHPA) of 1966 (as amended) or its implementing regulation 36 CFR part 800 is required.

3.6 SOCIOECONOMICS

Socioeconomics is defined as the basic attributes and resources associated with the human environment, particularly population, demographics, and economic development.

Demographics entail population characteristics and include data pertaining to race, gender, income, housing, poverty status, and educational attainment. Economic development or activity typically includes employment, wages, business patterns, an area's industrial base, and its economic growth. Impacts on these fundamental socioeconomic components can also influence other issues such as housing availability.

EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, dated February 11, 1994, tasks "each federal agency [to] make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high adverse human health and environmental effects of its programs, policies, and activities on minority populations and low-income populations." EO

12898 aims to: 1) focus the attention of federal agencies on the environmental and human health conditions in minority communities and low-income communities with the goal of achieving environmental justice; 2) foster non-discrimination in federal programs that substantially affect human health or the environment; and 3) give minority communities and low-income communities greater opportunities for public participation in, and access to public information on, matters relating to human health and the environment.

The USEPA describes environmental justice as the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no group of people, including racial, ethnic, or socioeconomic, should bear a disproportionate share of the negative environmental consequences resulting from the execution of federal, state, local, and tribal programs and policies. The goal of fair treatment is not to shift risks among populations but to identify potential disproportionately high and adverse effects and identify alternatives that may mitigate these effects. Federal agencies must provide minority and low-income communities with access to information on matters relating to human health or the environment and opportunities for input in the NEPA process, including input on potential effects and mitigation measures.

Because children may suffer disproportionately from environmental health risks and safety risks, EO 13045, Protection of Children from Environmental Health Risks and Safety Risks, was issued on April 21, 1997 to help ensure that federal agencies' policies, programs, activities, and standards address environmental health and safety risks to children.

EO 13045 requires all federal agencies to make it a high priority to identify and assess environmental health risks and safety risks that may disproportionately affect children and ensure that its policies, programs, activities, and standards address disproportionate risks to children that may result from environmental health risks or safety risks. The demographic information, including age, race and income of the populace, is vital to framing both a socioeconomic analysis and an analysis of environmental justice conditions.

3.6.1 Affected Environment

The State of Oklahoma was estimated to have a population of over 3.8 million people in 2010. The proposed project area is located in rural eastern Oklahoma County, nearly 19 miles east of the central part of downtown Oklahoma City. The greater Oklahoma City metropolitan area includes Oklahoma County (population 741,781), Cleveland County (population 265,638), and Canadian County (population 122,560), according to the US Census Bureau 2010 Quick Facts.

In Oklahoma County, the majority of the urban areas are located in the western part of the county. The study area is located in rural eastern Oklahoma County. Harrah is the closest incorporated city to the study area and its business district is approximately 2 miles east-southeast of the Luther Road Bridge and the study area. The city limits of Harrah are

approximately 0.5-miles south of the project area. To reflect the rural characteristic of this part of Oklahoma County, the socioeconomic data presented here is based on the City of Harrah data; however, it should be noted that the area surrounding the proposed project area is more rural than Harrah.

The protection of the Luther Road Bridge is critical to typical quality of life issues and needed to protect public safety. For many residents in this rural part of the county, the Luther Road Bridge is the only direct access to necessities such as food and emergency services (i.e., ambulance, fire, and police) and schools, all of which are located within the city boundaries of Harrah and south of the river. The Luther Road Bridge is only one of two bridges that cross the North Canadian River, the other bridge is located approximately two straight-line miles east of the proposed site and at the easternmost end of the business district of Harrah. However, should the bridge fail, the travel routes to access the other bridge would be considerably more than two additional miles and involve traveling on many rural, unimproved roads.

The land area of Harrah is 12.32 square miles and its population is approximately 5,096 people. The population density is estimated at approximately 413 people per square mile. As reported in the 2010 Census, about 25.8% of the 1,971 households in Harrah reported having children under the age of 18. Also, approximately 56.8% were comprised of married couples living together, about 9.2% reported a female head of household, and nearly 31.9% were identified as non-families.

According to the American Community Survey for 2007 to 2011, the average household size was 2.55 persons and the average family size was 3.14 persons. Approximately 9.9% of all households were reported as single individuals, and more than 7% of the households had someone living alone 65 years of age or older. The approximate age distribution of population in Harrah 2007-2011 was comprised of 30.8% under the age of 18 years, 5.2% between the ages of 18 and 24 years, 26.2% between 25 and 44 years, 24.3% between 45 and 64 years, and 13.4% were 65 years of age or older. The median age was 37 years. The gender distribution of male to female was 52.1% to 47.9%.

The median income for a household in Harrah was \$56,302, and the median income for a family was \$10,486. The per capita income for the city was \$25,545, slightly above the statewide average of \$23,770 per person.

3.6.1.1 Environmental Justice

On February 11, 1994, President Clinton issued Executive Order 12898, Federal Actions to address Environmental Justice in Minority and Low-Income Populations. Environmental justice is analyzed to identify potential disproportionately high and adverse impacts on minority and low-income populations from proposed actions and to identify measures that can mitigate impacts. According to the 2010 census for Harrah, 84% of respondents identified themselves as White, 1.0% as African American, 7.3% as American Indian and Alaskan Native, 0.7% as Asian, 4.0% as Hispanic or Latino, none identified themselves as

Native Hawaiian and Other Pacific Islander, and 6.3% from two or more races. Approximately 6.1% of families and 8.4% of the total population were reported below poverty level, including 17.1% of those under age 18 and 4.7% of those ages 65 and older.

3.6.1.2 Protection of Children

Executive Order 13045 seeks to protect children from disproportionately incurring environmental health or safety risks that might arise as a result of Federal policies, programs, and actions. In 2010, 1,572 children under the age of eighteen (30.8% of total population) were reported to be living in the City of Harrah.

3.6.2 Environmental Consequences

Alternative 1 -No-Action: If no action is taken to stabilize the stream banks and Luther Road and the bridge fail, then the road and bridge would be closed indefinitely. There is only one other north-south route in the Harrah area and traffic would need to be re-routed more than two miles on rural roads to use the NE 23rd Street bridge in Harrah. The majority of the Harrah school district is situated north of the North Canadian River, with its northernmost boundary approximately 5 straight-line miles north of Harrah. In the event of failure and road closure, school busses would all need to use an alternate route to transport children to their schools in Harrah. The effect of the No-Action alternative could represent a disproportionate safety risk to children, since travel on school busses would require longer times and distances on rural roads.

Alternatives 2, 3, 4, 5, 6, 7: None anticipated. With regard to environmental justice and protection of children, there would be no disproportionately high and adverse impacts on minority and low-income populations, and there would be no disproportionate health or safety risks to children from implementing the preferred alternative. A direct, beneficial impact would be realized if Luther Road and the bridge remain intact.

3.7 AIR QUALITY

Existing air quality at a given location can be described by the concentrations of various pollutants in the atmosphere. The USEPA defines air quality as the ambient air concentrations of specific pollutants determined by the USEPA to be of concern to the health and welfare of the public. These "criteria pollutants" include ozone (O₃), carbon monoxide (CO), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), particulate matter less than or equal to 2.5 microns in aerodynamic diameter (PM_{2.5}), particulate matter less than or equal to 10 microns in aerodynamic diameter (PM₁₀), and lead (Pb).

Criteria pollutant emissions affecting air quality in a given region can be characterized as being from either stationary or mobile sources. Stationary sources of emissions, also known as point sources, are typified by emissions from smokestacks. Mobile sources of emissions, also termed non-point sources, categorize emissions from vehicles and aircraft. Air quality for a region is a function of the type and concentration of pollutants in the atmosphere, the

size and topography of the air basin, and local and regional meteorological influences. The significance of a pollutant concentration in a region or geographical area is determined by comparing it to federal and/or state ambient air quality standards.

Under the authority of the Clean Air Act (CAA), the USEPA has established ambient air quality standards to protect public health and welfare, with an adequate margin of safety. These federal standards, the National Ambient Air Quality Standards (NAAQS), are defined in terms of concentration (e.g., parts per million [ppm], parts per billion [ppb], micrograms per cubic meter [pg/m³]) determined over various periods of time (averaging periods).

Short-term standards (1-hour, 3-hour, 8-hour, or 24-hour periods) are established for pollutants with acute health effects and may not be exceeded more than once a year. Long-term standards (annual periods) are established for pollutants with chronic health effects and may never be exceeded. The USEPA designates areas of the U.S. as having air quality equal to or better than the NAAQS (attainment) or worse than the NAAQS (nonattainment), based on measured ambient criteria pollutant data. Upon achieving attainment, areas that were previously in nonattainment are considered to be in maintenance status. Areas are designated as unclassifiable for a pollutant when there is insufficient ambient air quality data for the USEPA to form a basis of attainment status; unclassifiable areas are treated similar to areas that are in attainment of NAAQS.

3.7.1 Affected Environment

The project area in eastern Oklahoma County is predominantly a rural area that does not have a local air quality monitoring station, although there are some located in the general region to the west in Oklahoma City. The U.S. Environmental Protection Agency (EPA) published a Conformity Rule on November 30, 1993, requiring all Federal actions to conform to appropriate State implementation Plans (SIPs) that were established to improve ambient air quality. At this time, the Conformity Rule only applies to Federal actions in non-attainment areas. A conformity determination based on air emission analysis is required for each proposed Federal action within a non-attainment area. This geographical region is in attainment and meets the National Air Quality Standards for the criteria pollutants designated in the CAA; therefore, a conformity determination is not required.

3.7.2 Environmental Consequences

Alternative 1-No-Action: No impact anticipated.

Alternatives 2, 3, 4, 5, 6, 7: Implementation of any of the action alternatives would have little adverse impacts to air quality. These impacts are considered to be short-term and would result from the use of construction equipment, trucks entering and exiting the site, and potential soil disturbance with bank reshaping. Construction vehicles and gasoline-or diesel-powered equipment would emit carbon monoxide, hydrocarbons, oxides of nitrogen and other contaminants. These impacts are considered to be short-term and would not be

expected to exceed threshold limits. A conformity analysis is not required as the project site is not in a non-attainment area.

3.8 NOISE

Noise is defined as unwanted or intrusive sound. Noise impacts on the human environment range from intensity levels that interfere with communication and daily activities to those that can cause adverse health effects. Noise levels naturally decrease as the receptor moves further away from the source. Noise sensitive receptors include residential areas in proximity to a specific area.

Sound is generally characterized by several variables, including frequency and intensity. Frequency describes the sound's pitch and is measured in cycles per second, or hertz (Hz). Intensity describes the sound's loudness and is measured in decibels (dB). Decibels are measured using a logarithmic scale; thus, the average person perceives a change in sound level of about 10 dB as a doubling (or halving) of the sound's loudness. This relation holds true for sounds of any loudness. The normal human ear can detect sounds that range in frequency from about 20Hz to 20,000 Hz. However, all sounds in this wide range of frequencies are not heard equally well by the human ear, which is most sensitive to frequencies in the range of 1,000 Hz to 4,000 Hz. This frequency dependence can be taken into account by applying a correction to each frequency range to approximate the human ear's sensitivity within each range. This is called A-weighting and is commonly used in measurements of community environmental noise. The A-weighted sound pressure level (abbreviated as dBA) is the sound level with the "A-weighting" frequency correction.

3.8.1 Affected Environment

No noise surveys have been conducted within the study area. Therefore, an evaluation of existing noise levels must be based on land usage. Noise generated in the proposed project area is related to transportation uses such as highways and railroads, with a lesser noise arising from the use of various types of rural activity. Table 3-1 presents a comparison of typical noise levels.

Table 3-1: Comparison of Noise Levels

Industrial Activity	Noise Level in Db(A)	Rural Activity
	110	Chain Saw
Rail Line on Steel Structure	100	Leaf Blower
Jet Fly-over at 300 meters (1,000 feet)		
Bulldozer at 15 meters (50 feet)	95	Power Saw (50 feet)
Front-end Loader at 15 meters	90	Gas Lawn Mower at 30 feet
Construction Backhoe and Graders at 15 meters (50 feet)	85	
Diesel Truck at 15 meters (50 feet) at 50 miles per hour	80	Food Blender at 1 meter (3 feet)
	70	Vacuum Cleaner at 3 meters (10 feet)

Source: FHWA, *Construction Noise Handbook*

3.8.2 Environmental Consequences

Alternative 1-No-Action: No impact anticipated.

Alternatives 2, 3, 4, 5, 6, 7: The proposed project area is located in a predominantly rural area. Traffic in the area is heavier during commuting hours and typically lower during the daytime hours. There is no heavy industry in the immediate vicinity. Therefore, it is anticipated that there would be a minor, temporary increase in the noise levels attributed to all of the action alternatives. Noise levels created by construction equipment would vary greatly depending on factors such as the type of equipment, the specific model, the operation being performed, and the condition of the equipment. Heavy equipment such as backhoes, front-end loaders and dump trucks would cause short-term, localized, minor increases in noise levels. These short-term increases would not be expected to substantially affect adjacent noise sensitive receptors or wildlife areas, since they would be attenuated by distance, topography and vegetation.

3.9 Transportation

3.9.1 Affected Environment

Functional classification is an important factor for Oklahoma since it provides useful information to a variety of government agencies in the areas of planning, organizing,

jurisdictional responsibility, and cost allocation. Functional classification is the process by which streets and highways are grouped into classes according to the character of service they intend to provide. Cities, towns, businesses, farms, homes, schools, recreation areas, and other places generate or attract trips. Rural roads consist of those facilities that are outside of urbanized areas.

- Rural Principal Arterials consists of a connected rural network of continuous routes that have the density of interstate and intrastate travel, that serve an urbanized area within ten miles of its location.
- Major Rural Collector routes generally serve travel of primarily intracounty rather than statewide importance and constitute those routes on which predominant travel distances are shorter than on arterial routes. These routes provide service to any county seat not on an arterial route and to other traffic generators such as schools, shipping points, county parks, and important agricultural areas.

Luther Road is classified by the Oklahoma Department of Transportation as a major county collector roadway. It is a north-south route that connects US Highway 62 (US 62), approximately 0.5-miles to the south and US Route 66 Interstate 44, approximately 11.5- and 10-miles, respectively, to the north. US Route 66 is a major collector highway that collects traffic from rural routes and channels it into the arterial system. US 62, also named NE 23rd St., is classified as a principal east-west arterial to central Oklahoma City through Harrah with an annual average daily traffic count of 8,200 vehicles. Arterials serve the major traffic movement within urbanized areas and connecting residential areas to major intercity communities and businesses.

3.9.2 Environmental Consequences

Alternative 1-No-Action: The No-Action Alternative is the only alternative evaluated in this EA that could result in a major, long term impact to the existing transportation network should the North Canadian River continue its migration eastward. If the streambank continues to erode, it would eventually cause failure of the road and bridge approach. The road would remain closed until a replacement roadway and/or bridge or both could be funded and constructed. Traffic would need to be rerouted. The most likely scenario to replace the roadway once it has been severed would be to replace it with a bridge that would span both the river and the railroad.

Alternatives 2, 3, 4, 5, 6, 7: Temporary, minor impacts to transportation are anticipated. Although none of the action alternatives require the creation of new roads or existing roads, truck traffic would increase slightly as trucks enter and leave the site. Traffic on Luther Road could be slowed as a result.

3.10 UTILITIES

A public utility is a business that furnishes an everyday necessity to the public at large. Public utilities provide water, electricity, natural gas, telephone service, and other essentials. Utilities may be publicly or privately owned, but most are operated as private businesses.

3.9.1 Affected Environment

Overhead power distribution lines parallel both sides of Luther Road. Single pole steel structures carrying multiple lines parallel the west side of the road and single pole wood structures with cross-arm beams parallel the east side of the road. The wood poles also carry telephone lines. These are typical of medium voltage distribution lines used in urban and rural areas. Medium voltage distribution lines generally transmit between 1000 volts to 33 kilo-volts (kVs) of electricity.

Overhead, high voltage electric power transmission lines are also in the area, located at an angle to Luther Road, crossing the agricultural field adjacent to the north of the site. High voltage line usually transmits 115 to 138 kVs used for transmission of bulk quantities of power and connection to very large urban areas. One of the steel towers or pylon set on concrete footings/piers is situated along the left bank of the North Canadian River at the westernmost end of the proposed project site. Erosion has removed enough of the bank and the stream bank soil has sloughed such that the streambank is now vertical and approximately one foot from the concrete pier.

3.9.2 Environmental Consequences

Alternative 1-No-Action: The No-Action Alternative is the only alternative evaluated in this EA that could result in a major, negative impact to the existing utility network should the North Canadian River continue eroding its left bank. If the streambank continues to erode, it would eventually cause failure of the distribution poles along the west side of Luther Road, interrupting service in this area of the county. It could also cause an interruption in both the local delivery of electricity and interrupt the transmission of power to and from Oklahoma City.

Alternatives 2, 3, 4, 5, 6, 7: None of the action alternatives would impact the utilities in the area. No new construction is proposed as part of the proposed action, thus no potential environmental consequences to utilities would result from implementation of the proposed action.

3.11 CUMULATIVE EFFECTS

According to CEQ regulations, the cumulative effects analysis should consider the potential environmental impacts resulting from “the incremental impacts of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions” (40 *CFR* 1508.7).

Cumulative effects are found to occur when there is a relationship between a proposed action or alternative and other actions expected to occur in a similar location or during a similar time period. This relationship may or may not be obvious. The effects may then be incremental and result in cumulative impacts. The scope of the cumulative effects analysis involves both the geographic extent of the effects and the timeframe in which the effects could be expected to occur.

In this EA, the Tulsa District has made an effort to identify actions in or near the ROI that are under consideration at this time. These actions are included in the cumulative impacts analysis to the extent that details regarding such actions exist and the actions have a potential to interact with the proposed action or alternatives outlined in the EA. Although the level of detail available for those future actions varies, this approach provides the decision maker with the most current information to evaluate the consequences of the alternatives. This EA addresses cumulative impacts to assess the incremental contribution of the alternatives to impacts on affected resources from all factors.

This analysis describes past actions and circumstances that are relevant to the environments associated with streambank stabilization efforts on the North Canadian River in eastern Oklahoma County, Oklahoma, when combined with the proposed action, may result in incremental impacts.

3.11.1 Cumulative Effects Analysis

As described in the environmental consequences sections of this EA, none of the proposed action alternatives and/or the tentatively selected plan (Alternative 2) would affect geological resources, topography, groundwater, land use, aesthetics and visual resources, hazardous materials and wastes, climate change, floodplains, soils, including prime farmland soils, terrestrial resources, wetlands, cultural resources, Native American tribes, transportation, and utilities. Therefore, no cumulative impacts to any of these resource areas would result from implementing the proposed action in conjunction with past, present, or reasonably foreseeable projects in the ROI.

A review of the Tulsa District Regulatory Office records and aerial photography indicate that there are multiple other projects in many segments of the North Canadian River that involved streambank stabilization with riprap, many of which were authorized through the regulatory process. Adjacent to the southernmost project area, the Arkansas-Oklahoma Railroad most recently stabilized the streambank to prevent failure of the rail line. The North Canadian River has since cut off that segment of the river and it is now the southern

edge of the newest oxbow. That project was authorized under the Nationwide Permit 13 with only minor, temporary impacts to water quality during construction.

Approximately one river mile downstream of the project site, a railroad bridge over the North Canadian River and the left bank along the Horseshoe Lake power plant facilities have been stabilized with riprap. Within 3 river miles downstream are other stabilized streambanks protecting US Highway 62 and the NE 23rd Street Bridge into Harrah. The North Canadian River is an uncontrolled water course through mainly rural areas of Oklahoma from its exit from Oklahoma City to its confluence more than 130 river miles east with Lake Eufaula. There are many areas both upstream and downstream of this project site where riprap has been used to protect transportation and public facilities.

Many of the impacts associated with erosion control measures are independent of the material used. Generally, impacts arise from the habitat characteristics of the structure and the influence of the structure on riparian vegetation. It is important to note that the impacts associated with the use of riprap are generally minimized by reducing the height of protection, increasing the slope of the embankment, and by sizing the riprap in order to create adequate habitat within the aquatic environment. Planting along the riprap also reduces the impacts (Fischenich, 2003).

The existing stabilization efforts along the nearly 130 river miles between Oklahoma City and Eufaula Lake have used a variety of heights, slopes, and vegetation. Riprap placed higher on the streambank significantly decrease the energy and water surface slope, induce sediment deposition upstream and scour downstream. Since the Tentatively Selected Plan uses a lower height of riprap and steeper slope it is not expected to significantly add to the many other stabilized streambanks along the North Canadian River. Therefore, the incremental effects of the proposed action, in combination with potential impacts associated with reasonably foreseeable future actions, would not be expected to create significant or adverse cumulative effects to regional natural resources beyond those described in the environmental consequences section of this chapter.

3.12 MITIGATION MEASURES

The North Canadian River is classified as a “Water of the United States.” As such, it is protected under Section 404 of the Clean Water Act (33 CFR Part 320 - 325 and 33 USC 1344). Streambank stabilization activities will require an Individual DA Permit to authorize construction. The impacts realized result from the placement of fill materials below the ordinary high water mark that are necessary to stabilize the left and right banks of the North Canadian River. As part of the permit conditions, mitigation for impacts to Waters of the United States will most likely be required. Typically, mitigation may be planting the areas upslope of the riprap with vegetation to reduce potential future erosion. Since there would be no impact to jurisdictional wetlands, no wetland mitigation is anticipated.

At this stage of the planning process, the details of the extent of any mitigation required have not been determined. The lack of information regarding the specific mitigation requirements has not influenced the analysis in this EA or the selection of the Tentatively Selected Plan. As part of the DA Permit application, mitigation details will include a discussion of the Tentatively Selected Plan in (a) avoiding the impacts; (b) minimizing the impacts; (c) rectifying the impact by repairing, rehabilitating, or restoring the affected environment; (d) reducing or eliminating the impact over time by preservation and maintenance operation during the life of the action; and (e) compensating for the impact by replacing or providing substitute resources.

3.13 ENVIRONMENTAL COMMITMENTS

This EA is scheduled to be released to agencies and the general public in August 2013. Unless significant comments are received regarding the analysis contained herein are received, USACE expects to issue a Finding of No Significant Impact (FONSI) based on this analysis of impacts.

During the consideration of a complete DA Permit application, the mitigation plans and specifications will be required as part of that authorization to construct the streambank stabilization. Should those requirements not be met, an Individual DA Permit would not be issued, and no construction will occur. Also during the consideration of the DA Permit application, a thirty day public comment period separate from the public comment period of this EA is required by the Individual DA permitting process. Concurrent with the DA permitting process, the State of Oklahoma considers the Section 401 Water Quality Certification. The DA permit cannot be issued until the Water Quality Certification is issued.

All state and federal permit conditions necessary for construction and maintenance of the project will be acquired and secured prior to construction of the streambank stabilization.

3.14 CONCLUSION

The Tentatively Selected Plan, Alternative 2, may affect, but is not likely to adversely affect the transient avian species that occur in the North Canadian River. The preferred action would not impact historic properties, soils, floodplains, vegetation, wetlands, transportation, utilities, geology, topography, groundwater, land use, aesthetics and visual resources, hazardous materials and wastes, and/or climate. Only minor temporary impacts to the natural and human environments with regard to water quality, fish and wildlife resources, noise, physical disturbance to the river banks, and socioeconomics are expected. The Tentatively Selected plan meets the purpose and need of the proposed action by protecting Luther Road and associated utilities. It would not result in any significant, long term, adverse impacts to the human environment.

A significant impact to the human environment is expected should no action be taken to prevent the North Canadian River from eroding Luther Road and bridge and utility poles

and pylons. As documented in this evaluation, roadway and bridge failure would cause closures that could last indefinitely, until funding became available to reconstruct the bridge. An interruption of the surface transportation in this area could adversely and disproportionately affect children, since the majority of the Harrah school district lies on the north side of the river. Utilities serving the rural area and transmitting electric power to the metropolitan Oklahoma City urban centers would be interrupted should the river erode the power poles and pylons adjacent to the left bank of the river.

4.0 APPLICABLE ENVIRONMENTAL LAWS, REGULATIONS, and POLICY

4.1 *Applicable Laws and Regulations*

This EA is in compliance with the environmental laws listed on table 4-1 below.

Table 4-1: Environmental Statutes

Federal Statute	Compliance
Archeological Resources Protection Act, 16 U.S.C. 470, <i>et seq.</i>	NA
Bald and Golden Eagle Protection Act, 16 USC 668-668c	FC
Clean Air Act, as amended, 42 U.S. C. 7401-7671g, <i>et seq.</i>	FC
Clean Water Act (Federal Water Pollution Control Act), 33 U.S. C. 1251, <i>et seq.</i>	PC
Endangered Species Act, 16 U.S.C. 1531, <i>et seq.</i>	FC
Environmental Justice (Executive Order 12898)	FC
Farmland Protection Policy Act, 7 U.S.C. 4201, <i>et seq.</i>	FC
Federal Water Project Recreation Act, 16 U.S. C. 4601-12, <i>et seq.</i>	FC
Fish and Wildlife Coordination Act, 16 U.S.C. 661, <i>et seq.</i>	FC
Floodplain Management (Executive Order 11988)	FC
Invasive Species (Executive Order 13122)	FC
Land and Water Conservation Fund Act, 16 U.S.C. 4601-4, <i>et seq.</i>	NA
Migratory Bird Treaty Act, 16 U.S. C. 703-712, <i>et seq.</i>	FC
National Environmental Policy Act, 42 U.S.C. 4321, <i>et seq.</i>	FC
National Historic Preservation Act of 1966, as amended, 16 U.S. C. 470a, <i>et seq.</i>	FC
Protection & Enhancement of the Cultural Environment (Executive Order 11593)	FC
Protection of Children from Environmental Health and Safety Risks (Executive Order 13045)	FC
Protection of Wetlands (Executive Order 11990)	FC
Rivers and Harbors Act, 33 U.S. C. 403, <i>et seq.</i>	FC
Watershed Protection and Flood Prevention Act, 16 U.S.C. 1001, <i>et seq.</i>	FC
Wild and Scenic River Act, 16 U.S. C. 1271, <i>et seq.</i>	NA
NOTES:	
a. FC - Full compliance. Having met all requirements of the statute for the current stage of planning	
b. PC - Partial compliance. Not having met some of the requirements that normally are met in the current stage of planning.	
c. NA - Not applicable. No requirements for the statute required; compliance for the current stage of planning	

4.2 USACE Policy – Environmental Operating Principles

The U.S. Army Corps of Engineers (USACE) has reaffirmed its commitment to the environment by formalizing a set of "Environmental Operating Principles" applicable to all its decision-making and programs. These principles foster unity of purpose on environmental issues, reflect a new tone and direction for dialogue on environmental matters, and ensure that employees consider conservation, environmental preservation and restoration in all Corps activities.

Sustainability can only be achieved by the combined efforts of federal agencies, tribal, state and local governments, and the private sector, each doing its part, backed by all citizens. These principles help the Corps define its role in that endeavor. By implementing these principles, the Corps will continue its efforts to develop the scientific, economic and sociological measures to judge the effects of its projects on the environment and to seek better ways of achieving environmentally sustainable solutions. The principles are being integrated into all project management process throughout the Corps.

The proposed project is consistent with each of these seven principles as described below. The principles are consistent with the National Environmental Policy Act, the Army Strategy for the Environment with its emphasis on sustainability and the triple bottom line of mission, environment and community, other environmental statutes, and the Water Resources Development Acts that govern Corps activities.

1. *Foster sustainability as a way of life throughout the organization.* The proposed Luther Road streambank stabilization effort is important to protecting the public from the consequences of the failure of a roadway and bridge connecting rural parts of Oklahoma County to life safety necessities (emergency, police, fires, etc.) in Harrah, OK. Coordination with federal, state, and local government agencies, and non-governmental organizations and our non-federal sponsor was essential to the development of the recommended alternative. Where avoidance has not been possible, the project includes measures to ensure human safety, protect environmental resources during construction, and replace lost natural habitats in the same watershed.

2. *Proactively consider environmental consequences of all Corps activities and act accordingly.* As was the case for this project, the Corps study process for project formulation and alternative development is founded upon a multidisciplinary approach that addresses all facets of the physical and human environment. Potential environmental consequences were considered for an array of alternatives, including potential effects on the natural and human environment.

3. *Create mutually supporting economic and environmentally sustainable solutions.* It is the primary responsibility of local municipalities and not the USACE to control rural growth and development within the eastern portions of Oklahoma County. However, USACE in cooperation with Oklahoma County will continue assisting municipalities in protecting their populace when emergencies arise that threaten public safety and facilities.

4. *Continue to meet our corporate responsibility and accountability under the law for activities undertaken by the Corps which may impact human and natural environments.* This project complies with all applicable environmental laws and regulations in order to support environmental sustainability and protect public safety. Our corporate responsibility and accountability extends through the planning, preconstruction engineering and design, and construction phases of this project. Although after construction, the Non-Federal sponsor is responsible for day-to-day operation, maintenance, repair, rehabilitation, and replacement of the project, the Corps would remain involved if post-construction monitoring revealed unexpected or unintended consequences of our action.

5. *Consider the environment in employing a risk management and systems approach throughout the life cycles of projects and programs.* The Tulsa District strives to improve its ability to assess the effects associated with its activities and those of others by promoting the technical capability of agency staff in the science of impact assessment, including cumulative impacts. Scoping and coordination lead to effective evaluation of potential future impacts relative to the recommended alternative. The alignment of our corporate business process with the project life cycle facilitates a systems approach to assessing long-term incremental changes in the communities we serve.

6. *Leverage scientific, economic, and social knowledge to understand the environmental context and effects of Corps actions in a collaborative manner.* The Tulsa District has been sharing information with the public about its programs and projects for many years. To facilitate this sharing in recent years, the District website has been enhanced to provide wider coverage of current events, access to various data and electronic reports, and notification for public involvement. Electronic modes of access have also been broadened to include popular social networks such as Facebook and Twitter. A broader sharing and exchange of scientific, economic, and social information to more fully develop a better understanding of environmental sustainability is a long-term goal.

7. *Employ an open, transparent process that respects views of individuals and groups interested in Corps activities.* To achieve environmental solutions for the streambank stabilization efforts, the Tulsa District continues to seek the views of stakeholders, including local government as well as federal and state agencies with regulatory oversight. Public involvement takes place with the circulation of the study's draft environmental assessment. The District carefully considers all comments and continues to support the free exchange of views about this project.

5.0 FEDERAL, STATE, AND LOCAL AGENCY COORDINATION

The following federal and state agencies were contacted during the scoping phase of this EA. Copies of correspondence may be found in Appendices A and B. The comprehensive mailing list, including the tribal scoping recipients, may be found in Appendix A.

- US Environmental Protection Agency
- US Fish and Wildlife Service
- USDA, Natural Resources Conservation Service
- US Geological Survey
- Oklahoma Department of Wildlife Conservation
- Oklahoma Department of Environmental Quality
- Oklahoma Water Resources Board
- Oklahoma Conservation Commission
- Oklahoma Biological Survey
- Oklahoma Archaeological Survey
- State Historic Preservation Officer
- Oklahoma Department of Transportation

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APPENDIX A:
NEPA Coordination and Scoping

**Mailing List for Luther Road EA
Prepared 6/28/2013**

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3800 North Classen Boulevard
Oklahoma City, OK 73118

Mr. Mike Thralls
Executive Director
Oklahoma Conservation Commission
2800 N. Lincoln Blvd., Suite 160
Oklahoma City, OK 73105

Ms. Shanon Phillips, Director
Water Quality Programs
Oklahoma Conservation Commission
2800 N. Lincoln Blvd., Suite 160
Oklahoma City, OK 73105

Mr. Ian H. Butler
Oklahoma Natural Heritage Inventory
Oklahoma Biological Survey
111 E. Chesapeake Street
Norman, OK 73019-0575

Dr. Robert L. Brooks
University of Oklahoma
Oklahoma Archeological Survey
111 E. Chesapeake
Norman, OK 73019-0575

Dr. Bob Blackburn
State Historic Preservation Officer
Oklahoma Historical Society
Oklahoma History Center
800 Nazih Zuhdi Drive
Oklahoma City, OK 73105

Governor George Blanchard
Absentee-Shawnee Tribe of Indians of
Oklahoma
2025 S. Gordon Cooper Dr.
Shawnee, OK 74801-9381

Mekko Tiger Hobia
Kialegee Tribal Town, Oklahoma
PO Box 332
Wetumka, OK 74883

Principal Chief George Tiger
Muscogee (Creek) Nation, Oklahoma
PO Box 580
Okmulgee, OK 74447

Chairman John A. Barrett
Citizen Potawatomi Nation, Oklahoma
1601 Gordon Cooper Dr.
Shawnee, OK 74801

Mekko George Scott
Thlopthlocco Tribal Town, Oklahoma
PO Box 188
Okemah, OK 74859

Chairperson Janice Rowe-Kurak
Iowa Tribe of Oklahoma
Route 1, Box 721
Perkins, OK 74059

Chairperson Ron Sparkman
Shawnee Tribe
PO Box 189
Miami, OK 74355

Principal Chief John Red Eagle
Osage Tribe, Oklahoma
PO Box 779
Pawhuska, OK 74056

President Terri Parton
Wichita and Affiliated Tribes of Oklahoma
PO Box 729
Anadarko, OK 73005

Principle Chief Leonard Harjo
Seminole Nation of Oklahoma
PO Box 1498
Wewoka, OK 74884

Chairperson Gilbert Salazar
Kickapoo Tribe of Oklahoma
PO Box 70
McCloud, OK 74851

Mr. Keith Hayden
U. S. Environmental Protection Agency
Region VI
1445 Ross Ave., Suite 1200
Dallas, TX 75202

Mr. Stacy Trumbo, County Engineer
Oklahoma County
320 Robert S. Kerr, Suite 101
Oklahoma City, OK 73102

Mr. Rod Shaw, District Conservationist
Oklahoma County Conservation District
Natural Resources Conservation Service
4850 N. Lincoln Blvd
Oklahoma City, OK 73105-3315

Mr. Robert Payao
Oklahoma Department of Transportation
Environmental Programs Division
200 N.E. 21st Street, Room 3D2a
Oklahoma City, OK 73105

Kickapoo Tribe of Oklahoma

P.O.Box 70
407 N. Hwy 102
McLoud, Oklahoma 74851

Administration Department
Phone: 405-964-7053; Fax: 405-964-7065
Email: kwilson@kickapootribeofoklahoma.com

August 29, 2013

Department of the Army
U.S. Army Corps of Engineers
ATTN: Patricia Newell, NEPA Specialist
(CESWT-PE-E)
1645 South 101st East Avenue
Tulsa, OK 74128-4629

*RE: Draft Environmental Assessment & Draft Final
Planning & Design Analysis Report;
Luther Road, Oklahoma County, Oklahoma,
Section 14 Streambank Stabilization Project*

Dear Ms. Newell:

Thank you for consulting with the Kickapoo Tribe of Oklahoma in regard to the above proposed referenced site(s). At this time, the Kickapoo Tribe of Oklahoma has no objections to the proposed streambank stabilization project at the intended site(s). However, in the event burial remains and/or artifacts are discovered during the development or construction process, the Kickapoo Tribe of Oklahoma would ask for immediate notification of such findings.

Should I be of any further assistance, please contact me (405) 964-4227.

Sincerely,



Kent Collier
NAGPRA Contact
Kickapoo Tribe of Oklahoma

Cc: File

Gilbert Salazar
APETOKA
CHAIRMAN

Boyd Ponkilla
ADAMIDATA
VICE-CHAIRMAN

Patricia Gonzales
MOKITANOCUA
SECRETARY

Jennell Downs
KISAKODICUA
TREASURER

Everett Suke
MOKITANO
COUNCILMAN



DEPARTMENT OF THE ARMY
UNITED STATES ARMY CORPS OF ENGINEERS, TULSA DISTRICT
1645 SOUTH 101 EAST AVENUE
TULSA OK 74128-4609

June 28, 2013

REPLY TO
ATTENTION OF

Planning and Environmental Division
Environmental Analysis and Compliance Branch

To Interested Parties:

The Tulsa District, U.S. Army Corps of Engineers is beginning the process of preparing an environmental assessment, in compliance with the National Environmental Act of 1969, to assess the impacts associated with a proposed stream bank stabilization project along the North Canadian River, immediately west of Luther Road and approximately 0.5 miles north of the intersection of Luther Road and Highway 62 in Oklahoma County, Oklahoma. Oklahoma County is the local cost-share sponsor for this proposed project. A site location map is included for reference.

A meander of the North Canadian River has eroded the stream bank eastward at the average rate of 100 feet per year, so that the river is now located within 125 feet of Luther Road. Given that the soils in this area are sandy and easily erodible, the structural integrity of Luther Road could be compromised within a year, should the river continue to erode the current stream bank at its current rate and the meander continue its eastward movement.

The proposed project entails removing concrete pieces from the existing stream bank, some bank reshaping, and stabilizing approximately 7,920 linear feet of stream bank (1.5 miles) to reduce the migration of this meander eastward toward Luther Road. The alternatives proposed for evaluation include assessing various levels and methods of protection based upon the frequency discharge elevations associated with the 1-, 2-, and 10-year frequencies in combination with 2:1 or 3:1 finished bank slopes. The methods of protection include riprap, channelization, drop structures, bendway weirs, and hydraulic jacks.

The total land area required for this proposed project ranges between approximately 5 to 6.5 acres, depending upon the alternative considered, and include easements acquired by the Non-Federal Sponsor (Oklahoma County) for an access road and drainage ditch. Approximately 1.34 acres of the site lies within the existing right-of-way of Luther Road. The sur-

rounding sites along the east bank of the North Canadian River are farmed.

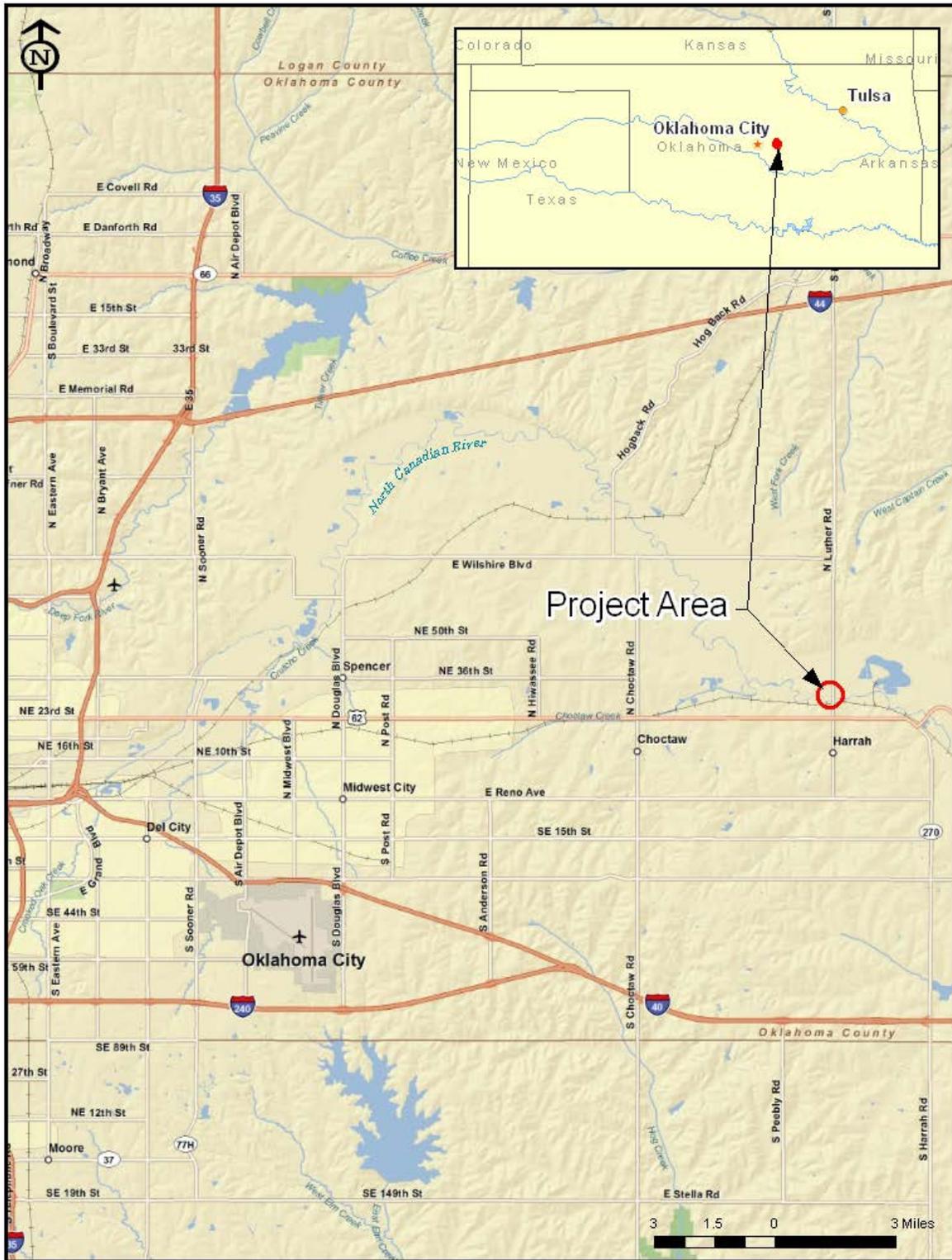
Tulsa District encourages other agencies and organizations to be an active partner in its evaluation and requests your comments and input as related to this proposed project. As such, please provide any comments, questions, or requests for additional information you may need to Ms. Patricia Newell at 918-669-4937 or by e-mail at Patricia.A.Newell@usace.army.mil.

Sincerely,

A handwritten signature in black ink, appearing to read "Stephen L. Nolen", with a long, sweeping horizontal stroke extending to the right.

Stephen L. Nolen
Chief, Planning and
Environmental Division

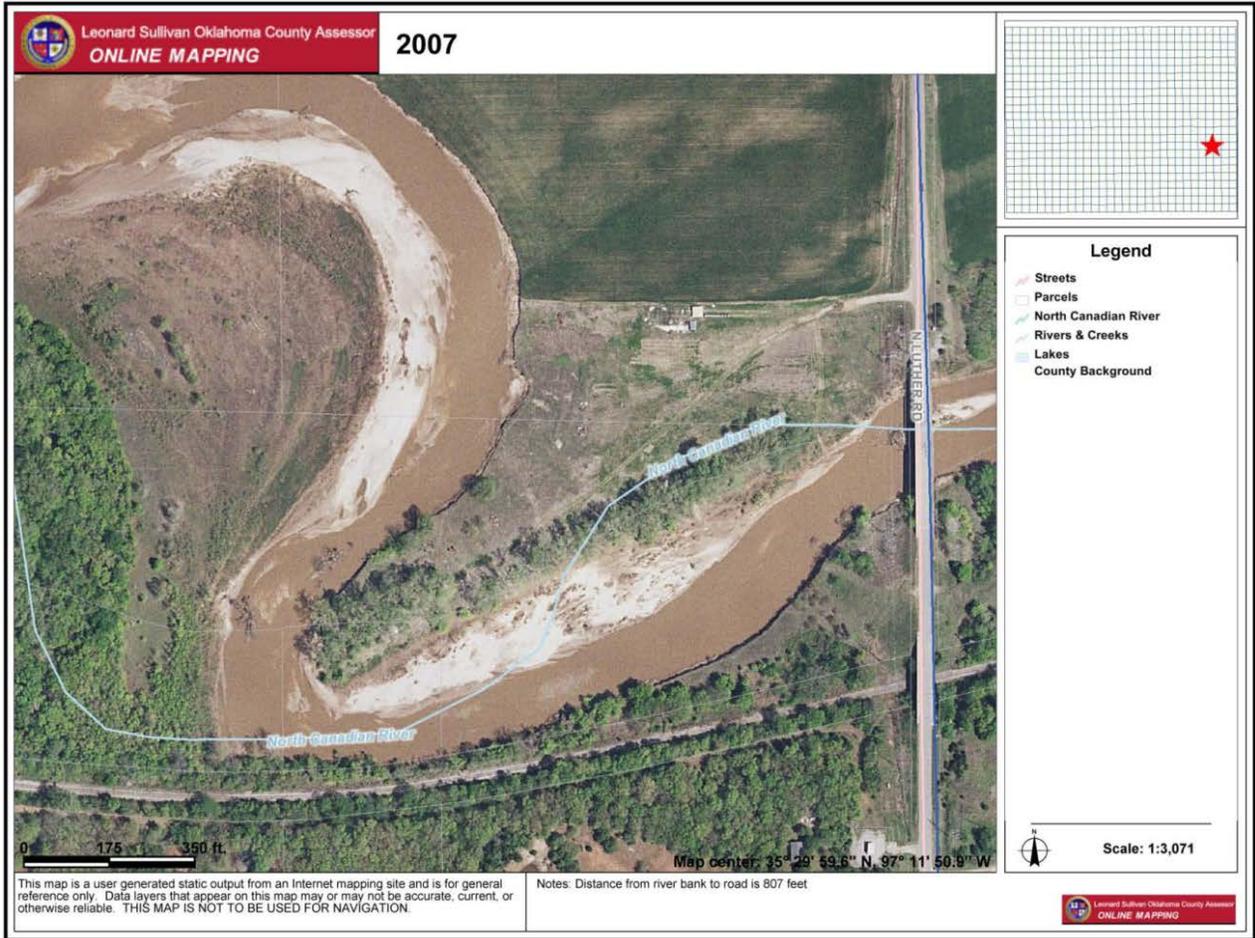
Enclosure



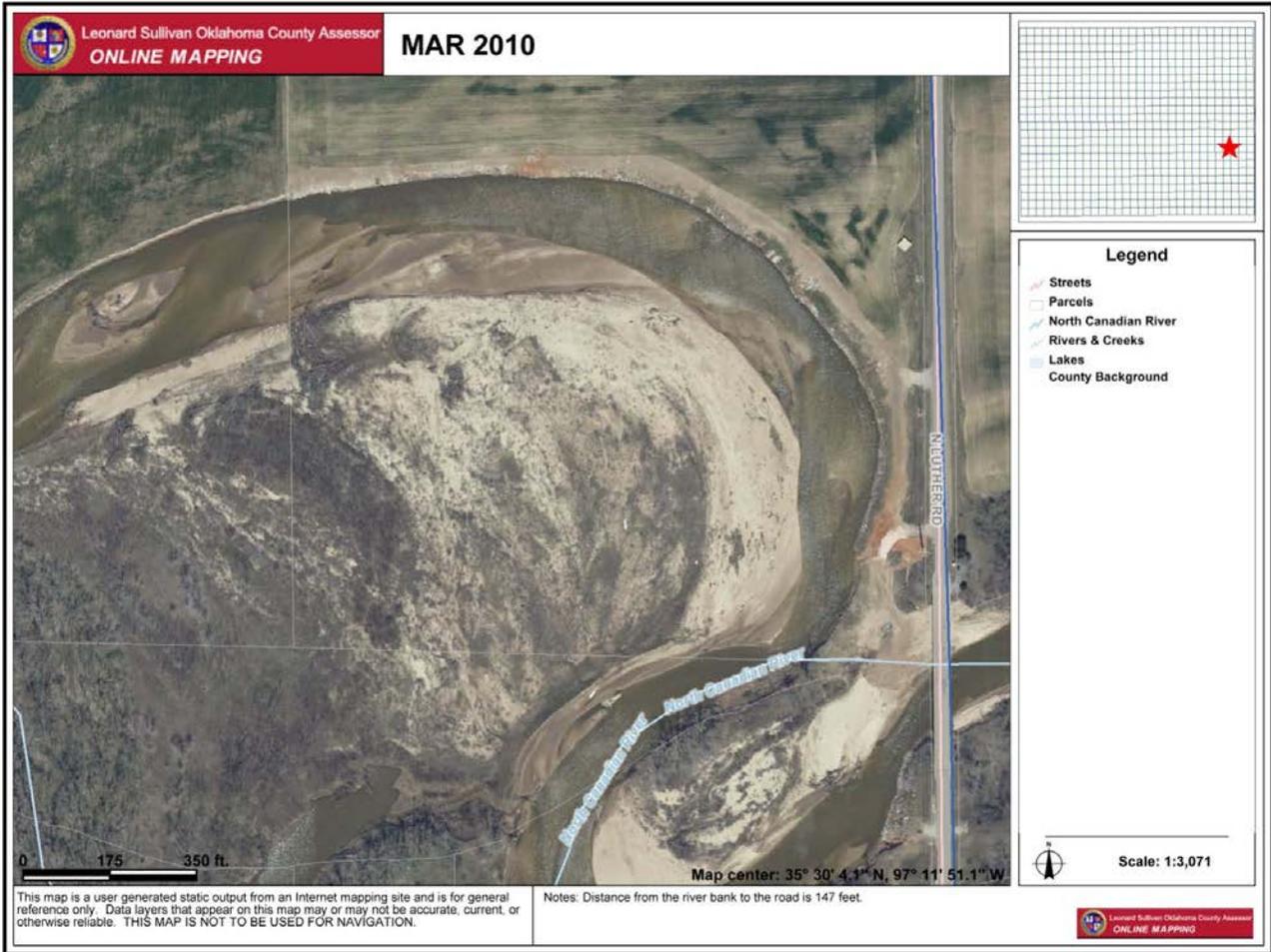




Proposed Streambank Stabilization Site



Location Of North Canadian River in 2007



Location of North Canadian River in 2010



Oklahoma Archeological Survey

THE UNIVERSITY OF OKLAHOMA

September 6, 2013

Stephen L. Nolen
US Army Corps of Engineers
1645 South 101st East Ave.
Tulsa, Oklahoma 74128-4609

Re: Proposed streambank stabilization at Luther Road and the North Canadian River. Legal Description: Section 21 T12N R1E, Oklahoma County, Oklahoma.

Dear Mr. Nolen:

The Community Assistance Program staff of the Oklahoma Archeological Survey has reviewed the above referenced project in order to identify potential areas that may contain prehistoric or historic archaeological materials (historic properties). The location of your project has been crosschecked with the state site files containing approximately 23,000 archaeological sites that are currently recorded for the state of Oklahoma. No Sites are listed as occurring within your project area, and based on the topographic and hydrologic setting, no archaeological materials are likely to be encountered. Thus an archaeological field inspection is not considered necessary. However, should construction activities expose buried archaeological materials such as chipped stone tools, pottery, bone, historic crockery, glass, metal items or building materials, this agency should be contacted immediately at (405) 325-7211. A member of our staff will be sent to evaluate the significance of these remains.

This environmental review and evaluation is performed in order to locate, record, and preserve Oklahoma's prehistoric and historic cultural heritage in cooperation with the state Historic Preservation Office, Oklahoma Historical Society, and you must also have a letter from that office to document your consultant 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,

Robert L. Brooks
State Archaeologist

:ls

Cc: SHPO





DEPARTMENT OF THE ARMY
UNITED STATES ARMY CORPS OF ENGINEERS, TULSA DISTRICT
1645 SOUTH 101 EAST AVENUE
TULSA OK 74128-4609

June 28, 2013

REPLY TO
ATTENTION OF

Planning and Environmental Division
Environmental Analysis and Compliance Branch

Dr. Bob Blackburn
State Historic Preservation Officer
Oklahoma Historical Society
Oklahoma History Center
800 Nazih Zuhdi Drive
Oklahoma City, OK 73105

Dear Dr. Blackburn:

The Tulsa District, U.S. Army Corps of Engineers is beginning the process of preparing an environmental assessment, in compliance with the National Environmental Act of 1969, to assess the impacts associated with a proposed stream bank stabilization project along the North Canadian River, immediately west of Luther Road and approximately 0.5 miles north of the intersection of Luther Road and Highway 62 in Oklahoma County, Oklahoma. Oklahoma County is the local cost-share sponsor for this proposed project. A site location map is included for reference.

A meander of the North Canadian River has eroded the stream bank eastward at the average rate of 100 feet per year, so that the river is now located within 125 feet of Luther Road. Given that the soils in this area are sandy and easily erodible, the structural integrity of Luther Road could be compromised within a year, should the river continue to erode the current stream bank at its current rate and the meander continue its eastward movement.

The proposed project entails removing concrete pieces from the existing stream bank, some bank reshaping, and stabilizing approximately 7,920 linear feet of stream bank (1.5 miles) to reduce the migration of this meander eastward toward Luther Road. The alternatives proposed for evaluation include assessing various levels and methods of protection based upon the frequency discharge elevations associated with the 1-, 2-, and 10-year frequencies in combination with 2:1 or 3:1 finished bank slopes. The methods of protection include riprap, channelization, drop structures, bendway weirs, and hydraulic jacks.

The total land area required for this proposed project ranges between approximately 5 to 6.5 acres, depending upon the alternative considered, and include easements acquired by the Non-Federal Sponsor (Oklahoma County) for an access road and drainage ditch. Approximately 1.34 acres of the site lies within the existing right-of-way of Luther Road. The surrounding sites along the east bank of the North Canadian River are farmed.

Tulsa District encourages other agencies and organizations to be an active partner in its evaluation and requests your comments and input as related to this proposed project. As such, please provide any comments, questions, or requests for additional information you may need to Ms. Patricia Newell at 918-669-4937 or by e-mail at Patricia.A.Newell@usace.army.mil.

Sincerely,

A handwritten signature in black ink, appearing to read "Stephen L. Nolen", with a long horizontal line extending to the right.

Stephen L. Nolen
Chief, Planning and
Environmental Division

Enclosure



DEPARTMENT OF THE ARMY
UNITED STATES ARMY CORPS OF ENGINEERS, TULSA DISTRICT
1645 SOUTH 101 EAST AVENUE
TULSA OK 74128-4609

June 28, 2013

REPLY TO
ATTENTION OF

Planning and Environmental Division
Environmental Analysis and Compliance Branch

Dr. Robert Brooks
University of Oklahoma
Oklahoma Archaeological Survey
111 E. Chesapeake
Norman, OK 73019-0575

Dear Dr. Brooks:

The Tulsa District, U.S. Army Corps of Engineers is beginning the process of preparing an environmental assessment, in compliance with the National Environmental Act of 1969, to assess the impacts associated with a proposed stream bank stabilization project along the North Canadian River, immediately west of Luther Road and approximately 0.5 miles north of the intersection of Luther Road and Highway 62 in Oklahoma County, Oklahoma. Oklahoma County is the local cost-share sponsor for this proposed project. A site location map is included for reference.

A meander of the North Canadian River has eroded the stream bank eastward at the average rate of 100 feet per year, so that the river is now located within 125 feet of Luther Road. Given that the soils in this area are sandy and easily erodible, the structural integrity of Luther Road could be compromised within a year, should the river continue to erode the current stream bank at its current rate and the meander continue its eastward movement.

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The total land area required for this proposed project ranges between approximately 5 to 6.5 acres, depending upon the alternative considered, and include easements acquired by the Non-Federal Sponsor (Oklahoma County) for an access road and drainage ditch. Approximately 1.34 acres of the site lies within the existing right-of-way of Luther Road. The surrounding sites along the east bank of the North Canadian River are farmed.

Tulsa District encourages other agencies and organizations to be an active partner in its evaluation and requests your comments and input as related to this proposed project. As such, please provide any comments, questions, or requests for additional information you may need to Ms. Patricia Newell at 918-669-4937 or by e-mail at Patricia.A.Newell@usace.army.mil.

Sincerely,

A handwritten signature in black ink, appearing to read 'S. L. Nolen', with a long horizontal flourish extending to the right.

Stephen L. Nolen
Chief, Planning and
Environmental Division

Enclosure



DEPARTMENT OF THE ARMY
UNITED STATES ARMY CORPS OF ENGINEERS, TULSA DISTRICT
1645 SOUTH 101 EAST AVENUE
TULSA OK 74128-4609

June 28, 2013

REPLY TO
ATTENTION OF

Planning and Environmental Division
Environmental Analysis and Compliance Branch

Mr. Rod Shaw, District Conservationist
Oklahoma County Conservation District
Natural Resources Conservation Service
4850 N. Lincoln Blvd.
Oklahoma City, OK 73105-3315

Dear Mr. Shaw:

The Tulsa District, U.S. Army Corps of Engineers is beginning the process of preparing an environmental assessment, in compliance with the National Environmental Act of 1969, to assess the impacts associated with a proposed stream bank stabilization project along the North Canadian River, immediately west of Luther Road and approximately 0.5 miles north of the intersection of Luther Road and Highway 62 in Oklahoma County, Oklahoma. Oklahoma County is the local cost-share sponsor for this proposed project. A site location map is included for reference.

A meander of the North Canadian River has eroded the stream bank eastward at the average rate of approximately 100 feet per year, so that the river is now located within 125 feet of Luther Road. Given that the soils in this area are sandy and easily erodible, the structural integrity of Luther Road could be compromised within a year, should the river continue to erode the current stream bank at its current rate and the meander continue its eastward movement.

The proposed project entails removing concrete pieces from the existing stream bank, some bank reshaping, and stabilizing approximately 7,920 linear feet of stream bank (1.5 miles) to reduce the migration of this meander eastward toward Luther Road. The alternatives proposed for evaluation include assessing various levels and methods of protection based upon the frequency discharge elevations associated with the 1-, 2-, and 10-year frequencies in combination with 2:1 or 3:1 finished bank slopes. The methods of protection include riprap, channelization, drop structures, bendway weirs, and hydraulic jacks.

The total land area required for this proposed project ranges between approximately 5 to 6.5 acres, depending upon the alternative considered, and include easements acquired by the Non-Federal Sponsor (Oklahoma County) for an access road and drainage ditch. Approximately 1.34 acres of the site lies within the existing right-of-way of

Luther Road. The surrounding sites along the east bank of the North Canadian River are farmed.

The area adjacent to the North Canadian River on the east bank and in the project area is currently farmed. A brief review of the NRCS Web Soil Survey online depicts Keokuk very fine sandy loam, 0 to 1% slopes and Yahola fine sandy loam, 0 to 1% slopes, along the both banks of the North Canadian. Both of these soils are listed as prime farmland. Other soils within the project area include the Gaddy-Gracemore complex, 0 to 1% slopes, and Gracemont fine sandy loam, 0 to 1% slopes. Neither of these soils is identified in the web soil survey as prime farmland.

All of the alternatives currently considered for this bank stabilization would require an access road (unpaved) and drainage ditch. As such, the easements that would be acquired by Oklahoma County will require the conversion of farmland to a non-farmland use.

Tulsa District encourages other agencies and organizations to be an active partner in its evaluation and requests your comments and input as related to this proposed project. As such, your comments for the above mentioned location are requested in accordance with the Farmland Protection Policy Act.

If you have any questions or require additional information, please contact Ms. Patricia Newell at 918-669-4937 or by e-mail at Patricia.A.Newell@usace.army.mil.

Sincerely,



Stephen L. Nolen
Chief, Planning and
Environmental Division

Enclosure

From: [Fagin, Todd D.](#)
To: [Newell, Patricia A SWT](#)
Subject: ONHI Information Request: re: Environmental Assessment of stabilization project of North Canadian River
Date: Tuesday, July 02, 2013 3:41:42 PM

OBS Ref. 2013-260-FED-CORP

Dear Ms. Newell,

July 2, 2013

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. 21-T12NR1E, Oklahoma County

We found no occurrence(s) of relevant species within the vicinity of the project location as described. However, 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
< http://vmpincel.ou.edu/heritage/ranking_guide.html >

Information regarding the Oklahoma Natural Areas Registry:

http://www.oknaturalheritage.ou.edu/registry_faq.htm
< http://www.oknaturalheritage.ou.edu/registry_faq.htm >

Todd Fagin

Oklahoma Natural Heritage Inventory/

Department of Geography and Environmental Sustainability



Oklahoma Archeological Survey

THE UNIVERSITY OF OKLAHOMA

July 8, 2013

Stephen L. Nolen
Department of the Army
US Army Corps of Engineers, Tulsa District
1645 South 101 East Ave.
Tulsa, Oklahoma 74128-4609

Re: Proposed stream bank stabilization project along North Canadian River west of Luther Road. Legal Description: E ½ SE ¼ NE ¼ Section 21 T12N R1E, Oklahoma County, Oklahoma.

Dear Mr. Nolen:

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. **No sites are listed in your project area, but based on the topographic and hydrologic setting of your project, archeological materials are likely to be encountered. An archaeological field inspection is considered necessary prior to project construction in order to identify significant archaeological resources that may exist in the project area.** Please contact this office at (405) 325-7211 if you require additional information on this project.

This environmental review and evaluation is performed in order to locate, record, and preserve Oklahoma's prehistoric and historic cultural heritage in cooperation with the State Historic Preservation Office, Oklahoma Historical Society, and you must also have a letter from that office to document your 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. Thank you for your cooperation.

Sincerely,

C. Adam Moody
Staff Archaeologist

Robert L. Brooks
State Archaeologist

:ls

Cc: SHPO





UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region 6

**1445 Ross Avenue, Suite 1200
Dallas, TX 75202-2733**

July 16, 2013

Stephen L. Nolen
Chief, Planning and
Environmental Division
Department of Army
U.S. Army Corps of Engineers
Tulsa District
1645 South 101 East Avenue
Tulsa, OK 74128-4609

RE: Solicitation of Comments for Preparation of Draft Environmental Assessment (DEA)
Proposed Stream Bank Stabilization Project along North Canadian River in Oklahoma

Dear Mr. Nolen:

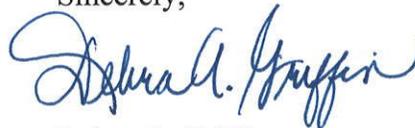
The U.S. Environmental Protection Agency (EPA) Region 6 office received your correspondence dated June 28, 2013 requesting comments regarding the proposed Stream Bank Stabilization Project along the North Canadian River in Oklahoma County, Oklahoma. In accordance with our responsibilities under Section 309 of the Clean Air Act (CAA), the National Environmental Policy Act (NEPA), and the Council on Environmental Quality (CEQ) regulations for implementing NEPA, EPA Region 6 office identified the following areas of concern that should be addressed in the DEA:

- Project area is within 1,000 meters of a regulated facility, American Oil Recyclers, LLC;
- Project area is within the 100 and 500-year floodplain. Coordination with the local floodplain administrator is required;
- Project area is within 1,000 meters of a Tribal boundary or property of interest. Coordination and consultation with Absentee Shawnee Tribe of Indians is recommended. Also, DEA should address any cultural resources within the vicinity of the project area;
- Project area is within rare and/or sensitive and/or vegetation complexes. Consultation with the Oklahoma Department of Wildlife Conservation and U.S. Fish and Wildlife Service is recommended. The area was identified by the Regional Ecological Assessment Protocol (REAP) GIS layer. EPA suggests using REAP methodology to determine ecologically sensitive areas within the proposed project area that should be avoided or protected. REAP is a screening level, rapid assessment tool using existing electronic data available statewide. It is a planning tool and screening-level assessment that should lead users to progressively narrow the scope of analysis. The report can be provided upon request and the GIS data can be found at <https://edg.epa.gov/metadata/catalog/main/home.page>.

- Construction should avoid or minimize adverse impacts to the environment. The DEA should address air quality, noise, traffic and transportation, utilities and public services, and invasive species associated with implementation of proposed project. Also, the document should address any potential direct, indirect and cumulative impacts of hazardous and toxic materials and hazardous and solid wastes associated with construction activities;
- DEA should include discussions of the need for the proposed project; alternatives as required by Section 102(2)(E) of NEPA; direct, indirect, and cumulative impacts of the proposed action and alternatives to the environment (i.e., resources, ecosystem, and communities) in the vicinity of the project area; and a listing of agencies and persons consulted;
- DEA should address geology and soils associated with the existing bank conditions and proposed bank stabilization;
- DEA should address the original (natural) drainage patterns in the project area, as well as the drainage patterns of the area during construction and project implementation. Also, the DEA should identify if any construction of the proposed project disturbs a land area of one or more acres that may require a construction stormwater discharge permit;
- DEA should address water resources and hydrology;
- DEA should address land use planning activities and eminent domain for the land requirements of the proposed project;
- DEA should address any recreation activities associated with the river in the vicinity of the project area; and
- Project area may be within or near wetlands. DEA should address Section 404 of the Clean Water Act and all appropriate permits and approvals applicable to the implementation of the proposed project.

EPA appreciates the opportunity to provide comments. Please note that other federal, state, and local regulations and laws may be applicable to the proposed project. Enclosed is a NEPA Analysis of the project area for your consideration. Please send a copy of the completed DEA to EPA Region 6, Compliance Assurance and Enforcement Division, Office of Strategic Planning and Analyses (6EN-X), 1445 Ross Avenue, Suite 1200, Dallas, TX 75202 to my attention. If you have any questions or concerns, please contact Kimeka Price of my staff at 214-665-7438 or price.kimeka@epa.gov for assistance.

Sincerely,



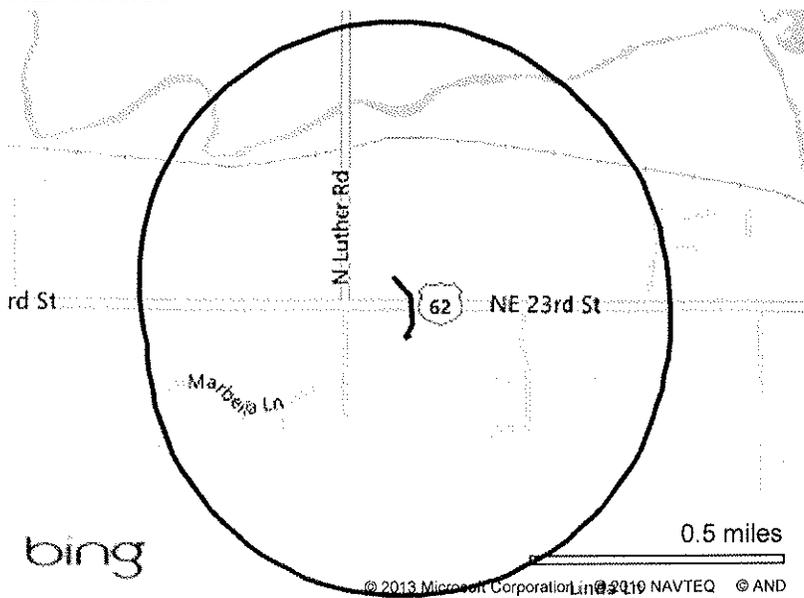
Debra A. Griffin
Associate Director
Compliance Assurance and
Enforcement Division

Enclosure



http://r6gis1.r06.epa.gov/NEPAVETools/NepaCall/Drill.aspx?

NEPAssist



Report question: *Within 1000 meters of a r*

Modify question by entering a new buffer dist:

1000 meters S

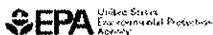
Features within Study Area

Features found: 1

Name

AMERICAN OIL RECYCLERS LLC

Last updated on Thursday, July 11, 2013



NEPAssist

Project Location Map



Geographic coordinates:

LINE (35.500998,-97.200937,35.500404,-97.200208,35.499391,-97.200122,35.498867,-97.200551,35.498937,-97.200294)

Length of digitized line	0.19 mi
Facility	
<u>Within 100 meters of a hospital?</u>	no
<u>Within 1000 meters of a hospital?</u>	no
<u>Within 100 meters of a TRI facility?</u>	no
<u>Within 1000 meters of a TRI facility?</u>	no
<u>Within 100 meters of a regulated facility?</u>	no
<u>Within 1000 meters of a regulated facility?</u>	yes
<u>Within 100 meters of an airport?</u>	no
Water	
<u>Within 100 meters of a Wild and Scenic River?</u>	no
<u>Within an area over a Sole Source Aquifer?</u>	no
<u>Within the 100 year flood plain?</u>	yes
<u>Within the 500 year flood plain?</u>	yes
<u>Within 400 meters of an NWI wetland?</u>	loading...
	<i>May take several minutes</i>
<u>Within an NLCD wetland?</u>	no
<u>Within 1000 meters of an NLCD wetland?</u>	no
Ecology	
<u>Within a federal/state park or wildlife area?</u>	no
<u>Within 1000 meters of a federal/state park or wildlife area?</u>	no
<u>Within a critical habitat area?</u>	no
<u>Within 1000 meters of a critical habitat area?</u>	no
<u>Within 100 meters of a REAP Composite area that is within the Top 10% highest scores?</u>	no
<u>Within 100 meters of a REAP Diversity area that is within the Top 10% highest scores?</u>	no
<u>Within 100 meters of a REAP Rarity area that is within the Top 10% highest scores?</u>	yes
<u>Within 100 meters of a REAP Sustainability area that is within the Top 10% highest scores?</u>	no
Other	
<u>Within 100 meters of a place on the National Historic Register?</u>	no
<u>Within 1000 meters of a place on the National Historic Register?</u>	no
<u>Within 100 meters of a school?</u>	no
<u>Within 1000 meters of a school?</u>	no
<u>Within a nonattainment area?</u>	no

Within a previous nonattainment, maintenance, or EAC area?

no

http://r6gis1.r06.epa.gov/NEPAVE/analysis_gisst.aspx

Within 1000 meters of a Tribal boundary or property of interest?

yes

NatureServe data

Within an area with known rare, endangered, or at-risk species?

[click here](#)

EJView Reports

Note: The EJView Reports provide demographic and health information. There are four reports available from EJView, please select from the following reports:

[ACS Summary Report](#)

[EXIT NEPAssist](#)

[Census 2010 Summary \(SF1\)](#)

[EXIT NEPAssist](#)

[Census 2000 Summary \(SF3\)](#)

[EXIT NEPAssist](#)

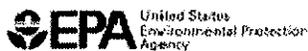
[Health Report](#)

[EXIT NEPAssist](#)

[Download XML](#)

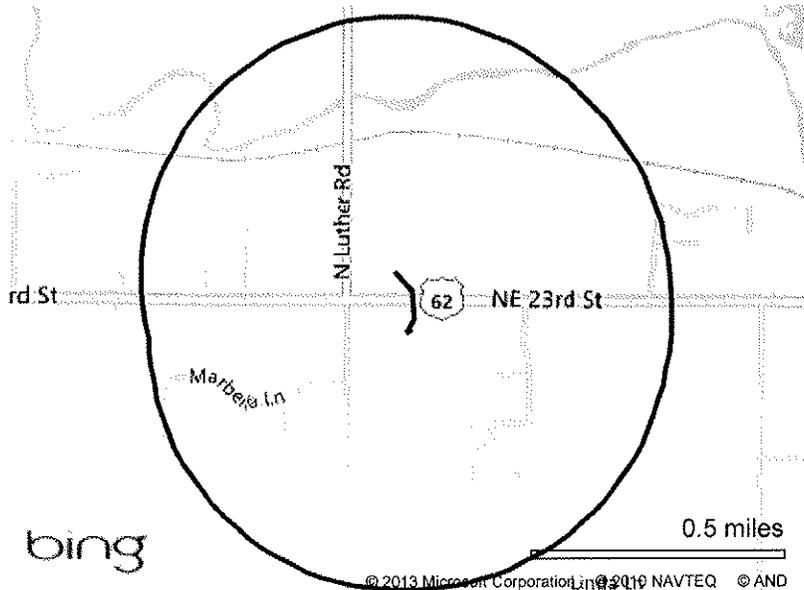
[GISST Analysis](#)

Last updated on Thursday, July 11, 2013



http://r6gis1.r06.epa.gov/NEPAVETools/NepaCall/Drill.aspx?

NEPAssist



Report question: *Within 1000 meters of a 1*

Modify question by entering a new buffer dist:

1000 meters

Features within Study Area

Features found: 1

Name

Citizen Potawatomi Nation-Absentee Shawnee C

Last updated on Thursday, July 11, 2013



EJView Census 2010 Summary Report



Location: -97.200937,35.500998,-97.200208,35.500404,-97.200122,35.499391,-97.200551,35.498867,-97.20029

Study Area: 0.5 miles around the linear location

Summary	Census 2010
Population	200
Population Density (per sq. mile)	330
Minority Population	33
% Minority	16%
Households	77
Housing Units	82
Land Area (m ²)	1,567,395
% Land Area	100%
Water Area (m ²)	0
% Water Area	0%

Population by Race	Number	Percent
Total	200	-----
Population Reporting One Race	191	96%
White	171	85%
Black	4	2%
American Indian	15	7%
Asian	1	0%
Pacific Islander	0	0%
Some Other Race	1	1%
Population Reporting Two or More Races	9	4%
Total Hispanic Population	7	3%
Total Non-Hispanic Population	193	97%
White Alone	167	84%
Black Alone	4	2%
American Indian Alone	14	7%
Non-Hispanic Asian Alone	1	0%
Pacific Islander Alone	0	0%
Other Race Alone	0	0%
Two or More Races Alone	7	4%

Population by Sex	Number	Percent
Male	99	50%
Female	101	50%

Population by Age	Number	Percent
Age 0-4	10	5%
Age 0-17	46	23%
Age 18+	154	77%
Age 65+	31	15%

Households by Tenure	Number	Percent
Total	77	
Owner Occupied	67	87%
Renter Occupied	10	13%

Data Note: Detail may not sum to totals dues to rounding. Hispanic population can be of any race.
Source: U.S. Census Bureau, Census 2010 Summary File 1.



EJView ACS Summary Report



Location: -97.200937,35.500998,-97.200208,35.500404,-97.200122,35.499391,-97.200551,35.498867,-97.200294,35.49893

Study Area: 0.5 miles around the linear location

Summary of ACS Estimates		2006 - 2010
Population		235
Population Density (per sq. mile)		388
Minority Population		33
% Minority		14%
Households		70
Housing Units		70
Housing Units Built Before 1950		1
Per Capita Income		23,467
Land Area (sq. miles) (Source: SF1)		0.61
% Land Area		100%
Water Area (sq. miles) (Source: SF1)		0.00
% Water Area		0%

	2006 - 2010 ACS Estimates	Percent	MOE (±)
Population by Race			
Total	235	100%	415
Population Reporting One Race	231	98%	914
White	201	86%	420
Black	0	0%	109
American Indian	17	7%	123
Asian	2	1%	27
Pacific Islander	0	0%	109
Some Other Race	10	4%	126
Population Reporting Two or More Races	4	2%	31
Total Hispanic Population	10	4%	126
Total Non-Hispanic Population	224		
White Alone	201	86%	420
Black Alone	0	0%	109
American Indian Alone	17	7%	123
Non-Hispanic Asian Alone	2	1%	27
Pacific Islander Alone	0	0%	109
Other Race Alone	0	0%	109
Two or More Races Alone	4	2%	31
Population by Sex			
Male	129	55%	247
Female	105	45%	248
Population by Age			
Age 0-4	28	12%	134
Age 0-17	78	33%	182
Age 18+	157	67%	274
Age 65+	17	7%	123

Data Note: Detail may not sum to totals dues to rounding. Hispanic population can be of any race. N/A means not available.
Source: U.S. Census Bureau, American Community Survey (ACS) 2006 - 2010.



EJView ACS Summary Report



Location: -97.200937,35.500998,-97.200208,35.500404,-97.200122,35.499391,-97.200551,35.498867,-97.200294,35.49893

Study Area: 0.5 miles around the linear location

	2006 - 2010 ACS Estimates	Percent	MOE (±)
Population 25+ by Educational Attainment			
Total	140	100%	307
Less than 9th Grade	0	0%	109
9th - 12th Grade, No Diploma	9	7%	125
High School Graduate	48	34%	123
Some College, No Degree	54	39%	151
Associate Degree	8	5%	42
Bachelor's Degree or more	29	21%	154
POPULATION AGE 5+ YEARS BY ABILITY TO SPEAK ENGLISH			
Total	207	100%	350
Speak only English	204	99%	333
Non-English at Home ¹⁺²⁺³⁺⁴	3	1%	114
¹ Speak English "very well"	3	1%	114
² Speak English "well"	0	0%	109
³ Speak English "not well"	0	0%	109
⁴ Speak English "not at all"	0	0%	109
³⁺⁴ Speak English "less than well"	0	0%	109
²⁺³⁺⁴ Speak English "less than very well"	0	0%	109
POPULATION AGE 5+ YEARS BY LANGUAGE SPOKEN AT HOME			
Total	N/A	N/A	N/A
Speak only English	N/A	N/A	N/A
Non-English Speaking	N/A	N/A	N/A
Population by Place of Birth for the Foreign-Born			
Total	N/A	N/A	N/A
Europe	N/A	N/A	N/A
Asia	N/A	N/A	N/A
Africa	N/A	N/A	N/A
Oceania	N/A	N/A	N/A
Americas	N/A	N/A	N/A
Households by Household Income in 1999			
Household Income Base	70	100%	98
< \$15,000	1	2%	110
\$15,000 - \$25,000	8	12%	44
\$25,000 - \$50,000	15	21%	136
\$50,000 - \$75,000	20	29%	89
\$75,000 +	26	37%	95
Occupied Housing Units by Tenure			
Total	70	100%	98
Owner Occupied	67	96%	103
Renter Occupied	3	4%	28

Data Note: Detail may not sum to totals due to rounding. Hispanic population can be of any race. N/A means not available.

2006-2010 ACS 5-year Estimates: The American Community Survey (ACS) summary files provide nation-wide population and housing characteristic data at all Census summary levels down to the Block Group level. This data was collected between January 1, 2006 and December 31, 2010. ACS replaces the decennial census sample data, and is not the 2010 Census population counts data. (<http://www.census.gov/acs/www/#fragment-3>)

Margin of error (MOE): The MOE provides a measure of the uncertainty in the estimate due to sampling error in the ACS survey. Applying the MOE value yields the confidence interval for the estimate. For example, an estimate value of 50 and +/- MOE of 5 means the true value is between 45 and 55 with a 90 percent certainty (http://www.census.gov/acs/www/Downloads/data_documentation/Accuracy/MultiyearACSAccuracyofData2010.pdf). Maximum MOE is shown for each value within study area.

Source: U.S. Census Bureau, American Community Survey (ACS) 2006 - 2010.

From: [Fields, Quiana](#)
To: [Newell, Patricia A SWT](#)
Subject: [EXTERNAL] FW: docs
Date: Monday, September 09, 2013 10:31:33 AM
Attachments: [Skonicaasd_13090910000.pdf](#)

Ms. Newell,

Per your request our department has reviewed your request and found there to be no comments.

Please contact us for any additional information.

Thanks,

Quiana

Quiana Fields, Administrative Programs Officer
Office of the Executive Director
Oklahoma Department of Environmental Quality
Phone: (405) 702-7152
Fax: (405) 702-7101
quiana.fields@deq.ok.gov

From: konicaasd@deq.state.ok.us [<mailto:konicaasd@deq.state.ok.us>]
Sent: Monday, September 09, 2013 11:01 AM
To: Freeman, Michael; Fields, Quiana
Subject: docs

From: [Fields, Quiana](#)
To: [Newell, Patricia A SWT](#)
Subject: Department of the Army Requests - Environmental Assessment
Date: Thursday, July 11, 2013 10:06:37 AM

Ms. Newell,

Per your request our department has reviewed your request and found there to be no comments.

Please contact us for any additional information.

Thanks,

Quiana

Quiana Fields, Administrative Programs Officer
Office of the Executive Director
Oklahoma Department of Environmental Quality
Phone: (405) 702-7152
Fax: (405) 702-7101
quiana.fields@deq.ok.gov

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APPENDIX B:

FISH and WILDLIFE COORDINATION

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From: [Burgess, Angela](#)
To: [Newell, Patricia A SWT](#); [Dunn, Tonya N SWT](#)
Subject: Luther Road Section 14 Emergency Streambank Stabilization, Oklahoma County, OK
Date: Tuesday, July 30, 2013 9:03:21 AM

Dear Ms. Newell and Ms. Dunn,
Thank you for your July 29, 2013, submission of the Online Project Review Request Package for the Luther Road Section 14 Emergency Streambank Stabilization project in Oklahoma County, OK. The Service has reviewed your project review request package and concurs with your species impact determinations that the project is not likely to adversely affect the whooping crane, interior least tern, or piping plover.

Please let me know if you have any further questions.

Sincerely,

Angela Burgess
Fish and Wildlife Biologist
U.S. Fish and Wildlife Service
Oklahoma Ecological Services Field Office
9014 E. 21st Street
Tulsa, OK 74129

918/382-4527
angela_burgess@fws.gov
www.fws.gov/southwest/es/oklahoma/



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
UNITED STATES ARMY CORPS OF ENGINEERS, TULSA DISTRICT
1645 SOUTH 101 EAST AVENUE
TULSA OK 74128-4609

July 26, 2013

Planning and Environmental Division
Environmental Analysis and Compliance Branch

Mr. Jontie Aldrich
Assistant Field Supervisor
U.S. Fish and Wildlife Service
9014 East 21st Street
Tulsa, OK 74129

Dear Mr. Aldrich:

This letter is to request your concurrence pursuant to Section 7 of the Endangered Species Act of 1973, (ESA) as amended (16 U.S.C. 1231 *et seq.*) with regard to effects on federally-listed species resulting from construction of stream bank stabilization features along the North Canadian River. The project area is immediately west of Luther Road and approximately 0.5 miles north of the intersection of Luther Road and Highway 62 in Oklahoma County, Oklahoma. Oklahoma County is the local cost-sharing sponsor for this project which is proposed by the Tulsa District under Section 14 of the 1946 Flood Control Act (P.L. 79-526), as amended. The purpose of the project would be to provide emergency stream bank protection against erosion and stream migration which threatens the structural integrity of Luther Road in the project area. A site location map and aerial photograph is included for reference.

The proposed project entails removing concrete rubble from the existing stream bank, minor bank reshaping, and stabilizing approximately 3,500 linear feet of vertical stream bank to reduce the migration of stream meander eastward toward Luther Road. Alternatives proposed for evaluation include assessing various levels and methods of protection based upon the frequency discharge elevations associated with the 1-, 2-, and 10-year frequencies in combination with 2:1 or 3:1 finished bank slopes. The methods of protection to be considered include riprap, channelization, drop structures, bendway weirs, and hydraulic jacks. The proposed action is to use riprap placed at the 1-year flood frequency elevation for stream bank stabilization.

The total land area required for this proposed project ranges between approximately 5 to 6.5 acres, depending upon the alternative considered, and includes easements acquired by the non-Federal sponsor for an access road and drainage ditch. Approximately 1.3 acres of the site lies within the existing right-of-way of Luther Road. The surrounding lands along the east bank of the North Canadian River are currently farmed. An environmental assessment (EA) is being prepared in compliance with the National Environmental Policy Act (NEPA) of 1969. The draft EA will be provided to you for review when complete.

The Service's Information Planning and Consultation system (IPaC) was used to determine if any listed or candidate species or their designated critical habitat may be present in the action area for this proposed project. Results indicated that the threatened piping plover (*Charadrius melodus*) and endangered whooping crane (*Grus americana*) may be affected by the project and that the endangered interior least tern (*Sterna antillarum*) may be affected by the project, but only under certain conditions. No critical habitat for any listed species was identified.

Both the piping plover and whooping crane are transient migrants through the project area. While either could briefly occupy habitat in the project area, no life-history requirements are known to be significant or unique to the area and presence of the species would very likely be infrequent and of short duration. Nesting of either species in the project area would not be anticipated. Accordingly, it is our determination that the proposed activities "may affect - not likely to adversely affect" the piping plover and whooping crane.

The interior least tern commonly nests along river systems in Oklahoma. While some suitable sandbar habitat is present in the North Canadian River adjacent to areas proposed for construction activities, more suitable nesting habitat is present in nearby reaches of the North Canadian River further removed from the project area. The narrow nature of sandbar habitat adjacent to the construction area, presence of vegetation, and proximity to a tall standing structure (Luther Road bridge) make this area a less-than-desirable, though possible, nesting area for interior least terns. The area to be directly impacted by construction consists mostly of vertical

stream bank and is therefore unsuitable nesting habitat for least terns. On July 19, 2013, the project area and nearby river reaches were surveyed by Tulsa District biologists and no nesting or flying adult least terns were observed. Finally, the project area would be surveyed by Corps biologists prior to construction to ensure that no nesting terns are present in or near the construction area on the North Canadian River. After consideration of all factors, it is our determination that the proposed project "may affect - not likely to adversely affect" the interior least tern.

By this letter, we are requesting your concurrence with our determination of "may affect - not likely to adversely affect" for all federally-listed species in the proposed project area as well as the absence of critical habitat for any listed species. Should you concur with our determinations, it is our understanding that this concludes consultation under Section 7 of the ESA for this action. Thank you for your efforts with regard to these matters. Questions can be directed to me at 918-669-7660.

Sincerely,

A handwritten signature in black ink, appearing to read "Stephen L. Nolen", with a long, sweeping horizontal line extending to the right.

Stephen L. Nolen
Chief, Planning and
Environmental Division

Enclosure

From:

To: U.S. Fish and Wildlife Service
Oklahoma Ecological Services Field Office
9014 E 21st Street
Tulsa, Oklahoma 74129

Re: Online Project Review Request

We have reviewed the referenced project using the Oklahoma Ecological Services Field Office's online project review process and have followed all guidance and instructions in completing the review. We completed our review on and are submitting our project review package in accordance with the instructions for further review.

Our proposed action consists of:

The location of the project and the action area are identified on the enclosed map

The project is expected to be completed

This project review is needed for

The enclosed project review package provides the information about the species and critical habitat considered in our review, and the species conclusions table included in the package identifies our determinations for the resources that may be affected by the project.

For additional information, please contact
address listed above.

at the

Sincerely,

Enclosures:

1) ENTIRE PROJECT REVIEW PACKAGE:

- Species Conclusion Table
- IPaC Species List and Action Area map
- This letter (Online Project Review Request Letter)
- (Optional) Additional maps

2) Other relevant project data/documents

Species Conclusions Table

Project Name: Luther Road Section 14 Streambank Stabilization

Date: 19 July 2013

Species / Resource Name	Conclusion	ESA Section 7	Notes / Documentation
Piping Plover (<i>Charadrius melodus</i>)	Potential habitat present, species not present	May affect – not likely to adversely affect	Transient migrant through Oklahoma during spring and fall. It is not known when construction will start; if project does not begin outside of migration season (spring or fall), a biologist will check the area prior to construction.
Whooping Crane (<i>Grus Americana</i>)	Potential habitat present, species not present	May affect – not likely to adversely affect	Transient migrant through Oklahoma during spring and fall. It is not known when construction will start; if project does not begin outside of migration season (spring or fall), a biologist will check the area prior to construction.
Least tern (<i>Sterna antillarum</i>) interior population	Potential habitat present, species not present	May affect – not likely to adversely affect	No adults, fledglings, chicks, or nests were observed during assessment. It is not known when construction will start; if project does not begin outside of tern migration/nesting season (typically May - August), a biologist will check the area prior to construction.
Critical Habitat	No critical habitat present	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.



U.S. Fish and Wildlife Service

Natural Resources of Concern

This resource list is to be used for planning purposes only — it is not an official species list.

Endangered Species Act species list information for your project is available online and listed below for the following FWS Field Offices:

OKLAHOMA ECOLOGICAL SERVICES FIELD OFFICE
9014 EAST 21ST STREET
TULSA, OK 74129
(918) 581-7458
<http://www.fws.gov/southwest/es/Oklahoma/>

Project Name:

Luther Road



U.S. Fish and Wildlife Service

Natural Resources of Concern

Project Location Map:



Project Counties:

Oklahoma, OK



Natural Resources of Concern

Geographic coordinates (Open Geospatial Consortium Well-Known Text, NAD83):

MULTIPOLYGON (((-97.2023241 35.5012206, -97.2023307 35.5012169, -97.2023381 35.5012145, -97.2023459 35.5012152, -97.2023528 35.5012187, -97.2023579 35.5012247, -97.2023603 35.5012321, -97.2023596 35.5012399, -97.2023561 35.5012468, -97.2023501 35.5012519, -97.2023142 35.5012719, -97.2022602 35.5015509, -97.2022571 35.5015583, -97.2022514 35.501564, -97.2018563 35.5018158, -97.201327 35.5022301, -97.2013238 35.5022322, -97.2007477 35.5025266, -97.2007453 35.5025276, -97.1994804 35.5029809, -97.1994762 35.5029819, -97.1982301 35.5031405, -97.1982273 35.5031407, -97.1972188 35.5031233, -97.1972172 35.5031232, -97.1961443 35.5030184, -97.1961375 35.5030165, -97.1953006 35.5026147, -97.1952921 35.5026069, -97.1949274 35.5019955, -97.1949249 35.501989, -97.1947961 35.5013077, -97.1947959 35.5013064, -97.1946826 35.5003715, -97.1940796 35.4998875, -97.1940742 35.4998808, -97.1939476 35.4996266, -97.1939456 35.4996196, -97.1939462 35.4996123, -97.1939495 35.4996057, -97.1939548 35.4996008, -97.1948517 35.4990357, -97.1948552 35.4990339, -97.1954882 35.4987893, -97.1954963 35.498788, -97.1955043 35.4987901, -97.1955108 35.4987952, -97.1955146 35.4988024, -97.1955152 35.4988107, -97.1955125 35.4988184, -97.1950007 35.4996571, -97.1948771 35.4999922, -97.1951015 35.5002067, -97.1951051 35.5002114, -97.1951072 35.5002169, -97.195222 35.5007401, -97.1952222 35.5007478, -97.1951153 35.5013742, -97.1951361 35.5016443, -97.1955744 35.5021116, -97.1955754 35.5021128, -97.1958517 35.5024589, -97.1964457 35.5027697, -97.1971055 35.5028564, -97.1984548 35.5027867, -97.199632 35.5026299, -97.2007644 35.5022123, -97.2014488 35.5017075, -97.201451 35.5017061, -97.2022785 35.5012459, -97.2022849 35.5012129, -97.2022878 35.5012057, -97.2022933 35.5012001, -97.2023005 35.5011971, -97.2023083 35.5011971, -97.2023155 35.5012, -97.2023211 35.5012055, -97.2023241 35.5012127, -97.2023241 35.5012205, -97.2023241 35.5012206), (-97.2022686 35.5012972, -97.2014715 35.5017405, -97.2007859 35.5022462, -97.2007809 35.5022489, -97.1996437 35.5026682, -97.1996394 35.5026692, -97.1984592 35.5028264, -97.1984576 35.5028266, -97.1971057 35.5028965, -97.1971021 35.5028963, -97.196437 35.5028089, -97.1964303 35.5028068, -97.1958294 35.5024924, -97.1958231 35.5024872, -97.1955447 35.5021384, -97.1951021 35.5016665, -97.1950984 35.5016609, -97.1950968 35.5016543, -97.1950753 35.5013748, -97.1950755 35.5013699, -97.1951821 35.5007449, -97.1950695 35.5002314, -97.19484 35.5000121, -97.1948355 35.5000058, -97.1948338 35.4999983, -97.194835 35.4999907, -97.1949638 35.4996414, -97.1949655 35.4996379, -97.1954476 35.4988479, -97.1948714 35.4990706, -97.1939915 35.499625, -97.194108 35.4998591, -97.194714 35.5003454, -97.194719 35.5003513, -97.1947214 35.5003586, -97.1948356 35.5013009, -97.1949636 35.5019781, -97.1953234 35.5025813, -97.1961517 35.5029789, -97.1972202 35.5030833, -97.1982265 35.5031007, -97.199469 35.5029425, -97.2007306 35.5024904, -97.2013039 35.5021975, -97.2018324 35.5017838, -97.2018339 35.5017826, -97.2022226 35.5015349, -97.2022686 35.5012972))))

Project Type:

Stream / Waterbody / Canals / Levees / Dikes



Natural Resources of Concern

Endangered Species Act Species List ([USFWS Endangered Species Program](#))

There are a total of 3 threatened, endangered, or candidate species, and/or designated critical habitat on your species list. 1 of which will be affected only under certain conditions. Species on this list are the species that may be affected by your project and could include species that exist in another geographic area. For example, certain fishes may appear on the species list because a project could cause downstream effects on the species. Please contact the designated FWS office if you have questions.

Species that may be affected by your project:

Birds	Status	Species Profile	Contact
Piping Plover (<i>Charadrius melodus</i>) Population: except Great Lakes watershed	Threatened	species info	Oklahoma Ecological Services Field Office
Whooping crane (<i>Grus americana</i>) Population: except where EXPN	Endangered	species info	Oklahoma Ecological Services Field Office

Species that may be affected by your project, but only under certain conditions:

Birds			
Least tern (<i>Sterna antillarum</i>) Population: interior pop.	Endangered	species info	condition info
			Oklahoma Ecological Services Field Office

FWS National Wildlife Refuges ([USFWS National Wildlife Refuges Program](#))

There are no refuges found within the vicinity of your project.

FWS Migratory Birds ([USFWS Migratory Bird Program](#))

Most species of birds, including eagles and other raptors, are protected under the Migratory Bird Treaty Act (16 U.S.C. 703). Bald eagles and golden eagles receive additional protection under the [Bald and Golden Eagle Protection Act](#) (16 U.S.C. 668). The Service's [Birds of Conservation Concern \(2008\)](#) report identifies species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become listed under the Endangered Species Act as amended (16 U.S.C 1531 et seq.).



U.S. Fish and Wildlife Service

Natural Resources of Concern

NWI Wetlands ([USFWS National Wetlands Inventory](#)).

The U.S. Fish and Wildlife Service is the principal Federal agency that provides information on the extent and status of wetlands in the U.S., via the National Wetlands Inventory Program (NWI). In addition to impacts to wetlands within your immediate project area, wetlands outside of your project area may need to be considered in any evaluation of project impacts, due to the hydrologic nature of wetlands (for example, project activities may affect local hydrology within, and outside of, your immediate project area). It may be helpful to refer to the USFWS National Wetland Inventory website. The designated FWS office can also assist you. Impacts to wetlands and other aquatic habitats from your project may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal Statutes. Project Proponents should discuss the relationship of these requirements to their project with the Regulatory Program of the appropriate [U.S. Army Corps of Engineers District](#).



Project Location. The proposed project area is located adjacent to the west shoulder of Luther Road, approximately 350 feet north of the Arkansas-Oklahoma railroad, 0.5-miles north of US Highway 62 (NE 23rd Street) and approximately 2 miles west-northwest of Harrah, Oklahoma. The heavy, green line is the conceptual location of the highly eroded streambanks that would be stabilized with this project.

Luther Road Project Site Visit Summary:

On 19 July 2013, Tonya Dunn (Biologist, PE-E), Corey Seele (Biological Science Technician, PE-E), Helen Williams (Regulatory Project Manager), and Bryan Noblitt (Regulator Specialist) conducted a site visit to the Luther Road Project Area. A small number of endangered migratory birds, interior least terns, are known to nest on the North Canadian River (email from Priscilla Crawford, OK Biological Survey, 2013 attached); therefore, Tonya Dunn conducted to survey for interior least terns nesting and/or foraging within the proposed project boundaries or within a quarter of a mile of the project area near Harrah, OK.

Terns typically nest on sparsely vegetated islands and sandbars that are along the larger river systems of Oklahoma. These sites are usually void of tall trees and typically not within several hundred feet of trees or structures which can provide roosting sites for avian predators. Areal maps were used to determine if suitable habitat occurs within the proposed project boundaries. Once it was determined that sandbars were present and knowing the terns have historically nested along the North Canadian River (Crawford, 2013), a survey for terns within the Luther Road Project Area was conducted. Using the proposed project boundaries from the engineer drawings provided in the draft EA, Tonya Dunn surveyed the immediate project area for interior least tern adults, nests, chicks, and fledglings. A quarter mile upstream and downstream of the project boundary was also surveyed for presence of the species. No terns were observed within or up to a quarter of a mile upstream and downstream of the project boundaries. While the sandbars in the North Canadian River are suitable habitat substrate for nesting terns, vegetation encroachment on the exposed sandbars, the width of the river within the proposed project area, and the close proximity of tall trees and man-made structures (i.e. Luther Road bridge and power line towers within 1.0 foot of the river) that provide roosting sites for avian predators would indicate the sandbars that are present in or around the project area would be less than optimal nesting habitat for the migratory species.

While on site, Tonya Dunn also inspected the site for zebra mussels; no live specimens or evidence of dead specimens were found. A terrestrial invasive plant, Johnsongrass (*Sorghum halepense*), was present at the proposed project site.

Dunn, Tonya N SWT

From: Priscilla Crawford [prill@ou.edu]
Sent: Tuesday, July 16, 2013 12:08 PM
To: Dunn, Tonya N SWT
Cc: Newell, Patricia A SWT
Subject: Re: Interior Least Terns on the North Canadian River (UNCLASSIFIED)

Tonya,

I do my work on the Canadian River (also referred to as the South Canadian River). There are only a small number of records for terns on the North Canadian River in our database - all are west of this location. There is one record for a bird at Lake Overholser (which is west of OKC and is on the North Canadian). There is no indication that there has historically been a colony in the area. Do you want me to check it out sometime?

Priscilla

Priscilla H. C. Crawford

Conservation Specialist
Oklahoma Biological Survey
office -- 405-325-7658
cell -- 405-255-8106

[Oklahoma Natural Areas Registry](#) | [BioBlitz! Oklahoma](#) | [Research](#)

On Jul 15, 2013, at 10:05 AM, "Dunn, Tonya N SWT" <Tonya.N.Dunn@usace.army.mil> wrote:

Classification: UNCLASSIFIED

Caveats: NONE

Hi Miss Priscilla!

A question came up about interior least tern presence on the North Canadian River and I thought you might be able to help. Please correct me if I am wrong, but I remember you mentioning monitoring interior least terns on the Canadian River in the Oklahoma city area. Would this include the North Canadian River near Harrah, OK? The specific location in question is just west of Luther Road, slightly north and west of Harrah, OK. The North Canadian River has been migrating east at this location, creating a nice, large area with sandbar exposure. Terns have nested on the Canadian River below Eufaula Dam on land-locked sites like this, as well as at a site where a bridge crosses the river, and I was wondering if you knew, or know someone who might know, if terns have historically nested or are currently nesting at this location near Luther Rd.

I will be out of the office for the rest of today; however, if you have a chance today, please email Ms. Pat Newell (copied on this message). If you would like, Pat's number is 918-669-4937 if you need clarification of the site description.

I appreciate any assistance and certainly appreciate your time!

Thank you!!

Tonya Dunn

Biologist
U.S. Army Corps of Engineers
Tulsa District, PE-E

918.669.7662 phone
918.669.7546 fax

Classification: UNCLASSIFIED
Caveats: NONE

Luther Road Section 14 Streambank Stabilization Project Site Assessment



A quarter of a mile upstream from Project boundary;
radius of ~ 167 ft



Near Project boundary; radius of ~ 120 ft



Within Project boundary; radius of ~ 110 ft



Within Project boundary; radius of ~ 116 ft



A quarter mile downstream of Project boundary;
radius of ~ 207 feet



DEPARTMENT OF THE ARMY
UNITED STATES ARMY CORPS OF ENGINEERS, TULSA DISTRICT
1645 SOUTH 101 EAST AVENUE
TULSA OK 74128-4609

June 28, 2013

REPLY TO
ATTENTION OF

Planning and Environmental Division
Environmental Analysis and Compliance Branch

Dr. Dixie Porter, Field Supervisor
U.S. Fish and Wildlife Service
Oklahoma Ecological Services Field Office
9014 East 21st Street
Tulsa, OK 74129

Dear Dr. Porter:

The Tulsa District, U.S. Army Corps of Engineers is beginning the process of preparing an environmental assessment, in compliance with the National Environmental Act of 1969, to assess the impacts associated with a proposed stream bank stabilization project along the North Canadian River, immediately west of Luther Road and approximately 0.5 miles north of the intersection of Luther Road and Highway 62 in Oklahoma County, Oklahoma. Oklahoma County is the local cost-share sponsor for this proposed project. A site location map is included for reference.

A meander of the North Canadian River has eroded the stream bank eastward at the average rate of approximately 100 feet per year, so that the river is now located within 125 feet of Luther Road. Given that the soils in this area are sandy and easily erodible, the structural integrity of Luther Road could be compromised within a year, should the river continue to erode the current stream bank at its current rate and the meander continue its eastward movement.

The proposed project entails removing concrete pieces from the existing stream bank, some bank reshaping, and stabilizing approximately 7,920 linear feet of stream bank (1.5 miles) to reduce the migration of this meander eastward toward Luther Road. The alternatives proposed for evaluation include assessing various levels and methods of protection based upon the frequency discharge elevations associated with the 1-, 2-, and 10-year frequencies in combination with 2:1 or 3:1 finished bank slopes. The methods of protection include riprap, channelization, drop structures, bendway weirs, and hydraulic jacks.

The total land area required for this proposed project ranges between approximately 5 to 6.5 acres, depending upon the alternative considered, and include easements acquired by the Non-Federal Sponsor (Oklahoma County) for an access road and drainage ditch. Approximately 1.34 acres of the site lies within the existing right-of-way of Luther Road. The surrounding sites along the east bank of the North Canadian River are farmed.

Tulsa District encourages other agencies and organizations to be an active partner in its evaluation and requests your comments and input as related to this proposed project. As such, your comments and an official list of endangered or threatened species for the above mentioned location are requested in accordance with the Fish and Wildlife Coordination Act and Section 7 of the Endangered Species Act of 1973, as amended.

If you have any questions or require additional information, please contact Ms. Patricia Newell at 918-669-4937 or by e-mail at Patricia.A.Newell@usace.army.mil.

Sincerely,



Stephen L. Nolen
Chief, Planning and
Environmental Division

Enclosure