U.S. Department of Transportation
Federal Highway Administration

NDDOT
North Dakota Department of Transportation

Billings County
North Dakota

KLJ

Little Missouri River Crossing

Environmental Impact Statement for a proposed crossing of the Little Missouri River in conjunction with upgrading existing roadways and/or creating new roadways to connect the transportation network on the east side of the Little Missouri River to the transportation network on the west side of the Little Missouri River, from ND Highway 16 to US Highway 85, within the study area.

DRAFT
Environmental Impact Statement

JUNE 2018

02-04(001), PCN 16970

FHWA-ND-EIS-18-02-D
Project No. 02-04(001), PCN 16970

Billings and Golden Valley Counties, North Dakota

Draft Environmental Impact Statement

Submitted Pursuant to 42 U.S.C. § 4332(2)(c) and 49 U.S.C. § 303 by the
U.S. Department of Transportation
Federal Highway Administration
North Dakota Department of Transportation
Billings County

Cooperating Agencies:

US Army Corps of Engineers – North Dakota Regulatory Office
US Forest Service – Dakota Prairie Grasslands

6/18/18 Date of Approval	Ron Henke, Deputy Director for Engineering	for NDDOT
6/19/18 Date of Approval	Wendall Meyer, Division Administrator	for FHWA
6-13-2018 Date of Approval	James Arthaud, Chairman Billings County Commission	for Billings County

This Draft Environmental Impact Statement (EIS) describes the Federal Highway Administration (FHWA), North Dakota Department of Transportation (NDDOT), and Billings County proposal to construct a new crossing over the Little Missouri River in between the Long X Bridge and Interstate 94 (I-94) bridges. The project would provide users with a safe, efficient, and reliable local connection between the roadways on the east and west sides of the Little Missouri River within Billings County. Two build alternatives (Alternatives A and K) and one no-build alternative (Alternative L) are evaluated in detail in this EIS. Alternative K has three options: Alternative K, Option 1; Alternative K, Option 2; and Alternative K, Option 3. The lead agencies, Billings County, the FHWA and NDDOT, are recommending Alternative K, Option 1 as the Preferred Alternative, as it would meet the project's purpose and need with minimal environmental impacts.

It is the intent of the FHWA to issue a single document that consists of the Final EIS and Record of Decision pursuant to Public Law 112-141, 126 Stat. 405, Section 1319(b), unless the FHWA determines statutory considerations preclude issuance of the combined document pursuant to Section 1319.

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Executive Summary

for the
Draft Environmental Impact Statement

JUNE 2018

02-04(001), PCN 16970

Little Missouri River Crossing

U.S. Department of Transportation
Federal Highway Administration

NDDOT
North Dakota Department of Transportation

BILLINGS COUNTY
NORTH DAKOTA

KLJ

Executive Summary

What is the project?

This Draft Environmental Impact Statement (EIS) describes the lead agencies' (Federal Highway Administration [FHWA], North Dakota Department of Transportation [NDDOT], and Billings County) proposal to construct a new crossing over the Little Missouri River. Since the project would encroach on property managed by the US Forest Service (USFS) and the US Army Corps of Engineers (USACE) has jurisdiction over wetlands and Other Waters, these agencies are included as cooperating agencies.

Lead Agency— An agency with jurisdiction over the project and ultimately responsible for the development of the environmental document to meet the requirements of the National Environmental Policy Act (NEPA).

Cooperating Agency— A cooperating agency can be selected using one, several, or all of the following processes:

Upon request by the lead agencies, any federal agency that has jurisdiction by law, shall be a cooperating agency.

An agency with special expertise can be a cooperating agency.

An agency can request the lead agencies to designate it as a cooperating agency.

In the area of Billings and Golden Valley counties, there is one bridge (Long X Bridge) that crosses the Little Missouri River on US Highway 85, south of Watford City, and two bridges (one eastbound and one westbound) that cross the Little Missouri River on Interstate 94 (I-94) in Medora. These bridges are nearly 70 highway miles apart. In between these bridges there are 18 unimproved private fords and one unimproved public ford, which are used by some vehicles to cross the Little Missouri River. However, these fords are unreliable because of seasonal conditions and are inaccessible to many types of vehicles.

The project would construct a new crossing over the Little Missouri River in between the Long X Bridge and I-94 bridges to provide users with a safe, efficient, and reliable local connection between the roadways on the east and west sides of the Little Missouri River within Billings County. The project would improve local connectivity and system linkage between Billings and Golden Valley counties.

What is the purpose of the project, and why is it needed?

The purpose of the project is to provide for the safe and efficient movement of people and commerce. Specifically, the purpose of the project is to conduct the following:

- Improve the transport of goods and services within the study area.
- Provide the public with a safe, efficient, and reliable connection:
  - between the roadways on the east and west sides of the Little Missouri River within Billings County (internal linkage)
  - that also improves the connectivity and system linkage between the Billings County and Golden Valley County roadway networks
  - with the added benefit of providing an additional connection between North Dakota Highway 16 (ND-16) and US Highway 85 within the study area.
- Construct a new river crossing over the Little Missouri River in a location that utilizes the existing transportation network, upgrading existing roadways, and/or creating new roadways to best meet roadway and structure design standards.
- Accommodate a variety of vehicles, ranging from a two-wheel-drive passenger vehicle to agricultural, commercial, and industrial vehicles and equipment.

Historically, Billings County has seen a need for a new crossing over the Little Missouri River as early as the 1930s, documenting concerns that roadways in the area were unreliable in inclement weather, which made them virtually impassable, while the ability to cross the river has had to be negotiated with landowners of private fords. The County also identified the need for a new river crossing to meet socioeconomic demands within the area, such as emergency management and industry (e.g., agriculture, oil and gas, and recreation/tourism).

The project is not expected or intended to generate a substantial increase in traffic; rather, its goal is to improve the efficiency of the existing transportation system and increase safety for local users. The Little Missouri River Crossing Traffic Operations Memorandum was developed for the project by KLJ in 2015 (**appended by reference**). The Traffic Operations Memorandum concluded that traffic volumes utilizing the new bridge would be a combination of rerouted existing local traffic adjacent to the new bridge, as well as a portion of the additional traffic growth attributed to the study area. While the new bridge would provide a shorter overall distance between some local origins and destinations, it would likely result in increased travel time when compared to the nearby regional highways (e.g., US Highway 85, I-94, and ND-16).

In a rural state such as North Dakota, traffic volumes alone do not dictate where and whether or not bridges are needed. Roadways, including bridges, provide farm-to-market access and accessibility for local traffic, emergency vehicles, and other users. The project is needed to improve the efficiency and reliability of the transportation system for existing users and provide farm-to-market access and accessibility for local traffic, emergency vehicles, and other users (e.g., industry).

What are the alternatives for the project?

A range of alternatives has been developed and evaluated for the project (Alternatives A through L). Alternatives A through J are the build alternatives and Alternative L is the no-build alternative. Alternatives B through J were eliminated from further detailed analysis primarily due to their proximity to the Theodore Roosevelt National Park (TRNP)–Elkhorn Ranch Unit.

Two build alternatives (Alternatives A and K) and the no-build alternative (Alternative L) were carried forward for detailed analysis in this EIS. Alternative K has three options: Alternative K, Option 1; Alternative K, Option 2; and Alternative K, Option 3. Alternative K, Option 1 is noted as the recommended Preferred Alternative in this EIS. The final selection of the Preferred Alternative will be made after comments to this EIS have been fully considered. The final Preferred Alternative will be noted in the Final EIS. Please refer to **'Figure ES-i, Alternatives for the Project' on page iv**.

The following further discusses each of the alternatives carried forward:

- Alternative A would connect Belle Lake Road with Magpie Creek Road on the north end of Billings County. The route under Alternative A would be approximately 11 miles long, of which 10.1 miles would closely follow the existing roadway alignment and 0.9 miles would be new roadway construction. Alternative A would cross over Buckhorn Creek, and therefore, one crossing would need to be installed to allow its waters to flow under the roadway. Approximately 174 acres of permanent easements would need to be acquired from the USFS, and approximately 73 acres of permanent right-of-way (ROW) and 4 acres of temporary easements would need to be acquired from private landowners. Alternative A would be the longest of the build alternatives carried forward for further detailed analysis. This alternative has the most rugged terrain and would involve the most earthwork (i.e., borrow and excavation).

  Alternative A would include construction of a bridge, approximately 850 feet long with five to seven spans, resulting in two to four piers located within the banks of the Little Missouri River. The final number of spans and piers would be determined during the final design phase and would be dependent on detailed hydraulic and geotechnical studies.

- Alternative K (all options) would connect Belle Lake Road with East River Road. The western 4.9 miles is shared among all three options. Within this stretch, an existing 50-foot-long bridge that crosses over Roosevelt Creek would be replaced as a result of the roadway alignment and grade change required to improve the existing roadway. The replacement structure would be a bridge of similar size or a box culvert of equivalent water capacity.

  An expanded area (approximately 2.5 acres) was added to the westernmost portion of the shared alignment under Alternative K. The expanded area, located in the SE1/4 of Section 26, Township 143 North, Range 103 West, was added to provide flexibility in aligning the intersection at Belle Lake Road.

In order to facilitate future landowner negotiations to minimize impacts on agricultural operations, two expanded areas were included to allow for flexibility in the alignment.

Expanded Area for all the options under Alternative K was located on the westernmost portion of the shared Alternative K alignments.

Expanded Area for Alternative K, Option 1 was located on the eastern portion of the Alternative K, Option 1 alignment.

See **'Figure ES-ii, Map of Alternative K, Option 1 (Preferred Alternative)' on page iv.**

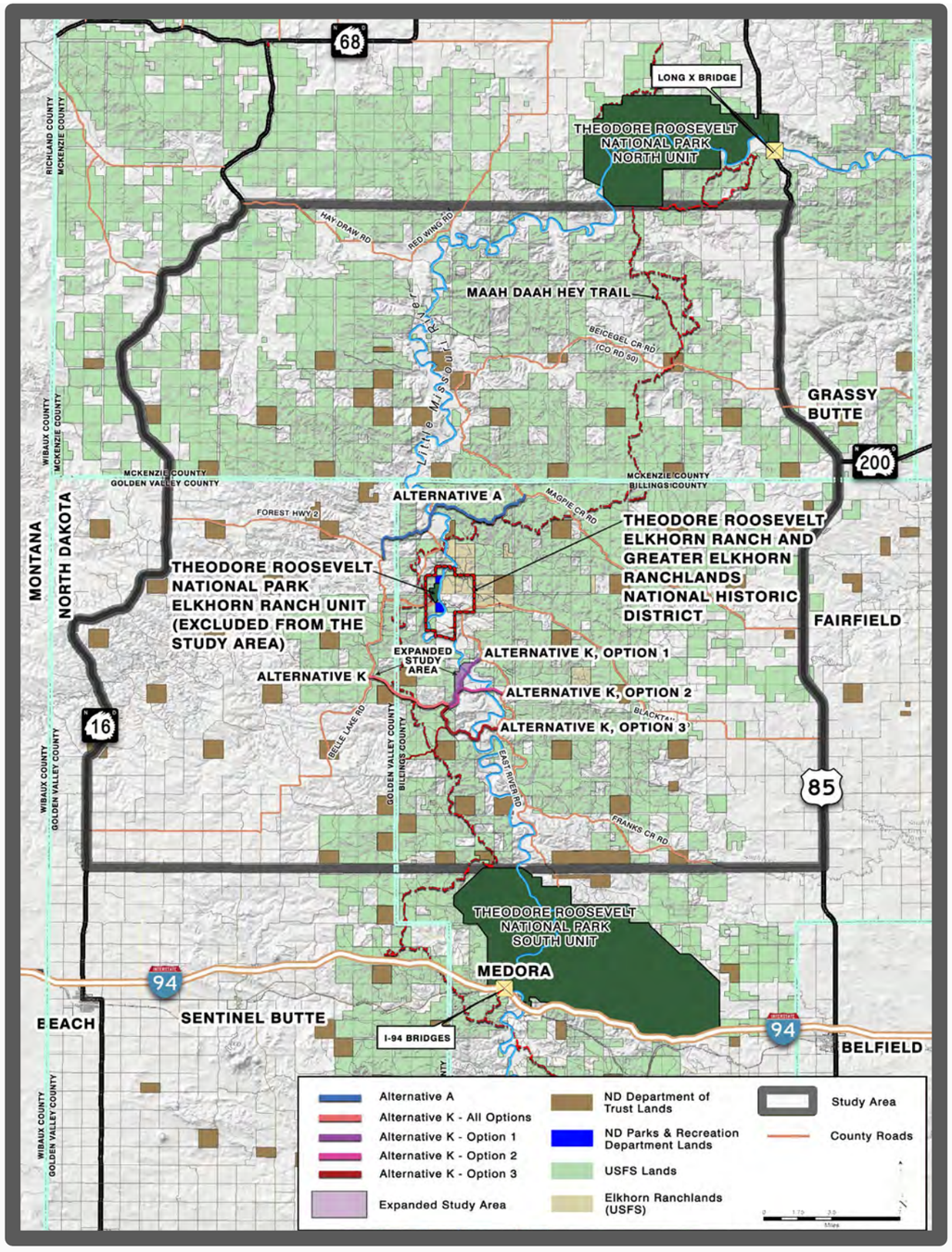

Figure ES-i, Alternatives for the Project

» Alternative K, Option 1 (Preferred Alternative) would be approximately 8.3 miles long, of which 6.2 miles would closely follow the existing roadway alignment and 2.1 miles would be new roadway construction. Approximately 88 acres of permanent easements would need to be acquired from the USFS, approximately 15 acres of permanent ROW would need to be acquired from the North Dakota Department of Trust, and approximately 62 acres of permanent ROW and 13 acres of temporary easements would need to be acquired from private landowners.

The alignment would run from Belle Lake Road to Short Road, where it would run north, between a privately-owned feed lot on the west side of the roadway and privately-owned agricultural land on the east side of the roadway.

The process for roadway projects is to complete the environmental review, then the project moves toward final design. Once the design is more developed, landowner negotiations begin, and then ultimately construction begins. Since the new roadway under Alternative K, Option 1 (Preferred Alternative) lies primarily on privately-owned land and it would run in between a feed lot and agricultural land, it was necessary for the lead agencies to consider and evaluate a larger area for this alternative. This larger expanded area would facilitate future landowner negotiations to minimize impacts on agricultural operations. It is approximately 671.9 acres and located in portions of Sections 22, 23, 27, and 34, Township 143 North, Range 102 West.

Most of the time, during the EIS phase, the lead agencies only design alternatives to a certain point. The expanded area is evaluated to ensure that any portions of the alignment that are off the original Alternative K, Option 1 (Preferred Alternative) would be environmentally cleared. Therefore, any changes to the roadway and bridge alignment after landowner negotiations are completed would have environmental clearance.

Alternative K, Option 1 (Preferred Alternative) would include construction of a bridge, approximately 600 feet

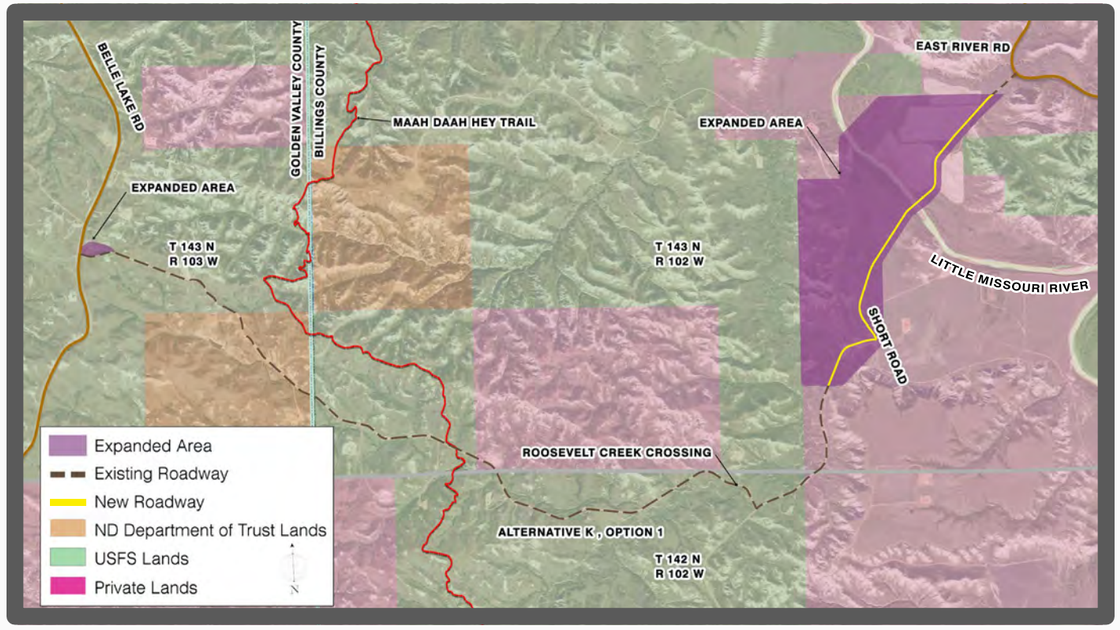

Figure ES-ii, Map of Alternative K, Option 1 (Preferred Alternative)

long with three to five spans, resulting in one to three piers located within the banks of the Little Missouri River. The final number of spans and piers would be determined during the final design phase and would be dependent on detailed hydraulic and geotechnical studies.

» Alternative K, Option 2 would be approximately 8.4 miles long, of which 5.8 miles would closely follow the existing roadway alignment and 2.6 miles would be new roadway construction. Approximately 94 acres of permanent easements would need to be acquired from the USFS, approximately 15 acres of permanent ROW would need to be acquired from the North Dakota Department of Trust, and approximately 55 acres of permanent ROW and 1 acre of temporary easements would need to be acquired from private landowners.

  Alternative K, Option 2 would include construction of a bridge, approximately 800 feet long with five to seven spans, resulting in two to four piers located within the banks of the Little Missouri River. The final number of spans and piers would be determined during the final design phase and would be dependent on detailed hydraulic and geotechnical studies.

» Alternative K, Option 3 would be approximately 9.9 miles long, of which 7.9 miles would closely follow the existing roadway alignment and 2 miles would be new roadway construction. In addition to crossing over Roosevelt Creek, Alternative K, Option 3 would also cross over Crooked Creek. Therefore, the crossing over Crooked Creek would need to be replaced as a result of the roadway alignment and grade change required to improve the existing roadway. The replacement structure would be a crossing of similar size or a box culvert of equivalent water capacity. Approximately 125 acres of permanent easements would need to be acquired from the USFS, approximately 15 acres of permanent ROW would need to be acquired from the North Dakota Department of Trust, and approximately 61 acres of permanent ROW and 11 acres of temporary easements would need to be acquired from private landowners.

  Alternative K, Option 3 would include construction of a bridge, approximately 600 feet long with three to five spans, resulting in one to three piers located within the banks of the Little Missouri River. The final number of spans and piers would be determined during the final design phase and would be dependent on detailed hydraulic and geotechnical studies.

- Under Alternative L (no-build), construction of a new bridge across the Little Missouri River and associated roadway improvements would not occur. Routine maintenance of existing roadways within the study area would continue.

What is the Preferred Alternative?

After nearly a decade of considering potential alternatives, collaborating with the public and cooperating and participating agencies, and conducting engineering and environmental studies for the project, the lead agencies, Billings County , the FHWA, and NDDOT, are recommending Alternative K, Option 1 as the Preferred Alternative. Alternative K, Option 1 would meet the project's purpose and need with minimal impacts. The final Preferred Alternative will be identified in the Final EIS after comments to this EIS have been considered.

Alternative K, Option 1 would be designed to avoid or minimize traffic, noise, and viewshed impacts to the maximum extent practicable. It is anticipated that Alternative K, Option 1 would result in minimal impacts on wetlands; Other Waters; wildlife and their habitats; cultural resources; and other environmental, socioeconomic, and human-made resources. Please refer to **'Figure ES-ii, Map of Alternative K, Option 1 (Preferred Alternative)' on page iv**.

What are the impacts from Alternative K, Option 1 (Preferred Alternative)?

Some of the impacts resulting from Alternative K, Option 1 (Preferred Alternative) include the following:

- Temporary impacts during construction on land use, portions of the Dakota Prairie Grasslands (DPG), public lands, farmlands of statewide importance, travel patterns, recreational areas, emergency vehicles, residents, regional air quality, water resources, water quality, vegetation, migratory birds, wildlife, viewshed of nearby locations, and energy.
- Permanent conversion of 119 acres of farmland of statewide importance.
- Approximately 62 acres of permanent ROW and 13 acres of temporary easements would need to be acquired from private landowners, 15 acres of permanent ROW would need to be acquired from the North Dakota Department of Trust, and 88 acres of permanent easements would need to be acquired from the USFS.[1]
- Efficiency and reliability of the transportation system and emergency response times would be improved.
- Local access to recreational and tourist facilities would be increased.
- Net economic benefit due to temporary increase in construction employment and subsequent increase in payroll taxes, sales receipts, and indirect purchases of goods and services.
- Farmers, ranchers, and oil and gas developers could manage resources more efficiently, lowering costs.
- Slightly increased fugitive dust and greenhouse gas (GHG) emissions from local traffic using existing roadway; however, overall less vehicle miles traveled and less associated emissions due to local crossing over the river.
- Little Missouri River would experience less overall sedimentation and disturbance upon completion of construction.
- Portions of riverine floodplains and riparian corridors would be eliminated due to the Roosevelt Creek crossing and piers associated with the new bridge.
- Permanent impacts on 1.65 acres of wetlands and 0.14 acres (1,873 linear feet) of Other Waters.
- Trees within construction limits would be impacted.
- May impact alkali sacaton (*Sporobolus airoides*), Missouri pincushion cactus (*Escobaria missouriensis*), Dakota buckwheat (*Eriogonum visheri*), alyssum-leaved phlox (*Phlox alyssifolia*), blue lips (*Collinsia parviflora*), dwarf mentzelia (*Mentzelia pumila*), Easter daisy (*Townsendia exscapa*), lance-leaf cottonwood (*Populus x acuminate*), nodding wild buckwheat (*Eriogonum cernuum*), sand lily (*Leucocrinum montanum*), smooth goosefoot (*Chenopodium subglabrum*), and Torrey's cryptantha (*Cryptantha torreyana*).
- May impact golden eagle (*Aquila chrysaetos*), prairie falcon (*Falco mexicanus*), bighorn sheep (*Ovis canadensis*), loggerhead shrike (*Lanius ludovicianus*), long-billed curlew (*Numenius americanus*), northern redbelly dace (*Chrosomus eos*), Ottoe skipper (*Hesperia ottoe*), regal fritillary (*Speyeria idalia*), Sprague's pipit (*Anthus spragueii*), tawny crescent (*Phyciodes batesii*), and sharp-tailed grouse (*Tympanuchus phasianellus*).
- Will impact Hooker's Townsendia (*Townsendia hookeri*).
- No effect on gray wolf (*Canis lupus*) or black-footed ferret (*Mustela nigripes*).
- May affect, but is not likely to adversely affect, whooping crane (*Grus americana*) and northern long-eared bat (*Myotis septentrionalis*).
- No impact on limber pine (*Pinus flexilis*).
- No impact on black-tailed prairie dog (*Cynomys ludovicianus*), greater sage grouse (*Centrocercus urophasianus*), or on Cooper's hawk (*Accipiter cooperii*).
- *No Historic Properties Affected*.
- Potential, temporary indirect impacts on the National Historic District during construction activities would include fugitive dust emissions from ground-disturbing activities. Potential indirect impacts on the National Historic District upon completion of construction activities would include fugitive dust emissions from vehicles traveling on the roadway. However, the National Historic District is approximately 2 miles away, so impacts would be negligible or minor.
- Temporary occupancy exemption under Section 4(f) for the Maah Daah Hey Trail.
- No direct impacts on viewshed of the TRNP–Elkhorn Ranch Unit or National Historic District.
- Existing electricity and communications lines and/or equipment and natural gas and crude oil pipelines would be moved and realigned, where necessary.

1 For the roadway easements, the estimated acreages are for the full width of the ROW/easements along the corridor. There may be locations along the existing roadway segments where ROW and/or easements have been previously acquired by Billings County. The actual acquisition of ROW or easements for these areas would be reduced by the amount of ROW or easement that currently exists; this determination would be made during the final design of the project.

What are the environmental commitments and considerations for the project?

This section outlines environmental commitments (including some NDDOT Standard Specifications, as noted) that would be implemented as part of the Preferred Alternative (Alternative K, Option 1) to avoid, minimize, and compensate for environmental impacts resulting from the project. Please refer to **'Table ES-i, Environmental Commitments Summary' on page vii** for a listing of the environmental commitments.

What permits and approvals may be required for the project?

The following permits and approvals would be required for the project:

- North Dakota Pollutant Discharge Elimination System (NDPDES) permit from the North Dakota Department of Health (NDDH)
- Section 401 of the Clean Water Act (CWA) Certification (unless waived) from the USACE
- Section 404 of the CWA Permit from the USACE
- Easement from the USFS

- Temporary Water Permit from the North Dakota State Water Commission (NDSWC)
- Section 106 of the National Historic Preservation Act (NHPA) concurrence from the North Dakota State Historic Preservation Office (NDSHPO)
- Section 7 of the Endangered Species Act (ESA) concurrence from the US Fish and Wildlife Service (USFWS)
- Section 4(f) of the Department of Transportation Act of 1966 (49 United States Code [U.S.C.] § 303) concurrence from the USFS

Table ES-i, Environmental Commitments Summary

NO.	COMMITMENT	TIMING OF IMPLEMENTATION	ENVIRONMENTAL IMPACT CATEGORY
1*	The contractor would be required to obtain an NDPDES permit and develop a SWPPP. The SWPPP would outline phasing for erosion- and sediment-controls, stabilization measures, pollution-prevention measures, and prohibited discharges. The SWPPP would also include dust-control measures and BMPs to minimize erosion, sedimentation, and stormwater runoff (e.g., fiber rolls, straw waddles, erosion mats, silt fencing, turbidity barriers, mulching, filter fabric fencing, sediment traps and ponds, surface water interceptor swales, ditches). The SWPPP would require that secure and contained refueling areas are located away from surface waters, maintenance and monitoring measures are implemented to reduce the potential for spills and leaks, and the amount of stockpiled material is minimized and stored away from surface waters. In addition, waste material would be disposed of in accordance with state and federal laws and in a manner that avoids impacts on the Little Missouri River channel.	Prior to construction	All resource categories, except Economics, Environmental Justice, Noise, and Energy
2	Areas that are reclaimed would be vegetated in accordance with USFS Seeding Rate Guidelines (i.e., 37-28A Seed Mixture). Grasses in this seed mixture include cool-season, warm-season, and alternate warm-season grasses and forbs.	Completion of construction	Land Use, Prime and Unique Farmlands, Wildlife, Vegetation
3	If waste sites are necessary, the contractor would be responsible for identifying appropriate locations to dispose of waste material, and would do so according to the NDDOT material source process. A commitment in the plans would require that the contractor avoid critical habitat, sensitive areas, and woody draws. In addition, coordination with NDDOT, USFWS, USACE, and NDGFD prior to final site selection would be required. If haul routes on county roads would be utilized, the necessary permit(s) would be acquired.	Throughout construction	Land Use
4	Notice of temporary construction activities would be provided to recreationists using the Maah Daah Hey Trail; appropriate safety mechanisms (e.g., fencing, signs) would be provided, as necessary; and the current trail route would be maintained through the construction work zone.	Throughout construction	Pedestrians and Bicyclists
5	Riprap (i.e., loose field or quarry stone used to form a foundation) would be added at each abutment (i.e., bridge end) and pier to reduce stream channel erosion.	Throughout construction	Water Resources
6	River flow would be maintained during construction by the installation of temporary culverts or by leaving part of the channel open.	Throughout construction	Water Resources
7	Temporarily impacted wetlands would be restored to pre-construction conditions following project completion.	Completion of construction	Wetlands and Other Waters
8	Impacts on wetlands would be mitigated onsite, adjacent to the project, or at an NDDOT-approved mitigation site or bank, as necessary. During final design, a Section 404 permit application (and mitigation plan, if necessary) would be provided to the USACE for their consideration of impacts on wetlands and Other Waters under USACE jurisdiction. For naturally occurring wetlands outside of USACE jurisdiction requiring mitigation under EO 11990, impacts would be mitigated onsite, offsite, or an approved wetland site or bank. Mitigation would be accomplished in a manner consistent with FHWA's program-wide goal of 'net gain' of wetlands through enhancement, creation, and preservation.	Prior to, or concurrent with, construction	Wetlands and Other Waters
9	To minimize the risk of degrading habitat by spreading aquatic nuisance species, the contractor would conduct equipment inspections and cleaning prior to placing any equipment within waters of the state (i.e., the Little Missouri River), in accordance with NDCC Chapter 20.1-17.	Completion of construction	Vegetation
10	Three sensitive plant species (i.e., alkali sacaton, Hooker's townsendia, and Missouri pincushion cactus) are located within the project areas of Alternative K, Option 1 (Preferred Alternative). Two populations of alkali sacaton are located within the proposed construction limits of Alternative K, Option 1 (Preferred Alternative). Known sensitive plant locations near the alignment would be avoided to the maximum extent practicable. All other known sensitive plant species populations near the alignment would be flagged in order to avoid adverse impacts. Upon availability of necessary utility relocations, additional coordination with USFS would occur to assess impacts on sensitive plant species.	Prior to and throughout construction	Vegetation
11	Training materials (e.g., presentation, poster, pamphlet) would be provided to the contractor to aid in threatened and endangered species identification.	Prior to construction	Wildlife
12*	If the contractor encounters threatened or endangered species anywhere the contractor performs the work, the contractor shall immediately suspend the work and notify the project engineer.	Throughout construction	Wildlife
13	To minimize the effects of construction disturbance on the whooping crane, in the event a whooping crane is identified within 1 mile of the project, all construction activities would cease and an avoidance area would be established. Coordination with USFWS, FHWA, and NDDOT would occur immediately and work would not resume within the avoidance area until the bird(s) have left the area.	Throughout construction	Wildlife
14	Tree removal would not occur from June 1 through July 31 to avoid impacting potential maturity roost trees during the northern long-eared bat pup season.	Throughout construction	Wildlife
15	The number of trees impacted would be assessed during construction and any necessary mitigation would be determined in coordination with the NDDOT, NDGFD, and USFS.	Throughout construction	Vegetation, Wildlife
16	In an effort to avoid impacts on raptors during the breeding and nesting season, a qualified biologist would conduct a pre-construction raptor survey within five days prior to the initiation of construction activities and tree removal to check the status of existing and historical nests and search for new nests. If any active nests are found, appropriate measures, such as timing and avoidance buffers, would be implemented to minimize and avoid potential impacts on any identified raptor nests. Active nests would be avoided during the breeding and nesting period in accordance with DPG Land and Resource Management Plan guidelines if it is determined that construction activities are likely to adversely affect raptor reproductive success or degrade winter roost quality. The guidelines may be modified for raptor species other than those listed in the DPG Land and Resource Management Plan, as well as in coordination with the USFS to account for the type, source, frequency and duration of disruption and extent screening of topography and vegetation. The NDDOT would coordinate with the USFWS prior to the continuation of construction activities to determine any measures necessary to minimize harm to bald and/or golden eagles.	Prior to and throughout construction	Wildlife
17	To minimize impacts on sensitive native fish species, instream riverine water flow would be maintained at baseline depth during construction.	Throughout construction	Wildlife

Key: NDDOT = North Dakota Department of Transportation; FHWA = Federal Highway Administration; USACE = US Army Corps of Engineers; NDPDES = North Dakota Pollutant Discharge Elimination System; NDDH = North Dakota Department of Health; SWPPP = Storm Water Pollution Prevention Plan; USFWS = US Fish and Wildlife Service; NDCC = North Dakota Century Code; NDGFD = North Dakota Game and Fish Department; BMP = best management practice; EO = Executive Order; SP = Special Provision; MBTA = Migratory Bird Treaty Act; NDSHPO = North Dakota State Historic Preservation Office; SFN = State Form Number; ACBM = asbestos-containing building material

*Note: *This is consistent with the NDDOT Standard Specifications for Road and Bridge Construction.*

NO.	COMMITMENT	TIMING OF IMPLEMENTATION	ENVIRONMENTAL IMPACT CATEGORY
18	The NDDOT Utility Engineer or consultant would request that utility companies install line markers (bird diverters) at a 1:1 ratio (per linear foot) on overhead utility lines to be raised, lowered, and/or moved to reduce the risk of flight collisions for birds, including the whooping crane.	Throughout construction	Wildlife
19	To minimize impacts on migratory birds, the NDDOT Standard SP for the MBTA (i.e., SP 0004(14)) would be included in the plan set for the contractor to implement. If construction occurs during the migratory bird nesting and breeding season in North Dakota (i.e., between February 1 and July 15), construction areas would be mowed and/or grubbed prior to the nesting and breeding season. If mowing and/or grubbing is not completed prior to the nesting and breeding season, a qualified biologist would conduct pre-construction surveys for migratory birds and their nests within the construction areas. If active nests are identified, the NDDOT would coordinate with the USFWS prior to construction to determine any measures necessary to minimize harm.	Prior to construction	Wildlife
20	If cultural resources are discovered during construction or operation, procedures and requirements outlined in the Little Missouri River Crossing Cultural Resource Discovery Plan (2017) would be followed: work would immediately be stopped, the affected site secured, and the NDDOT (Jeani Borchert, 701-328-4378) and NDSHPO be notified. Work would not resume until written authorization to proceed was received from the NDDOT.	Throughout construction	Historic and Archaeological Preservation/ Cultural Resources
21*	All project workers would be prohibited from collecting artifacts or disturbing cultural resources in any area under any circumstances.	Throughout construction	Historic and Archaeological Preservation/ Cultural Resources
22	Prior to removal/demolition, the Roosevelt Creek and Crooked Creek crossings would be inspected for asbestos. The contractor would submit a SFN 17987 Asbestos Notification of Demolition and Renovation form to the NDDH at least 10 days prior to removing/demolishing the crossings. Any ACBMs removed as part of removal/demolition of the crossings would be disposed of in accordance with local, state, and federal regulations.	Prior to Roosevelt Creek crossing removal/demolition	Hazardous Waste
23*	If the contractor encounters abnormal conditions (e.g., presence of barrels, obnoxious odors, excessively hot earth, smoke) during construction that indicate the presence of hazardous materials or toxic wastes anywhere the contractor performs work, the contractor would immediately suspend the work and notify the project engineer. The contractor would continue construction in other areas of the project, but would not resume work in the area of the abnormal condition, unless directed to by the project engineer.	Throughout construction	Hazardous Waste
24	The bridge would be designed to be low-profile and blend with the surrounding environment to the maximum extent possible.	Final design	Visual
25	All construction equipment would be pressure washed and free of noxious weeds and plant propagules (i.e., seeds and vegetative parts that may sprout) prior to entrance onto the project site. This would include equipment and vehicles intended for off-road as well as on-road use, whether they are owned, leased, or borrowed by the contractor or any subcontractor. Cleaning of vehicles and equipment would occur off-site.	Prior to construction	Vegetation

Key: NDDOT = North Dakota Department of Transportation; FHWA = Federal Highway Administration; USACE = US Army Corps of Engineers; NDPDES = North Dakota Pollutant Discharge Elimination System; NDDH = North Dakota Department of Health; SWPPP = Storm Water Pollution Prevention Plan; USFWS = US Fish and Wildlife Service; NDCC = North Dakota Century Code; NDGFD = North Dakota Game and Fish Department; BMP = best management practice; EO = Executive Order; SP = Special Provision; MBTA = Migratory Bird Treaty Act; NDSHPO = North Dakota State Historic Preservation Office; SFN = State Form Number; ACBM = asbestos-containing building material

*Note: *This is consistent with the NDDOT Standard Specifications for Road and Bridge Construction.*

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List of Documents Appended by Reference

- Biological Assessment of Threatened & Endangered Species & Biological Evaluation of Sensitive Species—Little Missouri River Crossing, Alternative A (2017)
- Biological Assessment of Threatened & Endangered Species & Biological Evaluation of Sensitive Species Amendment—Little Missouri River Crossing, Alternative K (All Options) (2017)
- Addendum to: Biological Assessment of Threatened & Endangered Species & Biological Evaluation of Sensitive Species – Little Missouri River Crossing, Alternative K (All Options) (2017)
- Biological Assessment—Little Missouri River Crossing (Preferred Alternative) (2016)
- Field Wetland Delination Report—Little Missouri River Crossing (2016)
- Field Wetland Delination Report—Little Missouri River Crossing Expanded Study Area (2016)
- Noise Report—Little Missouri River Crossing (2016)
- Little Missouri River Crossing Traffic Operations Memorandum (2015)
- Coordination Plan—Little Missouri River Crossing (2015)
- Little Missouri River Crossing: A Class III Cultural Resource Inventory in Billings, Golden Valley, and McKenzie Counties, North Dakota (2015)
- Scoping Report—Little Missouri River Crossing (2016)
- Little Missouri River Crossing: Evaluation Plan for Sites 32BI234, 32BI272, 32BI290, 32BI713, 32BI1127, 32GV299, and 32GV300 in Billings and Golden Valley Counties, North Dakota (2015)
- Evaluative Testing at 32B1713 for the Little Missouri River Crossing (2016)
- Addendum to "The Little Missouri River Crossing: A Class III Cultural Resource Inventory in Billings, Golden Valley, and McKenzie Counties, North Dakota" for the Expanded Alternative K, Option 1 Area (2016)
- Little Missouri River Crossing Cultural Resource Discovery Plan (2017)

Chapter 1. Introduction

This Draft Environmental Impact Statement (EIS) describes the lead agencies' (Federal Highway Administration [FHWA], North Dakota Department of Transportation [NDDOT], and Billings County) proposal to construct a new crossing over the Little Missouri River. Since the project would encroach on property managed by the US Forest Service (USFS) and the US Army Corps of Engineers (USACE) has jurisdiction over wetlands and Other Waters, these agencies are included as cooperating agencies.

Lead Agency— An agency with jurisdiction over the project and ultimately responsible for the development of the environmental document to meet the requirements of NEPA.

Cooperating Agency— A cooperating agency can be selected using one, several, or all of the following processes:

Upon request by the lead agencies, any federal agency that has jurisdiction by law, shall be a cooperating agency.

An agency with special expertise can be a cooperating agency.

An agency can request the lead agencies to designate it as a cooperating agency.

In the area of Billings and Golden Valley counties, there is one bridge (Long X Bridge) that crosses the Little Missouri River on US Highway 85, south of Watford City, and two bridges (one eastbound and one westbound) that cross the Little Missouri River on Interstate 94 (I-94) in Medora. These bridges are nearly 70 highway miles apart. In between these bridges there are 18 unimproved private fords and one unimproved public ford, which are used by some vehicles to cross the Little Missouri River. However, these fords are unreliable because of seasonal conditions and are inaccessible to many types of vehicles.

The project would construct a new crossing over the Little Missouri River in between the Long X Bridge and I-94 bridges to provide users with a safe, efficient, and reliable local connection between the roadways on the east and west sides of the Little Missouri River within Billings County. The project would improve local connectivity and system linkage between Billings and Golden Valley counties.

1.1. How do you use this document?

In the beginning of each chapter, the following is noted:

- A table of contents is provided that lists the topics included and their location within the chapter.
- A roadmap which identifies where the reader is currently located in the EIS.
- When applicable, a list of policies, regulations, and procedures that will be discussed within the chapter.

Throughout this EIS, figures, renderings, and tables are provided to accommodate information and facilitate a clearer understanding of the topics discussed in this EIS.

Callout boxes are also provided throughout this EIS, which provide definitions and short descriptions of some of the topics discussed in this EIS.

In **Chapter 1**, you will find out how to use this document, what the purpose of the EIS is, and what the EIS process is.

In **Chapter 2**, you will find out about the purpose of, and need for, the project. In general, the 'purpose' describes the particular problem to be solved and outlines the goals and objectives that should be included as part of a successful solution to the problem. The 'need' provides data to support the problem statement (purpose) and includes a discussion of existing conditions that need to be changed, problems that need to be remedied, decisions that need to be made, and/or policies and mandates that need to be implemented.

In **Chapter 3**, you will find out about the alternatives developed for the project. When a project is initiated, alternatives (or options) to complete the project must be considered. Alternatives that meet the underlying need are considered reasonable and should be analyzed. Alternatives that do not meet the underlying need, do not have to be analyzed and can be eliminated from further consideration.

In **Chapter 4**, you will find out about construction of the project, what the environmental commitments and considerations are, and what permits and approvals may be necessary. In general, EISs need to include a complete discussion of appropriate environmental commitments and considerations (or mitigation measures). These environmental commitments and considerations are efforts the lead agencies take to avoid or minimize environmental impacts resulting from the project.

In **Chapter 5**, you will find out about the affected environment and environmental consequences from the project. The affected environment is the existing area(s) and environmental resources that could be affected by the alternatives. The description of the affected environment provides relevant information for those unfamiliar with the environmental setting, the context for understanding the environmental consequences, and the environmental baseline against which the impacts from the alternatives can be compared. The environmental consequences are the possible effects on the affected environment caused by the alternatives. They can be adverse (negative) or beneficial (positive) and are discussed in comparative form to define the issues and provide a clear basis of choice among options by decision-makers and the public.

In **Chapter 7**, you will find out about cumulative effects, which are environmental consequences that result from the alternatives combined with environmental consequences from other past, present, and reasonably foreseeable projects and actions within a given area and timeframe.

In **Chapter 8**, you will find out about public involvement and outreach efforts conducted for the project.

In **Chapter 9**, you will find out who contributed to and prepared the EIS.

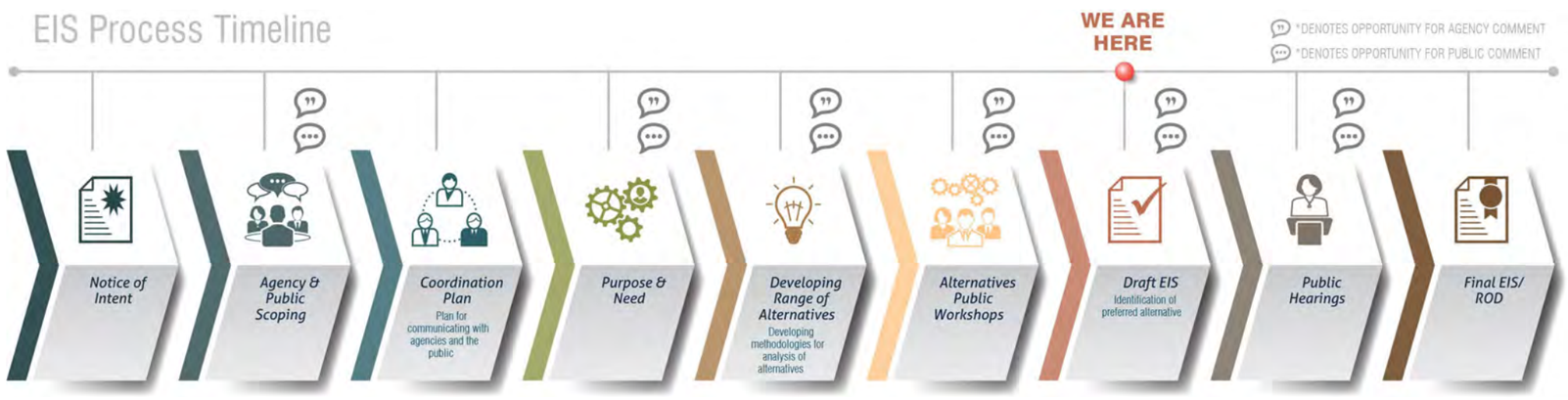
Following the EIS chapters, you will find a list of the **'References'** and **'Abbreviations & Acronyms'** that were used in developing the EIS. The references are the sources used for all of the factual information presented in the EIS. The acronyms are abbreviations for commonly used sets of words, names, and official titles.

1.2. What is the purpose of the EIS?

This EIS is a disclosure document that details the process through which the project was developed, includes consideration of a range of reasonable alternatives, analyzes the potential impacts resulting from the alternatives, and demonstrates compliance with other applicable environmental laws and Executive Orders (EOs). The primary purpose of this EIS is to serve as a decision-making device to ensure that the policies and goals defined in the National Environmental Policy Act (NEPA), as amended, are integrated into the ongoing programs and actions of the federal government. It provides discussion of any significant environmental impacts and informs decision-makers and the public of the reasonable alternatives that would avoid or minimize potential adverse impacts or enhance the quality of the environment.

1.3. What is the EIS process?

The EIS process begins with publication of the Notice of Intent (NOI) in the *Federal Register*. The NOI serves as the legal notice issued by the lead federal agency that an EIS will be been prepared. Once the NOI has been filed, the scoping process can officially begin. The purpose of the public scoping process is to initiate early communication, inform the public about the proposed project, help develop the proposed project's purpose and need, and gather feedback regarding the overall proposed project. The scoping process obtains agency and public opinions about what important issues should be addressed in the EIS.



Following completion of the scoping process, project alternatives are developed. The project alternatives development process begins by developing a full range of alternatives. A screening process is then used to evaluate and develop a range of reasonable alternatives that would meet the project purpose and need and established design criteria and standards. The range of reasonable alternatives will then be carried forward for analysis in the Draft EIS.

The Draft EIS is based off of the information gathered during the scoping process, as well as the expertise of the lead, cooperating, and participating agencies. The basic content of the Draft EIS contains a full description of the project and alternatives, as well as a full description of the affected environment and direct, indirect, and cumulative effects of the alternatives. The Draft EIS will also identify the potential Preferred Alternative. The final selection of the Preferred Alternative will not be made until the public hearing and comments on the Draft EIS have been evaluated. When the Draft EIS is complete, it is distributed to agencies and the public for comment.

Once the Draft EIS comment period has concluded, preparation of the Final EIS can begin. The Final EIS addresses comments received during the Draft EIS comment period and incorporates revisions, as appropriate. All comments received during the Draft EIS comment period will be addressed in the Final EIS; however, not all comments may warrant a revision to the document.

The final step in the EIS process is to issue a Record of Decision (ROD). The ROD identifies the selected alternative; provides an explanation as to why the selected alternative was chosen; identifies all other alternatives considered, including the environmentally preferred alternative; and includes an explanation of the mitigation measures that were, or were not, adopted and why.

Chapter 2. Purpose and Need

This chapter provides an introduction to the project, including a description of the project setting, history of Billings and Golden Valley counties, history of the project, and difference between previous efforts and the current project. This chapter also includes a description of the study area and how it evolved; purpose of, and need for, the project; summary of key environmental compliance requirements; information regarding the lead, cooperating, and participating agencies; and details regarding the scoping process and alternatives workshops.

2.1. What is the setting of the study area?

The project is located in the Little Missouri National Grasslands (LMNG) which, in its entirety, encompasses more than 1 million acres and is the largest grassland in the United States. The LMNG is managed by the USFS. Within its boundaries lies portions of state- and privately-owned land. Local ranchers lease much of these lands for grazing, where low-lying grasslands are composed of mixed-prairie grasses (USFS Undated A). Alfalfa and small grain fields can also be found at the base of the hills. The surrounding landscape of the study area along the Little Missouri River consists of buttes, bluffs, and sparsely vegetated conical hillslopes (Bryce 1998). Oil and gas well pads can also be seen throughout the study area. Another USFS-managed property within the study area is the Maah Daah Hey Trail, which has been recognized as a premier non-motorized trail and has been featured in multiple national publications (NDPRD Undated c).

The climate is semi-arid and the landforms are comprised of shale, siltstone, and sandstone. Due to the natural landforms and Little Missouri River, the erosional landscape exposes Oligocene-age beds that are notable for their abundant flora and fauna fossils, including significant examples of driftwood (Bluemle 2009).

Little Missouri Grasslands

There are multiple campgrounds and picnic areas within the study area managed by the USFS (USFS Undated A):

- Bennett Campground– Northern side of the study area, next to a trail head of the Maah Daah Hey Trail.
- Magpie Campground– Approximately 20 miles south of Bennett Campground and approximately 0.5 miles from the Maah Daah Hey Trail and popular tourist attractions, including Devil's Pass and the Ice Caves.
- Elkhorn Campground– Approximately 15 miles southwest of Magpie Campground and 2.5 miles west of the Theodore Roosevelt National Park (TRNP)–Elkhorn Ranch Unit, on the western side of the Little Missouri River; features a scenic canyon.
- Whitetail Picnic Area– Adjacent to the west of US Highway 85, approximately 25 miles east of the Elkhorn Campground, in the Whitetail Creek Drainage.
- Wannagan Campground– Southern side of the study area, near the Maah Daah Hey Trail; features several large buttes.

The Elkhorn Ranchlands, approximately 5,200 acres, are also located within the study area. The Elkhorn Ranchlands are managed to protect the heritage of the Elkhorn Ranch (FOTRNP Undated).

Research Natural Area programs (managed by the USFS) occur on National Forest System lands. These areas are composed of a wide array of native plant and animal species. Research Natural Areas were established to serve as reference areas for monitoring and evaluating the impacts of certain management practices. These areas also protect biological diversity through long-term research that studies the impacts of different types of management and global climate change. Two Top and Big Top are two Research Natural Areas found within the east-central portion of the study area that together encompass approximately 100 acres. Both of these Research Natural Areas were established in 1972 and the primary visitors are researchers, naturalists, and the occasional hiker (USFS 2001a).

The majority of the study area is within big game hunting areas (e.g., bighorn sheep [*Ovis canadensis*], elk [*Cervus canadensis*], pronghorn [*Antilocapra americana*], white-tailed deer [*Odocoileus virginianus*], and mule deer [*Odocoileus hemionus*]), which are regulated by the North Dakota Game and Fish Department (NDGFD). Hunting licenses are only allocated by lottery and are dependent on the species' population status. The season varies among the big game species (NDGFD Undated).

Maah Daah Hey Trail —Courtesy USFS

Greater Elkhorn Ranchlands —Courtesy USDA

Bighorn sheep —Courtesy NDGF

The following policies, regulations, and procedures are included in this chapter:

- *National Environmental Policy Act of 1969*, as amended (40 Code of Federal Regulations Parts 1500 through 1508)
- Federal Highway Administration Standards and Procedures (23 United States Code § 109(h))
- Environmental Impact and Related Procedures (23 Code of Federal Regulations § 771)
- Section 6002 of Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users

The documents referenced in this chapter are as follows:

- The 2006 and 2010 Notices of Intent are provided in **Appendix A**
- The Solicitation of Views Materials are provided in **Appendix B.**
- The 2007 Scoping Materials are provided in **Appendix C.**
- The 2008 Alternatives Workshop Materials are provided in **Appendix D.**
- The 2012 Alternatives Workshop Materials are provided in **Appendix E.**
- The newsletters are provided in **Appendix F.**
- The Tribal Consultation Committee Materials are provided in **Appendix G.**
- The Little Missouri River Crossing Traffic Operations Memorandum (2015) is **appended by reference.**
- The Scoping Report – Little Missouri River Crossing (2016) is **appended by reference.**
- The Coordination Plan – Little Missouri River Crossing (2015) is **appended by reference.**

2.2. What is the history of Billings, Golden Valley, and McKenzie counties?

In the early 1800s, the Great Plains experienced a boom in the open cattle industry. During that time, North Dakota was home to a fur trading industry and was explored by Lewis and Clark's 'Corps of Discovery' expedition, which ignited further exploration of the Northern Plains (North Dakota Department of State 1989). With the advent of homesteading in 1863, farming in Billings County rose dramatically. In 1879, Billings County was officially established, and in 1886, Medora became the county seat (GRHS Undated, Richter Undated). However, the borders of Billings County were altered five times until 1915, when the borders were solidified to those of present-day Billings County (Long 2006).

Before 1880, there were very few large ranches in Billings County. However, a dramatic change to the area was noticeable by 1883, as the remaining buffalo were eradicated; the Northern Pacific Railway was completed to connect St. Paul to the Pacific Coast; and cattlemen began to occupy the region for grazing, creating the first agricultural industry in Billings County (NDstudies 2017). A witness to these changes was Theodore Roosevelt, who came to the area in 1883 to ranch. In 1884, he established the Elkhorn Ranch as the center of his ranching operation (Theodore Roosevelt Medora Foundation 2013).

Northern Pacific Railway crossing and settlement known as 'Little Missouri', a settlement west of Medora and on the west side of the river. More popularly known as 'Little Misery.' 1880.

This photo was taken shortly after the railroad arrived at the Little Missouri crossing. By the time the Marquis arrived in 1883, the railroad workers with their tents had moved on west and there were about nine buildings at Little Missouri. The townsite was never platted out so buildings were placed as to be off the railroad right of way but not in any orderly fashion. They stretched from the bridge to the station. —Courtesy ND/MT State Historical Society

In 1900, the city of Beach was an important stopping point for the Northern Pacific Railway, as it was the only location for the railway to load coal and water (NDstudies Undated a). Beach became the county seat of Golden Valley County when the county was formally established in 1912 (City of Beach Undated). In 1914, the railroad sold lots in Watford City (i.e., the future county seat of McKenzie County), which resulted in greater development there. McKenzie County had been organized in 1883; however, due to low settlement rates, it was eliminated, only to be re-established in 1905 (McKenzie County 2017).

In 1920, approximately 3,413 farms and ranches (averaging 700 acres each) existed in Billings, Golden Valley, and McKenzie counties (USDA 1925). However, during the Great Depression in the 1930s, many farms and ranches were abandoned. Land purchases made by the United States government under the Land Utilization Program also contributed to the abandonment of farms and ranches during that time. The Land Utilization Program was implemented in attempt to manage the agricultural problems (e.g., drought, soil erosion, and crop failure) plaguing the United States. The program was administered by the US Soil Conservation Service until 1954, when the administrative responsibilities were transferred to the USFS (Cunfer 2001).

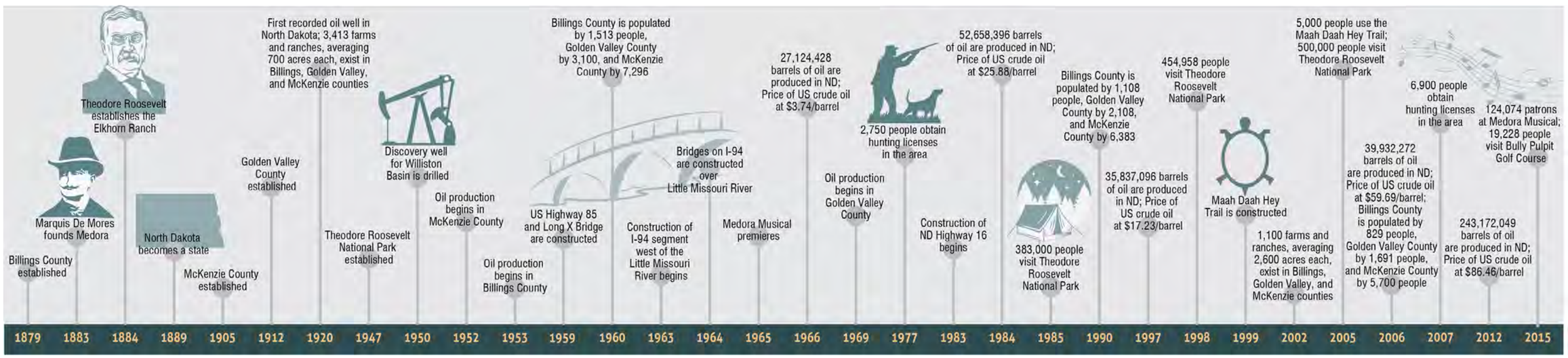
In addition to the agricultural industry, the early 1900s brought the beginning of energy development in western North Dakota. Gas production in western North Dakota began as early as 1909, and the first recorded oil well was constructed in 1920 (North Dakota Department of State 1989, Laird 1956). The first 'oil boom' in North Dakota came in the 1950s with the discovery of the Williston Basin and resulted in increased oil wells in the region (Laird 1956). Uranium mining came to the area in the 1950s as well, only to last approximately 10 years (Murphy 2015). In 1952, McKenzie County began producing oil, followed by Billings County one year later, and Golden Valley County 17 years later (NDIC Undated).

*An **oil boom** is a sudden increase in economic activity or wealth as a result of the exploitation of mineral oil.*

By the 1950s, the tourism industry was also on the rise in North Dakota. The TRNP (historically known as Theodore Roosevelt Memorial Park) was established in 1947. In addition, Medora (known for its western appeal) brought an influx of tourism to the area in 1965 with the premier of the Medora Musical, which had 22,000 people in attendance its first year (Theodore Roosevelt Medora Foundation 2013).

Between the late 1950s and early 1980s, three major roadways were constructed in Billings, Golden Valley, and McKenzie counties, which increased access to the area. In 1959, US Highway 85 was constructed, which provided north-south directional travel in western North Dakota, east of the Little Missouri River. From 1963 to 1964, a segment of North Dakota's only east-west directional interstate highway (i.e., I-94) was constructed east of the Little Missouri River. Between 1983 and 1984, North Dakota Highway 16 (ND-16) was constructed, which provided north-south directional travel west of the Little Missouri River (NDDOT 2015b).

The second oil boom in North Dakota came in the 1970s and 1980s and significantly increased oil wells in the region. This resulted in increased traffic and the need for a better internal roadway network,



as roads in many areas of Billings County were almost non-existent (NDstudies 2016).

In 1950, the NDGFD offered less than 20,000 deer hunting licenses throughout the state. In 2008, this number rose to 149,400 licenses for whitetail and mule deer, both antlered and antlerless (NDstudies Undated b). In 1977, 2,750 people obtained hunting licenses in the area. By 1985, the TRNP had approximately 377,000 visitors, and a little more than a decade later, that number increased to approximately 460,000 (NPS 2017). In addition, the Maah Daah Hey Trail was constructed in 1999 and attracted biking, hiking, and horseback riding enthusiasts. Within six years, the Maah Daah Hey Trail was used by a little more than 5,000 people (NDPRD Undated c).

Due to the advancement in deep horizontal directional drilling (HDD) techniques in the Bakken and Three Forks formations, the third oil boom began in the early 2000s. From 2009 to 2015, annual crude oil production in North Dakota increased approximately 442.2 percent (from 79.7 to 432.3 million barrels) (NDDMR 2015). The price per barrel of oil began falling in 2015 due to a worldwide surplus in the crude oil supply. From 2013 to 2014, there was an approximate 21 percent annual increase in oil production, but from 2014 to 2015, there was only an approximate 8.9 percent annual increase in oil production. By 2015 to 2016, there was an approximate 12 percent annual decrease in oil production. Oil production has leveled off into 2017. Between January and October 2017,[1] there was a total of approximately 322.3 million barrels of oil produced, which is approximately 1 percent more than what was produced between January and October in 2016 (approximately 320.0 million barrels) (NDDMR 2015, NDDMR 2016, NDDMR 2018, SHSND 2016).

2.3. What is the history of the project?

In the 1970s, Billings County identified a need for a new crossing over the Little Missouri River. The County documented concerns that roadways in the area were unreliable in inclement weather, which made them virtually impassable to local residents, local through traffic, emergency vehicles, and agricultural and industry traffic. In addition, the County noted that the ability to cross the river had to be negotiated with the landowners of private fords.

A ford is a location where a river is shallow enough to be crossed.

1 Annual statistics for oil and gas production in 2017 are not yet available from the North Dakota Industrial Commission, Department of Mineral Resources, Oil and Gas Division. Therefore, the available monthly statistics from January to October are used.

In the early 1980s, Billings and Golden Valley counties collaborated to plan a series of roadway improvements to improve system linkage between the east side of the Little Missouri River and west side of the river, specifically along Blacktail Road (Billings County) and Forest Highway 2 (Golden Valley County). The following outlines the background of the roadway improvements:

- In 1981, roadway improvements began in Billings County, along the Blacktail Road corridor. Portions of the roadway improvements were completed using local funds, and therefore, did not require full analysis under the NEPA.
- In 1982, 1984, and 1988, roadway improvements were completed in Golden Valley County, along the Forest Highway 2 corridor, and in Billings County, where the roadway crossed through USFS-managed lands. NEPA documentation was completed for these roadway improvement projects, and project approvals were issued by the USFS.
- In 1992 and 1995, Draft Environmental Assessments (EAs) for a crossing of the Little Missouri River to connect Blacktail Road with Forest Highway 2 were completed. However, both of the EAs were halted amid public and agency controversy; no decisions were made, and no actions were initiated.
- In 1998, the Billings County Comprehensive Plan was approved. The plan identified the following objective and associated policy: "promote a safe and adequate transportation system within Billings County" and "promote adequate roads and bridges, including a bridge crossing over the Little Missouri River in the northern portion of the County" (Billings County 1998).
- In 2006, this EIS process was initiated by Billings County (project sponsor and one of three lead agencies). An NOI was published in the Federal Register on October 12, 2006, announcing the FHWA's intent to prepare an EIS for the project within a study area bounded to the north by the Billings County border, to the east by US Highway 85, to the south by I-94, and to the west by ND-16.
- As a result of public and agency involvement, the study area was revised twice: (first revision) the southern boundary of the study area was moved north to the northern border of the TRNP–South Unit and (second revision) the northern boundary of the study area was moved north to the southern border of the TRNP–North Unit and the TRNP–Elkhorn Ranch Unit was excluded from the study area. A revised NOI was published in the Federal Register on December 6, 2010, announcing that the study area for the project had been modified.

2.4. What is the difference between the previous efforts and the current project?

This EIS differs from the EAs completed in 1992 and 1995 for construction of a new crossing over the Little Missouri River in the following ways:

- A larger study area and greater range of reasonable alternatives are evaluated in this EIS. The study area spans the distance between the two existing Little Missouri River crossings, which is approximately 70 miles (driving). Rather than focusing on ways to connect Blacktail Road with Forest Highway 2, this EIS evaluates the potential for a new crossing within the study area.
- This EIS follows procedures outlined in the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), which was signed into law on August 10, 2005, with final guidance developed on November 15, 2006.

- In 2007, the USFS–Dakota Prairie Grasslands (DPG) acquired the 5,200-acre Blacktail Ranch (formerly known as Eberts Ranch) to establish the Elkhorn Ranchlands. The federal legislation that authorized the acquisition and the provisions for the acquisition is found in Section 424 of Public Law PL-110-161, *the Consolidated Appropriations Act 2008*. Congress included the following provisions with the sale of the private ranch to federal property:
  - Offset the acreage acquired by the federal government upon the acquisition of the Elkhorn Ranchlands so that there will be no net gain of federally-managed property in North Dakota.
  - Multiple uses of the Elkhorn Ranchlands will continue (e.g., mineral development, grazing, oil and gas development, recreation, special uses).
- The Theodore Roosevelt Elkhorn Ranch and Greater Elkhorn Ranchlands National Historic District (excluding North Dakota Parks and Recreation Department [NDPRD] Lands) was established on September 28, 2012, and was listed on the National Register of Historic Places (NRHP). The National Historic District comprises 4,402 acres of land.
- The National Trust for Historic Preservation has proposed National Monument status for the Theodore Roosevelt Elkhorn Ranch and Greater Elkhorn Ranchlands National Historic District (Pahl 2015). National monuments can be created by the President of the United States under the Antiquities Act of 1906. The President has the authority to designate national monuments by proclamation alone, with no approval from Congress required. In 2015, the National Trust for Historic Preservation presented the national monument proposal to the Billings County Commission. The Commission unanimously passed a resolution to oppose the designation of a national monument.

Please refer to **'Figure 1, TRNP–Elkhorn Ranch Unit, Elkhorn Ranchlands, and National Historic District' on page 10** for an overview of the locations of the TRNP–Elkhorn Ranch Unit, Elkhorn Ranchlands, and Theodore Roosevelt Elkhorn Ranch and Greater Elkhorn Ranchlands National Historic District.

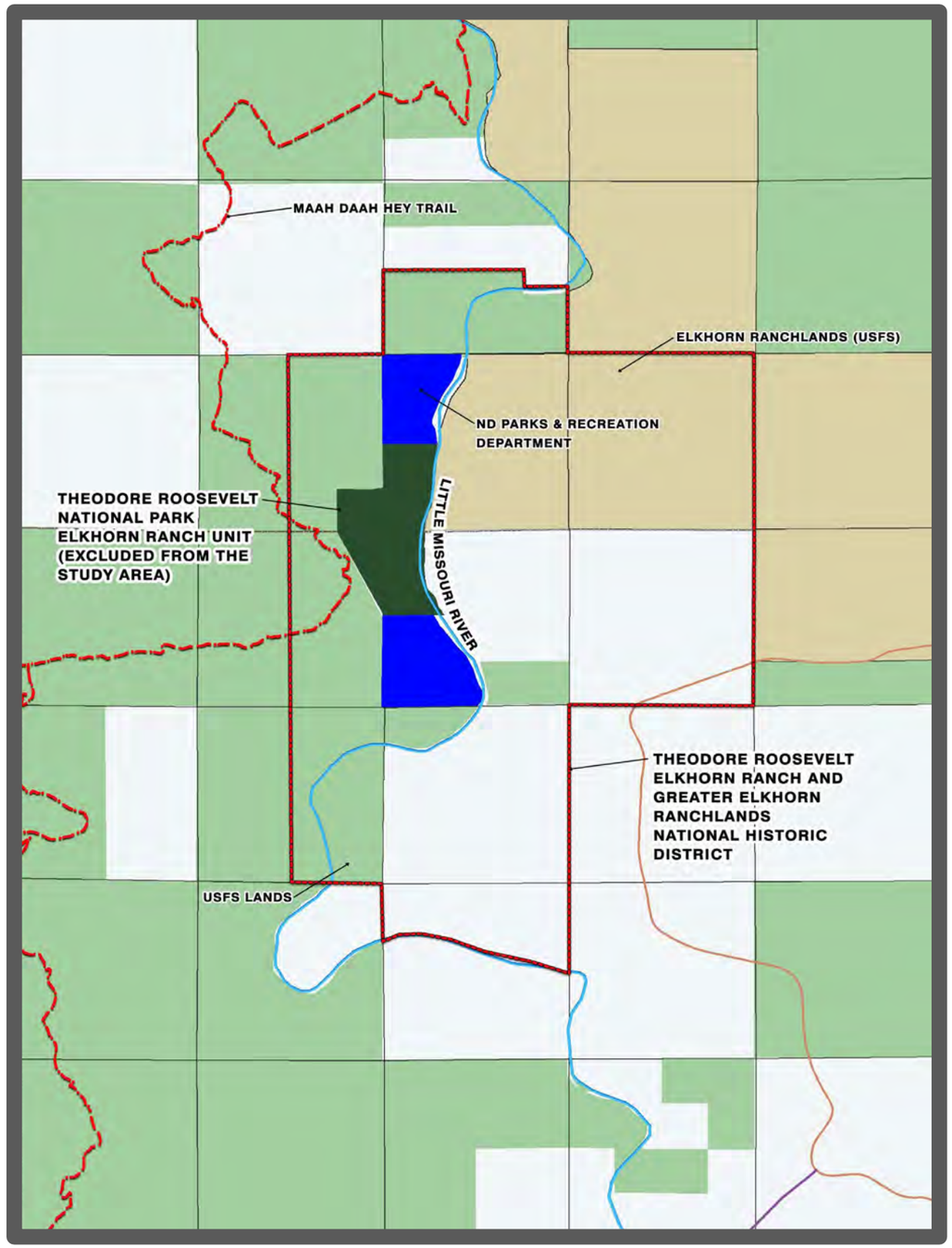


Figure 1, TRNP—Elkhorn Ranch Unit, Elkhorn Ranchlands, and National Historic District

2.5. How was the study area developed?

The study area for the project has evolved during the EIS process in response to public and agency review and comments. The initial study area proposed in 2006 was located in Billings and Golden Valley counties and was bounded to the north by the Billings County line, to the east by US Highway 85, to the south by I-94, and to the west by ND-16. Please refer to **'Figure 2, 2006 Study Area' on page 11**.

The 2006 study area was presented to agencies and the public for review and comment. In response to comments received, the southern boundary of the study area was moved north, from I-94 to the northern border of the TRNP—South Unit. Please refer to **'Figure 3, 2008 Study Area' on page 11**.

The 2008 study area was presented to agencies and the public for review and comment. In response to comments received, the northern boundary of the study area was moved north from the Billings County line to the southern border of the TRNP—North Unit (to include McKenzie County) and the TRNP—Elkhorn Ranch Unit (approximately 218 acres) was excluded from the study area.

The current study area was disclosed in the NOI published in the *Federal Register* in 2010 and presented to agencies and the public for review and comment in 2012. The east and west boundaries of the study area, US Highway 85 and ND-16, respectively, have remained constant since the EIS was initiated in 2006.

2.6. What is the current study area?

The current study area is bounded to the north by the southern border of the TRNP—North Unit, to the east by US Highway 85, to the south by the northern border of the TRNP—South Unit, and to the west by ND-16. The TRNP—Elkhorn Ranch Unit (approximately 218 acres) is located in the center of the study area, in northwestern Billings County. The TRNP—Elkhorn Ranch Unit was excluded from the study area in effort to avoid direct impacts on the area by not considering any alternatives that traverse through it. The exclusion does not preclude analyzing any indirect or cumulative effects on the TRNP—Elkhorn Ranch Unit. Please refer to **'Figure 4, Current Study Area' on page 12** for a depiction of the current study area.

Land uses within the study area include federal lands, ranching, oil and gas development, recreation, and tourism. Several portions of the LMNG are located within the boundaries of the study area. The Elkhorn Ranchlands (approximately 5,200 acres) are located near the center of the study area, adjacent to the east and northeast boundaries of the TRNP—Elkhorn Ranch Unit. The Maah Daah Hey Trail traverses through the study area from the northern boundary of the study area, through the Theodore Roosevelt Elkhorn Ranch and Greater Elkhorn Ranchlands National Historic District, and continues past the southern boundary of the study area near the TRNP—South Unit.

There are numerous oil and gas developments (e.g., oil well pads) throughout the study area. The development of hydrocarbon production in the Williston Basin, which spans all of western and most of northern, central, and southern North Dakota, has increased significantly in recent years due to advancements in deep HDD techniques and subsequent oil extraction in the Bakken and Three Forks shale formations. From 2009 to 2015, annual crude oil production in North Dakota increased approximately 442.2 percent (from 79.7 to 432.3 million barrels) (NDDMR 2015).

The transportation system within the study area is comprised of rural, unpaved gravel/graded roads, primitive roadways, and trails. There are no paved roadways within the study area except for US Highway 85 and ND-16, which form the eastern and western boundaries of the study area, respectively. There are no river crossings within the study area, except for 18 unimproved private fords and 1 unimproved public ford.

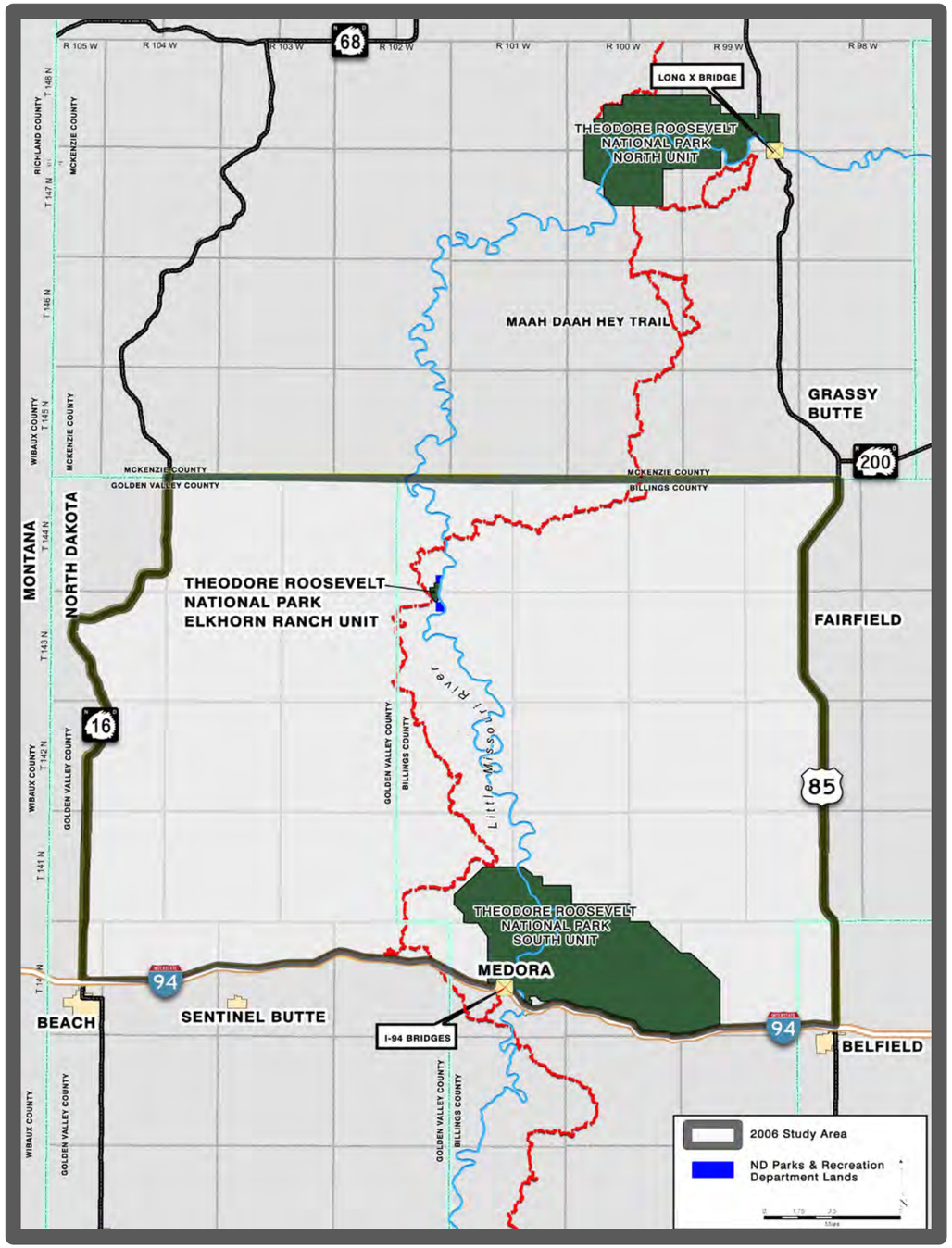


Figure 2, 2006 Study Area

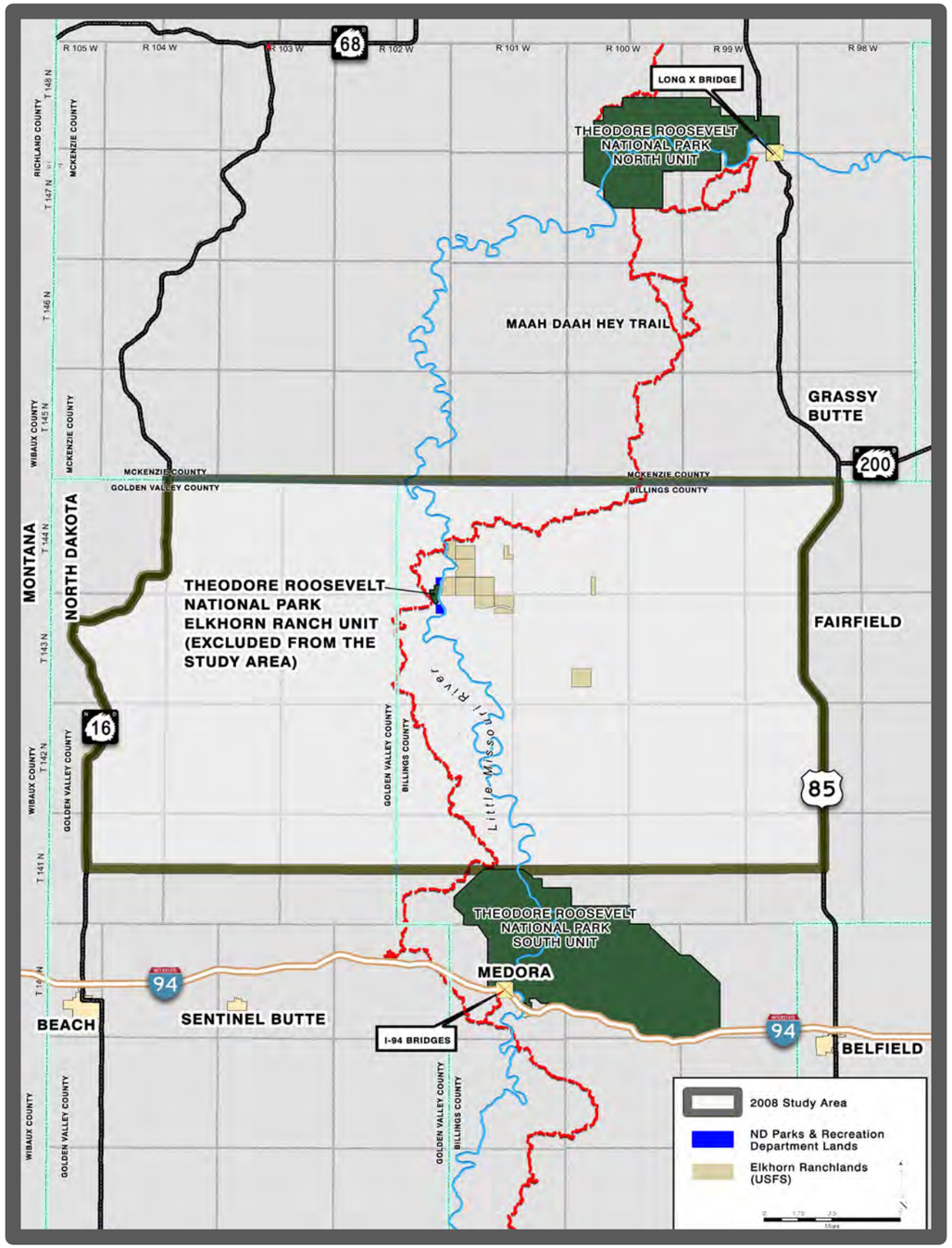


Figure 3, 2008 Study Area

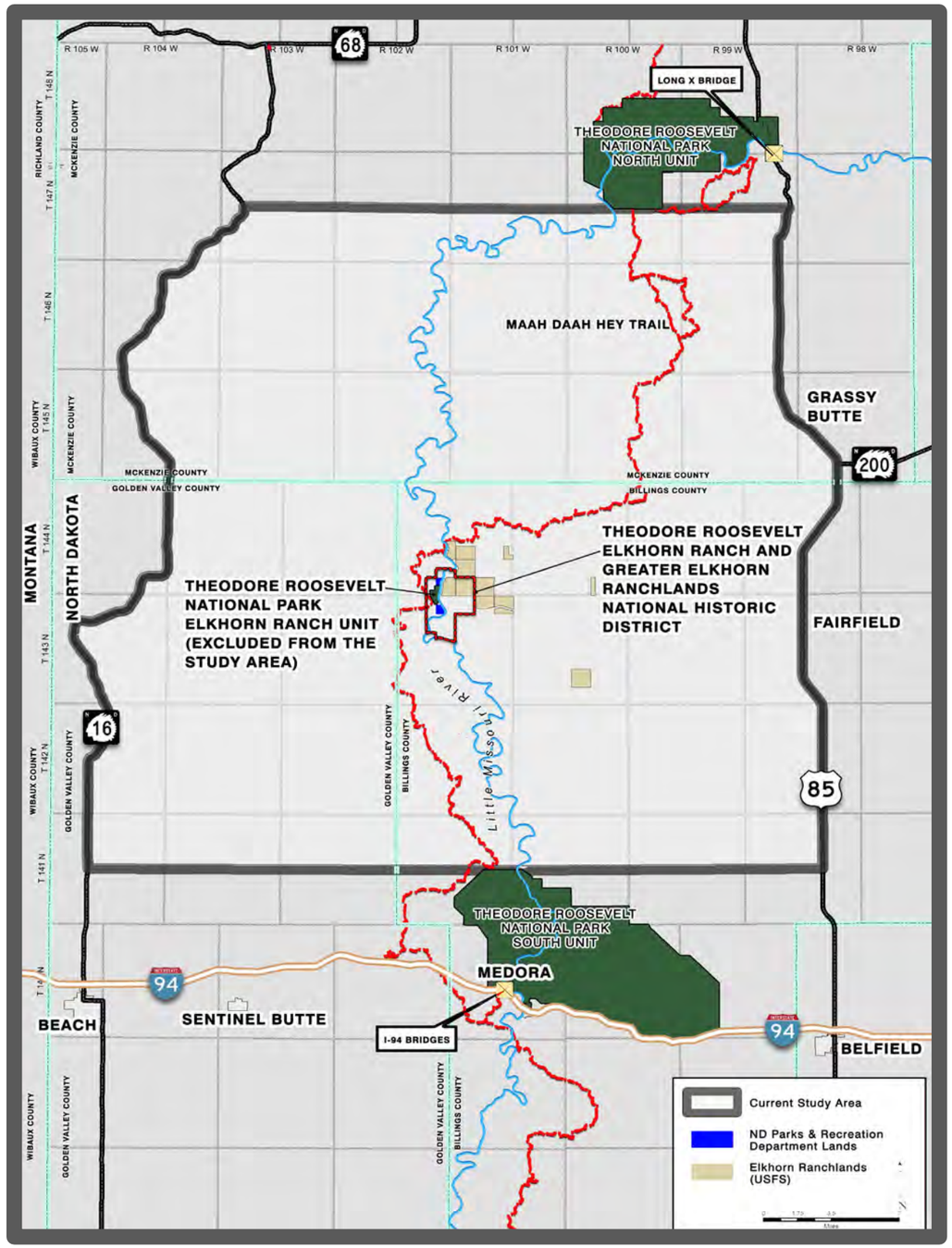


Figure 4, Current Study Area

2.7. What is the purpose of the Little Missouri River Crossing Project, and why is it needed?

Public and agency input was solicited to help define the purpose and need. The purpose of, and need for, the project was discussed with lead, cooperating, and participating agencies and the public.

The purpose of the project is to provide for the safe and efficient movement of people and commerce. Specifically, the purpose of the project is to conduct the following:

- Improve the transport of goods and services within the study area.
- Provide the public with a safe, efficient, and reliable connection:
  - between the roadways on the east and west sides of the Little Missouri River within Billings County (internal linkage)
  - that also improves the connectivity and system linkage between the Billings County and Golden Valley County roadway networks
  - with the added benefit of providing an additional connection between ND-16 and US Highway 85 within the study area.
- Construct a new river crossing over the Little Missouri River in a location that utilizes the existing transportation network, upgrading existing roadways, and/or creating new roadways to best meet roadway and structure design standards.
- Accommodate a variety of vehicles, ranging from a two-wheel-drive passenger vehicle to agricultural, commercial, and industrial vehicles and equipment.

Historically, Billings County has seen a need for a new crossing over the Little Missouri River as early as the 1930s, as indicated by discussions with County Commissioners and residents. Billings County documents from 1992 identify the need being discussed as early as the 1970s. The County documented concerns that roadways in the area were unreliable in inclement weather, which made them virtually impassable, while the ability to cross the river has had to be negotiated with landowners of private fords. The County also identified the need for a river crossing to meet socioeconomic demands within the area, such as oil and gas development and agriculture. However, financial constraints were a limiting factor to meeting these needs.

System linkage refers to the connection between the Billings County and Golden Valley County roadway networks, while internal linkage refers to connections between the roadways on the east and west sides of the Little Missouri River in Billings County.

Billings County is leading a planning effort to improve internal and system linkage from ND-16 to US Highway 85, between the TRNP–North Unit and TRNP–South Unit, to meet a variety of socio-economic demands. These include fire management and industry (e.g., agriculture, oil and gas, and recreation/tourism). Currently, no reliable crossings exist over the Little Missouri River between US Highway 85, south of Watford City (i.e., Long X Bridge) and Medora (i.e., bridges on I-94), a distance of nearly 70 highway miles. Approximately 18 unimproved private fords and 1 unimproved public ford exist; however, they are unreliable because of seasonal

Unimproved fords within the study area.

conditions and inaccessible to many types of vehicles. In addition, the majority of the existing fords are located on private land, requiring landowner permission to cross the river. Please refer to **'Figure 5, Unimproved Crossings'** for a depiction of roadway types and ford locations within study area.

2.7.1. Traffic Operations

The project is not expected or intended to generate a substantial increase in traffic; rather, its goal is to improve the efficiency of the existing transportation system and increase safety for local users. The Little Missouri River Crossing Traffic Operations Memorandum was developed for the project by KLJ in 2015 (**appended by reference**). The Traffic Operations Memorandum included a description the roadways within the study area that were considered for the traffic analysis, discussion of the traffic currently generated within the study area, and analysis of future traffic operations.

The study area consists exclusively of rural, unpaved, gravel roadways that provide local access and connectivity, but minimal mobility or connectivity benefit to inter/intra-regional traffic movements. Travel patterns throughout the study area are generally concentrated on Belle Lake Road, Forest Highway 2, County Road 50, Magpie Creek Road, Blacktail Road, East River Road (north and south segments), and Franks Creek Road; therefore, these roadways were considered for the traffic analysis. The following summarizes the traffic data collection efforts that have occurred on these roadways for the project:

- In 2013, KLJ collected traffic data within the study area.
- In 2014, the NDDOT collected traffic data throughout most of the study area.
- The traffic data collected by KLJ in 2013 was updated to reflect the traffic growth that occurred from 2013 to 2014.
- In 2015, the NDDOT collected traffic data throughout most of the study area.
- The traffic data collected by the NDDOT in 2015 was compared against the traffic data collected in 2014; negligible differences were noted.

It was determined, based on the traffic data collection efforts, that existing traffic volumes on the aforementioned roadways are low, ranging from less than 100 vehicles per day, to slightly more than 200 vehicles per day on the most frequently traveled roadways. The traffic consists primarily of oil and gas-related, recreational, agricultural, and local traffic. Trucks account for approximately 50 percent of the existing traffic.

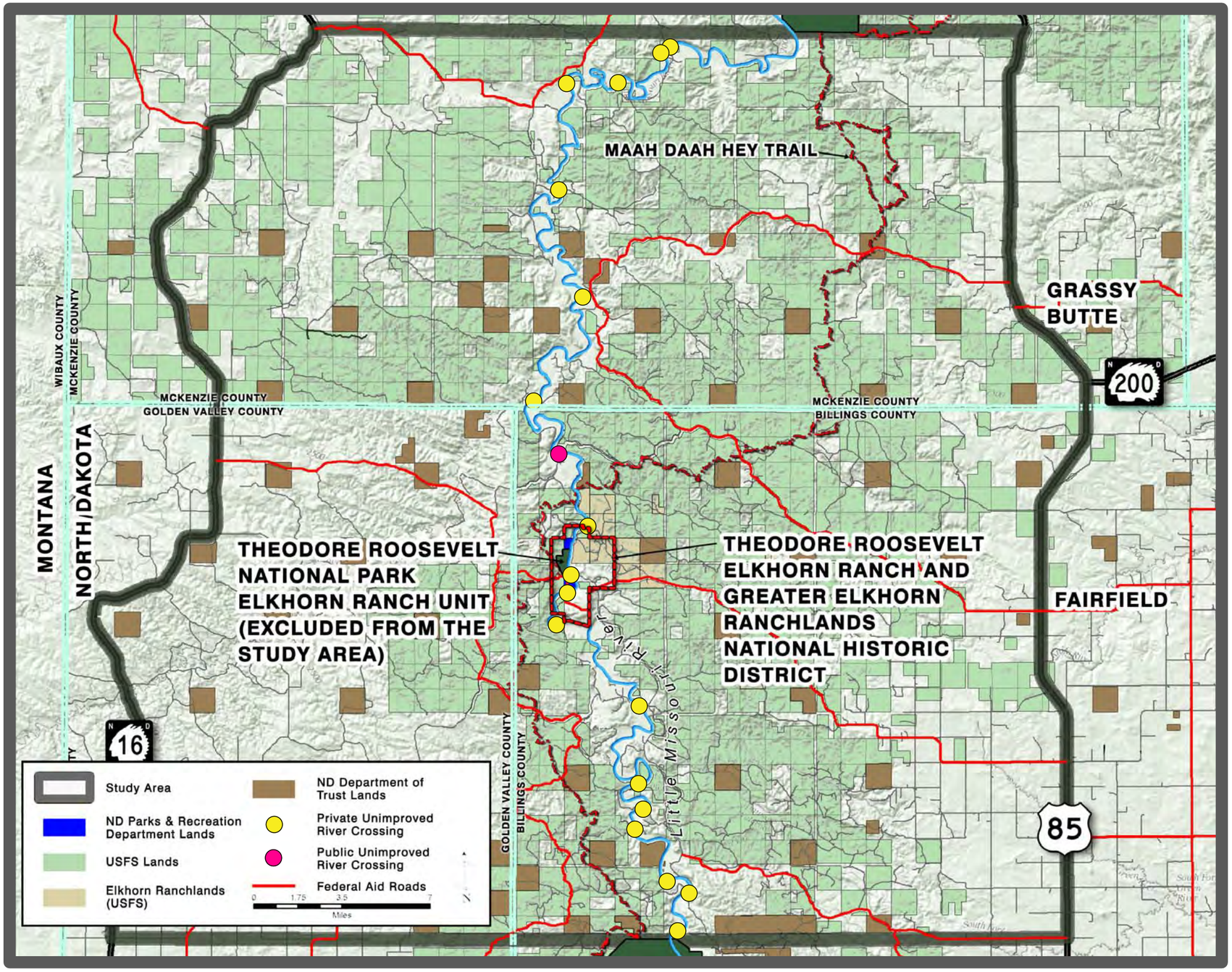


Figure 5, Unimproved Crossings

The methodology used to determine future traffic within the study area was based on establishing reasonable assumptions for traffic volumes and destinations, including the following:

- Estimating a baseline traffic growth rate under a "no-build" condition (i.e., No Action Alternative).
  - » An annual baseline growth rate of 2.5 percent is expected, which is consistent with typical NDDOT projections for rural infrastructure within oil and gas producing areas of North Dakota.
- Estimating the effect that a new bridge would have on the adjacent roadway network by increasing and improving the system linkage.
  - » Adding a new bridge would improve system linkage, but would only reassign trips in a more efficient manner to their destination and would not create additional traffic.
- Estimating the amount of traffic that would utilize the new bridge.
  - » In addition to the annual baseline growth rate of 2.5 percent, an additional 1 percent is expected, which represents the redistribution of local trips that may be attracted to the new bridge.

It was concluded that traffic volumes utilizing the new bridge would be a combination of rerouted existing local traffic adjacent to the new bridge, as well as a portion of the additional traffic growth attributed to the study area. An estimate of 30 percent of the traffic adjacent to the new bridge would be drawn to it.

While the new bridge would provide a shorter overall distance between some local origins and destinations, it would likely result in increased travel time when compared to the nearby regional highways (e.g., US Highway 85, I-94, and ND-16). The project would include a two-lane, unpaved, gravel roadway designed to 35 miles per hour (mph). It would offer reduced capacity and travel speeds relative to the existing paved, regional roadways that border study area (e.g., US Highway 85 [65 mph], I-94 [75 mph], and ND-16 [65 mph]). Traffic traveling through the study area (as a short cut) from ND-16 to US Highway 85 and utilizing the new bridge would likely increase their travel time up to 117 percent, depending on the route utilized within the study area. Therefore, it is unlikely that regional trips (e.g., along US Highway 85, I-94, and ND-16) would use the new bridge as a short cut.

In a rural state such as North Dakota, traffic volumes alone do not dictate where and whether or not bridges are needed. Roadways, including bridges, provide farm-to-market access and accessibility for local traffic, emergency vehicles, and other users. The project is needed to improve the efficiency and reliability of the transportation system for existing users and provide farm-to-market access and accessibility for local traffic, emergency vehicles, and other users (e.g., industry).

Two of the goals listed in the Billings County Comprehensive Plan include:

1. protect and guide development of non-urban areas of Billings County
2. provide for emergency management

Two of the objectives under these goals include:

1. promote a safe and adequate transportation system within Billings County
2. facilitate provision of adequate and efficient public services

Policies listed under these goals include:

- ensure an adequate and convenient local transportation network within Billings County
- ensure adequate, efficient, and reliable routes for the transfer of agricultural products from farms/ranches to markets
- ensure adequate, efficient, and reliable transportation routes for purposes of emergency vehicle access
- promote adequate roads and bridges (including a bridge crossing over the Little Missouri River in the northern portion of Billings County) (Billings County 1998)

2.7.2. Emergency Management

There are five fire districts within the study area (i.e., Billings County, Central-Beach, Grassy Butte, McKenzie County, and Sentinel Butte). Please refer to **'Figure 6, Fire Districts' on page 15** for a depiction of the total area each fire district serves. The Billings County Rural Fire Protection District (BCRF) covers 1,500 square miles and is distributed between three locations: Fryberg, Fairfield, and Medora, with Medora being the command center. (Murtha et al. 2014). Mutual aid agreements with surrounding communities allow for resources to lend assistance beyond jurisdictional boundaries improving a fire districts ability to handle larger and more frequent fire events. The USFS has primary jurisdiction over wildland fires in the area and over USFS-managed land, such as the DPG.

Mutual aid is an agreement that lends assistance across jurisdictional boundaries during times of an emergency. It essentially expands each district past its established boundary. Mutual aid includes the use of smokejumpers, when necessary. The first time smokejumpers were used in North Dakota occurred in the summer of 2004.

According to the National Interagency Fire Center, from 2011 to 2016, there was an average of 636 wildland fires and 15,343 acres burned each year in North Dakota. In 2012, the highest number of wildland fires occurred (1,094 wildland fires), and in 2015, the highest number of acres were burned (32,321 acres) (National Interagency Fire Center 2017). The western portion of North Dakota, which encompasses the study area, is known for its grass fire potential due to the semi-arid climate. Wildland fires or grass fires require extensive firefighting efforts in the area.

In one historical incident on August 26, 2000, lightning began two wildland fires in the Blacktail Creek Drainage area, located in the LMNG. The fires burned approximately 1,500 acres of federal and private land by the time the incident report was filed. Response to these fires required up to 100 firefighters from Billings County and surrounding districts, which included a total of 10 engine crews from the USFS, US Fish and Wildlife Service (USFWS), National Park Service (NPS), Bureau of Indian Affairs, and a helicopter and air tanker from the Bureau of Land Management (BLM). On August 31, 2001, another wildfire occurred near the TRNP–Elkhorn Ranch Unit. In that instance, local ranchers volunteered in addition to the 103 federal, state, Tribal, and local personnel who responded. According to the report filed, local ranchers provided all-terrain vehicles to maneuver rugged terrain, constructed firebreaks, and opened private river crossings to firefighters.

Each of the fire districts that have jurisdiction within the study area were contacted via telephone and written surveys to solicit information regarding the location and frequency of wildfires or grass fires and the ways that they respond to these fires. Most of the fire districts that responded to the surveys stated that the majority of their responses are to wildfires or grass fires. In addition to grass fires, these districts respond to search and rescue calls, injuries from recreationalists, and emergencies stemming from the oil field. The BCRF has seen an increase in calls for service regarding rescues and traffic accidents. By the end of April 2014 there had been approximately 15 to20 calls for service and approximately 57 calls for service in 2013 compared to an average of approximately 20 calls in previous years (Murtha et al. 2014).

In addition to fire districts, there are six ambulance districts within the study area (i.e., Community Ambulance, Belfield Ambulance, Killdeer Area Ambulance, Billings County Ambulance, McKenzie County Ambulance, and Sidney Ambulance). Please refer to **'Figure 7, Ambulance Districts' on page 15** for a depiction of the total area each ambulance district serves.[2] All ambulance districts are supported by a Basic Life Support (BLS) ground transport service with varying degrees of Advanced Life Support (ALS) capabilities throughout the study area.

Killdeer Area Ambulance Service Manager chats with squad leader on the steps of the service's newly acquired ambulance during an open house and groundbreaking for the service's new ambulance station. May 2013.

—Press photo courtesy of Dustin Monke, The Dickinson Press

In general, trauma centers range (state to state) from Level I to Level V. A Level I Trauma Center is capable of providing total care for every aspect of injury (from prevention through rehabilitation). A Level II Trauma Center is able to initiate definitive care for all injured patients. A Level III Trauma Center has the ability to provide prompt assessment, resuscitation, surgery, intensive care, and stabilization of injured patients and emergency operations. A Level IV Trauma Center has the ability to provide advanced trauma life support prior to transferring patients to a higher level trauma center. A Level V Trauma Center provides initial evaluation, stabilization, and diagnostic capabilities and prepares patients for transfer to higher levels of care (American Trauma Society Undated).

The nearest trauma centers are as follows:

- Level I Trauma Center – located in Minneapolis, Minnesota, more than 500 aerial miles from the alternatives.
- Level II Trauma Centers – located in Bismarck and Minot, North Dakota, approximately 170 and 210 highway miles from the alternatives, respectively.
- Level III Trauma Center – located in Dickinson, North Dakota, approximately 70 highway miles from the alternatives.
- Level III and IV Trauma Centers – located in Sidney, Montana, approximately 60 highway miles from the alternatives.
- Level IV Trauma Centers – located in Williston and Bowman, North Dakota, approximately 90 and 110 highway miles from the alternatives, respectively.

2 The data used to create the figures showing the ambulance and fire districts within the study area have a North Dakota GIS Hub Origin.

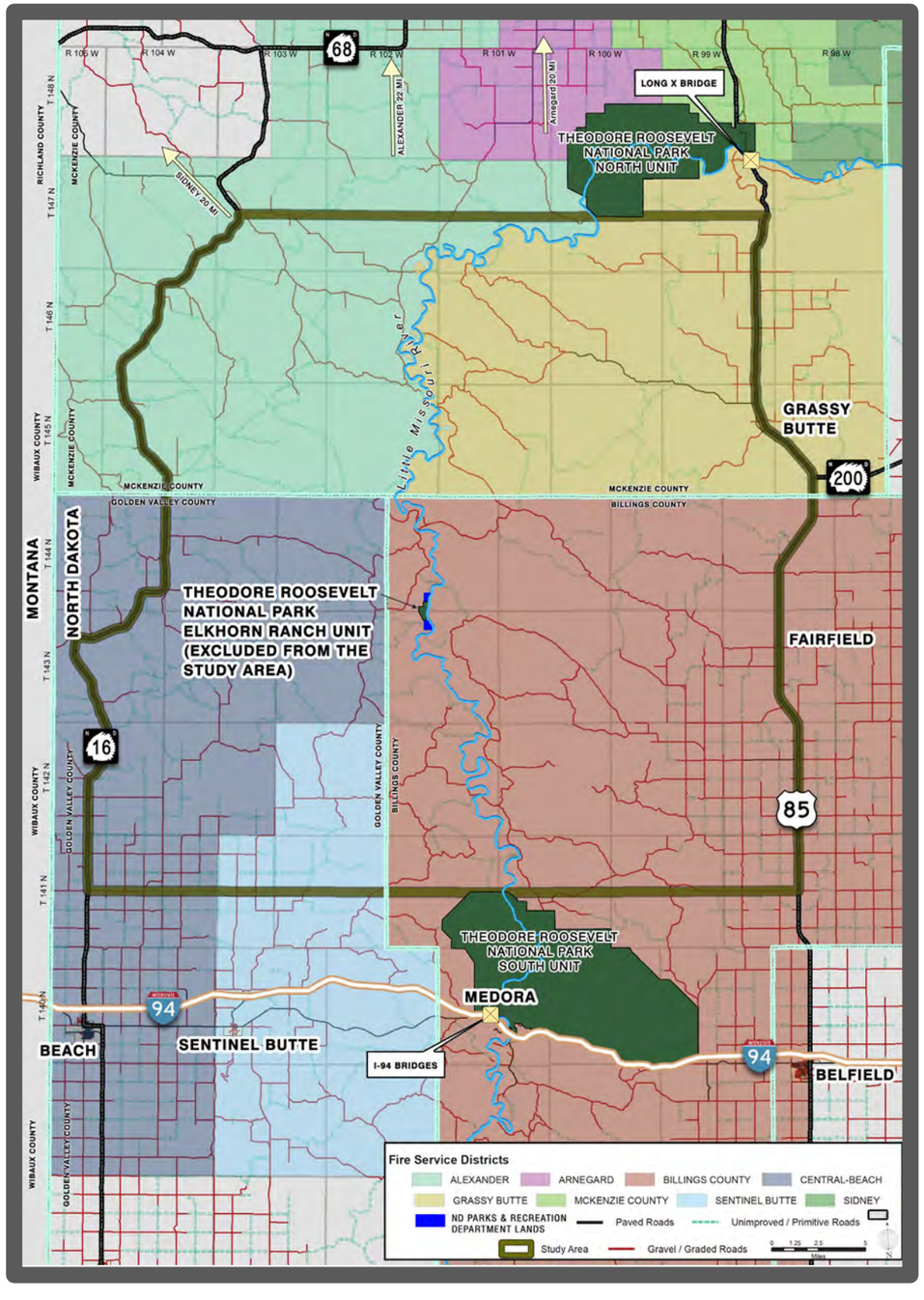


Figure 6, Fire Districts

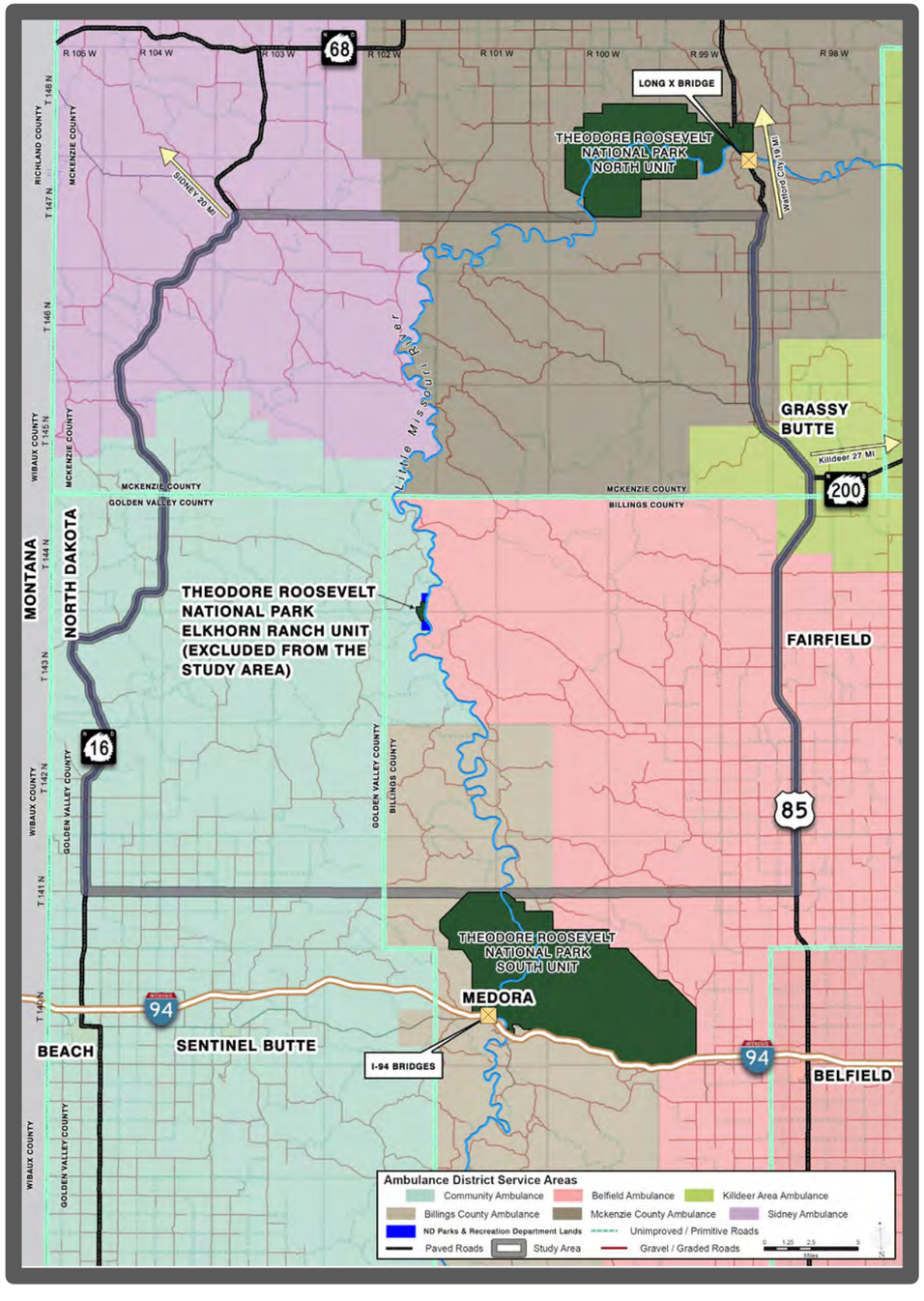


Figure 7, Ambulance Districts

Due to the rural nature of the area, specifically the lack of reliable crossings over the Little Missouri River and the large tracts of land that each district covers, it can be difficult for fire and ambulance district personnel to respond to emergency situations in a timely manner. For this reason, mutual aid is commonplace among the fire and ambulance districts. Depending on the location of the emergency and the responding personnel, mutual aid at times requires that emergency responders cross the Little Missouri River.

2.7.3. Industry

The major industries in the study area include agriculture, oil and gas development and production, and recreation/tourism.

2.7.3.1. Agriculture

The US Department of Agriculture National Agricultural Statistics Service conducted a Census of Agriculture in 2012, which provides a comprehensive picture of American agriculture in 2012. Over the years, the number of farms and ranches in Billings, Golden Valley, and McKenzie counties has decreased, while the size of the farms and ranches has increased. According to the Census, Billings County contained 197 farms (approximately 722,275 acres), Golden Valley County contained 251 farms (approximately 562,453 acres), and McKenzie County contained 574 farms (approximately 1,064,191 acres) in 2012 (USDA 2012).

Crops produced at these farms varied from small grains to native grass; much of which was used for cattle grazing. In addition to grazing on private land, a large amount of grazing occurs on federal lands, such as the approximate 349,423 acres of USFS land within the study area that is open to grazing.

Some local farmers and ranchers have expressed interest in a crossing over the Little Missouri River for the purpose of managing their land and having easier access to livestock and feed on both sides of the river. The increased size of farms and ranches, requiring additional miles traveled to manage land, creates higher farm-to-market costs by increased expenditures due to the cost of time and fuel. Furthermore, when not traveling the additional miles, farmers and ranchers will often use fords (when possible in favorable weather conditions) to reach their property across the river.

2.7.3.2. Oil and Gas

Hydrocarbon production began in McKenzie and Billings counties in 1952 and 1953, respectively, during the first 'oil boom'. The first oil boom began in the early 1950s and peaked in the 1960s. Golden Valley County began producing oil in 1969 right before the second oil boom. The second oil boom began in the 1970s and peaked in the 1980s. Due to the advancement in deep HDD techniques in the Bakken and Three Forks formations, the third oil boom began in the early 2000s and peaked in 2012. From 2009 to 2015, annual crude oil production in North Dakota increased approximately 442.2 percent (from 79.7 to 432.3 million barrels) (NDDMR 2015).

The price per barrel of oil began falling in 2015 due to a worldwide surplus in the crude oil supply. From 2013 to 2014, there was an approximate 21 percent annual increase in oil production, and West Texas Intermediate crude oil traded as high as $107.00 per barrel in 2014. From 2014 to 2015, there was only an approximate 8.9 percent annual increase in oil production, and West Texas Intermediate crude oil traded as high as $61.00 per barrel in 2015. From 2015 to 2016, there was an approximate 12 percent annual decrease in oil production, and West Texas Intermediate crude oil traded as high as $54.00 per barrel in 2016. Oil production has leveled off into 2017. Between January and October 2017,[3] there was a total of approximately 322.3 million barrels of oil produced, which is approximately 1 percent more than what was produced between January and October in 2016 (approximately 320.0 million barrels) (NDDMR 2016, NDDMR 2018, NDDMR 2015, UP 2014, UP 2017).

The recent downturn of oil production has created a sense of uncertainty regarding western North Dakota's future. North Dakota has experienced boom/bust cycles with oil and gas in the past; however, the scope and magnitude of the current boom have far exceeded past events. Although recent trends in the oil and gas industry have significantly reduced new well development, approximately 9,000 wells have been drilled in the region since the last oil boom. These wells require a maintenance and operation workforce that will remain in the area as long as the wells remain active. According to the North Dakota Department of Mineral Resources, the price point at which production from existing wells would be shut-in is $15.00 per barrel (NDDMR 2015).

2.7.3.3. Recreation/Tourism

According to the North Dakota Tourism Annual Report (2016) produced by the North Dakota Tourism Division (NDTD), tourism has shown consistent growth since 1990 and is North Dakota's third-largest industry with nonresident visitors spending $3.1 billion in 2015. A total of 21.9 million people visited North Dakota in 2015, and all 53 counties experienced visitor spending increases. Tourism makes up 13.2 percent of gross state product, but generates 5.8 percent of state and local taxes. From 2015 to 2016, the number of tourists visiting state parks increased 4 percent, tourists visiting national parks increased 30 percent, tourists visiting major attractions increased 1 percent, and tourists visiting visitor centers decreased 9 percent (NDTD 2016).

Major tourist and recreation areas within and near the study area include the TRNP (North, South, and Elkhorn Ranch units), Elkhorn Ranchlands, Theodore Roosevelt Elkhorn Ranch and Greater Elkhorn Ranchlands National Historic District, LMNG, Little Missouri River (State Scenic River), Maah Daah Hey Trail, and town of Medora. While the study area has a relatively low population, these recreation/tourist sites draw birdwatchers, campers, hunters, hikers, history enthusiasts, canoeists, equestrians, and mountain bikers from around the world to the area. This influx of people can create additional demands on area resources and the local entities that maintain them.

Further descriptions of the recreation/tourist sites are as follows:

- TRNP— There are three units of the TRNP, including the North, South, and Elkhorn Ranch units. The TRNP–North Unit (approximately 24,070 acres) is adjacent to the north of the study area, the TRNP–South Unit (approximately 46,159 acres) is adjacent to the south of the study area, and the TRNP–Elkhorn Ranch Unit (approximately 218 acres) is located in the center of the study area; however, the TRNP–Elkhorn Ranch Unit is excluded from the study area. The TRNP preserves land that profoundly affected President Theodore Roosevelt and is a beacon for nature lovers and outdoor enthusiasts (NPS Undated a, NPS 2016).
- Elkhorn Ranchlands— The Elkhorn Ranchlands comprise 5,200 acres near the northern end of the Medora Ranger District of the LMNG, in the center of the study area. In 2007, the Elkhorn Ranchlands were acquired by the USFS, in part to restore the viewshed as seen from Theodore Roosevelt's Elkhorn Ranch site. The Elkhorn Ranchlands support multiple uses including recreational activities (e.g., driving for pleasure, sight-seeing) (USFS 2015).
- Theodore Roosevelt Elkhorn Ranch and Greater Elkhorn Ranchlands National Historic District— In 2012, the Theodore Roosevelt Elkhorn Ranch and Greater Elkhorn Ranchlands were added to the NRHP as a National Historic District. The National Historic District comprises 4,402 acres of land (managed and/or owned by the USFS, the NPS, and private parties) in the center of the study area (USFS 2015).
- LMNG— The LMNG is located in western North Dakota and is the largest grassland in the country. The LMNG was once part of the Custer National Forest, but is now a part of the DPG, a National Forest unit consisting entirely of National Grasslands. The LMNG runs throughout the central portion of the study area. The LMNG provides opportunities for camping, hiking, picnicking, horseback riding, and hunting (USDA Undated).
- Little Missouri River (State Scenic River)— The Little Missouri River is designated as a State Scenic River. It runs north, from Wyoming, traversing the Badlands to North Dakota, and ending at its convergence with the Missouri River/Lake Sakakawea. The Little Missouri River provides fishing, rafting, and canoeing opportunities (USFS 2015).
- Maah Daah Hey Trail— The Maah Daah Hey Trail is approximately 140 miles long and runs from the USFS Civilian Conservation Corps (CCC) Campground near the TRNP–North Unit, south to the TRNP–South Unit, ending at the USFS Burning Coal Vein Campground. The trail runs through the center of the study area and is open to horseback riders, hikers, and bicyclists (NPS 2016, NDPRD Undated a).
- Medora— The town of Medora attracts thousands of tourists to the area for its western appeal and close proximity to outdoor recreation opportunities. The Medora Musical, which started in 1965, is an outdoor musical variety show in Medora and considered a top attraction to the area. In 2015, more than 124,000 tourists attended the musical in just 100 days. In addition, there were more than 17,000 rounds of golf played, 6,800 trail rides, and 600 volunteers working in Medora in 2015 (TRMF 2016).

In comments received at public input meetings held for the project and during the subsequent comment periods, some of the general public voiced a desire to increase access to these recreation/tourist sites, among others in the area, for hunting, mountain biking, and other recreational activities.

3 Annual statistics for oil and gas production in 2017 are not yet available from the North Dakota Industrial Commission, Department of Mineral Resources, Oil and Gas Division. Therefore, the available monthly statistics from January to October are used.

2.8. What are some of the key environmental compliance requirements?

This Draft EIS has been prepared in accordance with NEPA, as amended; the regulations of the Council on Environmental Quality (CEQ) (40 Code of Federal Regulations [CFR] § 1500 through 1508); and the provisions in Section 6002 of SAFETEA-LU.

2.8.1. What is the National Environmental Policy Act?

The intent of NEPA is to help decision-makers make well-informed decisions based on an understanding of the potential environmental consequences and take actions to protect, restore, or enhance the environment. The process for implementing NEPA is outlined in Title 40 CFR § 1500 through 1508, Regulations for Implementing the Procedural Provisions of NEPA. The policies and procedures of the FHWA and Federal Transit Administration for implementing NEPA is outlined in 23 United States Code (U.S.C.) § 109(h) and Environmental Impact and Related Procedures (23 CFR § 771). These policies and procedures supplement 40 CFR § 1500 through 1508 (CEQ regulations). Together, these regulations set forth all FHWA, Federal Transit Administration, and Department of Transportation requirements under NEPA for the processing of highway and public transportation projects.

NEPA is a federal statute requiring the identification and analysis of potential environmental impacts associated with proposed federal actions.

The CEQ regulations mandate that all federal agencies use a prescribed structured approach to environmental impact analysis. This approach also requires federal agencies to use an interdisciplinary and systematic approach in their decision-making process. This process evaluates potential environmental consequences from a proposed action and considers alternative courses of action.

2.8.2. What do SAFETEA-LU § 6002 and MAP-21 Address?

SAFETEA-LU was a funding and authorization bill that guaranteed funding for highways, highway safety, and public transportation. This bill signed into law, represented one of the largest surface transportation investments in our nation's history (FHWA 2005). SAFETEA-LU incorporated changes aimed at improving and streamlining the environmental process for transportation projects, with additional authority provided to, and responsibilities required for, transportation agencies.

SAFETEA-LU promotes more efficient and effective federal surface transportation programs by focusing on transportation issues of national significance, while giving state and local transportation decision makers more flexibility for solving problems in their communities (FHWA 2005).

The provisions of SAFETEA-LU included the following:

- A new environmental review process for highways, transit, and multimodal projects.
- A new category of 'participating agencies' to allow more state, local, and Tribal agencies a formal role and rights in the environmental process.
- An opportunity for public and interagency involvement, the project's purpose and need are defined, and a plan for coordinating public and agency participation is established.
- As early as practicable, a range of reasonable alternatives is considered.
- A 180-day statute of limitations for litigation of environmental actions.

SAFETEA-LU funding initially expired in 2009. A series of 10 extension acts were passed (FHWA Undated b) until the 2012 *Moving Ahead for Progress in the 21st Century Act* (MAP-21) (Public Law 112-141), highway provisions were enacted. MAP-21 reformed the environmental review process such that more projects will be categorically excluded from review, and there will be a four-year review deadline enforced with financial penalties. Additionally, the statute of limitations for litigation was revised from 180 days to 150 days and the number of funding programs was consolidated by two-thirds (FHWA 2012a).

2.9. Who are the lead, cooperating, and participating agencies?

The lead agencies are those with jurisdiction over the project and are ultimately responsible for the development of the environmental document to meet the requirements of NEPA. The lead agencies for the project are the FHWA – North Dakota Division, the NDDOT, and Billings County.

Cooperating agencies can be selected using one, several, or all of the following processes:

- Upon request by the lead agencies, any federal agency that has jurisdiction by law, shall be a cooperating agency.
- An agency with special expertise can be a cooperating agency.
- An agency can request the lead agencies to designate it as a cooperating agency.

The lead agencies sent invitations to the cooperating agencies on December 1, 2006. The cooperating agencies are the USACE – North Dakota Regulatory Office and USFS – DPG. The USACE has jurisdiction over the waters of the United States (including the Little Missouri River) and other jurisdictional waters. A new crossing over the Little Missouri River would be subject to its permitting and approval process. The USFS has jurisdiction over several lands within the study area (including lands that would be traversed by the project).

The lead agencies also sent invitations to the participating agencies on December 1, 2006. The participating agencies are federal agencies that did not decline the request from the lead agencies to participate in the project, and state, Tribal, and local agencies that agreed to participate. The participating agencies for the project are as follows:

- NPS – TRNP
- North Dakota Department of Emergency Services (Department of Homeland Security)
- North Dakota Department of Health (NDDH)
- NDGFD
- NDPRD
- North Dakota State Historic Preservation Office (NDSHPO)
- North Dakota State Water Commission (NDSWC)
- Tribal Consultation Committee (TCC)
- US Department of Agriculture – Natural Resources Conservation Service (NRCS)
- US Environmental Protection Agency (USEPA) – Region 8
- USFWS – North Dakota Field Office.

Additional information regarding the lead, cooperating, and participating agencies is provided in **'Chapter 8. Public Involvement & Outreach'**.

2.10. Who are the other consulting parties and public interest groups?

FHWA invites public participation throughout the EIS process. Consideration of the views and information of all interested parties promotes open communication and enables effective decision-making. All federal, state, and local agencies; special interest groups, committees, and associations; and members of the public with interest in the project are encouraged to participate in the decision-making process.

The consulting parties in the Section 106 process of the National Historic Preservation Act (NHPA) include the USACE, NPS, USFS, TCC, and National Trust for Historic Preservation. The TCC is the mechanism by which the individual Tribes choose to consult. The Tribes, through the TCC, are considered consulting parties as defined in 54 U.S.C. 302706(b), which requires federal agencies to consult with any tribe that attaches religious and cultural significance to properties that may be determined *Eligible* for inclusion on the NRHP. The NDSHPO is also a defined consulting party (54 U.S.C. 302303[9]). The National Trust for Historic Preservation is a consulting party because of its demonstrated interest in the project. The NPS has been consulted throughout the project, as they have park properties in the project vicinity. Additional information regarding the other consulting parties and public interest groups is provided in **'Chapter 8. Public Involvement & Outreach'**.

Section 106 regulations (36 CFR § 800) outline specific points at which consulting parties must be involved. Methods for communicating with consulting parties throughout the EIS process are described in detail in the Coordination Plan – Little Missouri River Crossing (2015) (**appended by reference**).

2.11. What is the scoping process and alternatives workshops, and how were they conducted?

Scoping is a term to define the early and open process for determining the extent or 'scope' of issues to be addressed in an EIS. The scoping process for this EIS was initiated with publication of the first NOI in the *Federal Register* on October 12, 2006. Please refer to **'Appendix A. Notices of Intent'**. The NOI announced the FHWA's intent to prepare an EIS for the project within the 2006 study area. Please refer to **'Figure 2, 2006 Study Area' on page 11**. Three preliminary alternatives were identified in the NOI and information regarding public and agency involvement was provided.

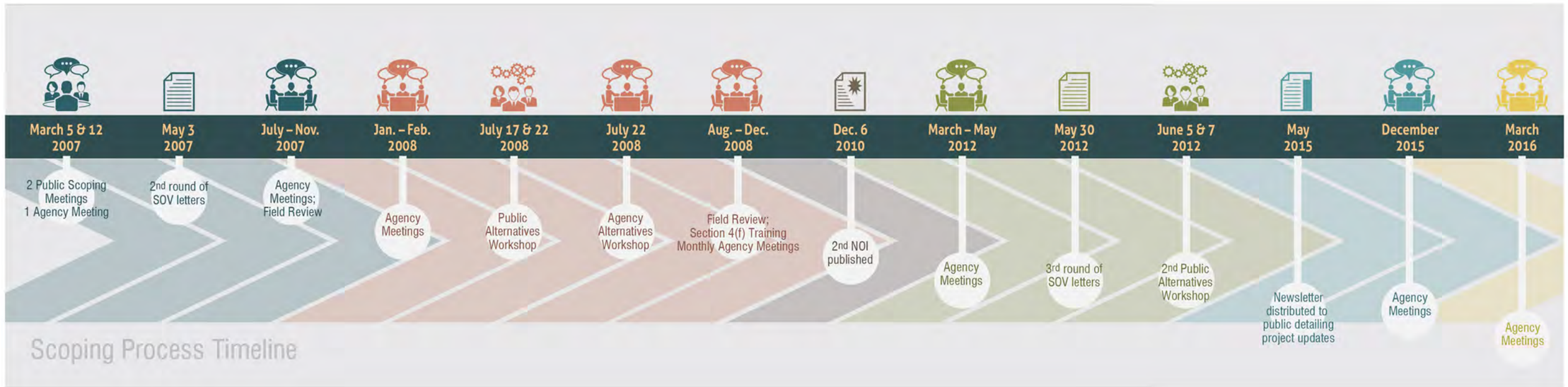
In accordance with NEPA, Section 102(D)(iv) (42 U.S.C. § 4332), the lead agencies provided early notification to, and solicited the view and comments of, several federal, state, and local agencies and special interest groups, committees, and associations on February 19 and May 14, 2007, and May 30, 2012. The scoping packages included a brief description of the project and the 2006 study area. Please refer to **'Appendix B. Solicitation of Views Materials'** .

Public and agency scoping meetings and alternatives workshops were held to discuss the EIS process; define the goals for the project and project's purpose and need; identify potential issues, concerns, and benefits of the project; and describe the alternatives methodologies and range of reasonable alternatives. The public and other interested parties were invited to participate in the public scoping meetings and alternatives workshops via newspaper advertisement, press release, and property owner notice, as appropriate. Please refer to **'Appendix C. 2007 Scoping Meeting Materials'**; **'Appendix D. 2008 Alternatives Workshop Materials'**; **'Appendix E. 2012 Alternatives Workshop Materials'**; **'Appendix F. Newsletters'**; and **'Appendix G. Tribal Consultation Committee Materials'**.

The Scoping Report – Little Missouri River Crossing (2017) (**appended by reference**) was developed for all of the public and agency scoping meetings and alternatives workshops. Additional information regarding the public and agency meetings and workshops is provided in **'Chapter 8. Public Involvement & Outreach'**.

Since the project began, there have been several meetings held between the FHWA, NDDOT, and Billings County, and several meetings held between the lead and cooperating agencies. The following are the major scoping and public coordination efforts that have been conducted for the project:

- March 5 and 12, 2007— Two public scoping meetings were held on March 5 and 12, 2007, and one agency scoping meeting was held on March 5, 2007.
- April 4, 2007— The scoping period ended. Several areas of concern were identified by agencies and the public, two of which were considered key areas of concern: (1) expansion of the study area and (2) the type of river crossing. Therefore, the southern boundary of the study area was moved north, from I-94 to the northern border of the TRNP – South Unit and the options of a concrete plank and concrete arch structure were added to the river crossing options. Please refer to **'Figure 3, 2008 Study Area' on page 11**.
- May 3, 2007— A second round of scoping letters were mailed to federal, state, and local agencies and special interest groups, committees, and associations. After consideration of public and agency comments received during the 2007 scoping period, the lead agencies collaborated with the cooperating and participating agencies to determine the appropriate methodologies to be used in development of a reasonable range of alternatives. The methodologies are used to explain how alternatives were selected for detailed study.
- July 25, 2007— A field review of the study area for the project was conducted with the lead, cooperating, and participating agencies.
- July 30, 2007— A meeting with the lead, cooperating, and participating agencies was held to discuss the purpose and need, alternatives methodologies, and range of reasonable alternatives.
- August 15, 2007— A meeting with the lead, cooperating, and participating agencies was held to discuss the purpose and need.
- August 16, 2007— A meeting with the Little Missouri Scenic River Commission was held to discuss the project.
- September and October 2007— Telephone interviews were conducted and written surveys were mailed to emergency management services to gather supporting data.
- November 8, 2007— A meeting with the lead and cooperating agencies was held to discuss the purpose and need.
- December 2007 to January 2008— Meetings with various agencies were held to obtain Geographical Information System (GIS) data for the project.
- February 22, 2008— A meeting with the lead and cooperating agencies was held to discuss the alternatives methodologies.
- July 17 and 22, 2008— The public and other interested parties were invited (via newspaper advertisement, press release, newsletter, and property owner notice, as appropriate) to participate in public alternatives workshops.
- July 22, 2008— The first agency alternatives workshop was held, to discuss the study area, alternatives methodologies, and range of reasonable alternatives.
- August 19 and 20, 2008— A field review was conducted at the TRNP – Elkhorn Ranch Unit, and Section 4(f) training was held with the lead, cooperating, and participating agencies.
- August to December 2008— Monthly meetings with the lead and cooperating agencies were held and a meeting with the lead, cooperating, and participating agencies was held.



- February 20, 2009— A meeting was held with the National Trust for Historic Preservation, NDDOT, FHWA, and NDSHPO.
- December 6, 2010— A second, revised NOI was published in the *Federal Register*. Please refer to **'Appendix A. Notices of Intent'**. As a result of public and agency input, the study area was revised and expanded again. Please refer to **'Figure 4, Current Study Area' on page 12**. The NOI announced that the study area for the project had been revised. Three alternatives were identified in the NOI and information regarding public and agency involvement was provided.
- March to May 2012— Monthly meetings with the lead and cooperating agencies were held.
- May 23, 2012— A meeting with the lead, cooperating, and participating agencies was held to discuss the alternatives.
- May 30, 2012— A third round of scoping letters were mailed to federal, state, and local agencies and special interest groups, committees, and associations. In addition, a newsletter was mailed to the public, which provided general project information, project updates, information on the purpose and need, and details regarding the second public alternatives workshops.
- June 5 and 7, 2012— The second public alternatives workshops were held to discuss the study area and range of reasonable alternatives.
- May 2015— A newsletter was mailed to the public, which provided general project information, project updates, information on the purpose and need, details regarding public review and comment, and study area maps.
- December 9, 2015— A meeting was held with the National Trust for Historic Preservation, NDDOT, FHWA, NPS, NDSHPO, USACE, and USFS.
- March 17, 2016— A meeting was held with the National Trust for Historic Preservation, NDDOT, FHWA, NPS, NDSHPO, USACE, USFS, and Advisory Council on Historic Preservation (ACHP).

Chapter 3. Alternatives

This chapter describes how the alternatives were developed, what alternatives were eliminated from further detailed analysis, and what alternatives were carried forward for further detailed analysis in the EIS. This chapter also provides a description of the alternative preferred by Billings County.

3.1. How were alternatives developed for the project?

The methodologies for alternatives analysis were developed in collaboration with cooperating and participating agencies. The methodologies are used to explain how alternatives were selected to be carried forward for detailed analysis in an EIS. A multiple-step process used to develop and evaluate alternatives, which included the connecting roadway(s) and types of crossings over the Little Missouri River, is discussed in the following paragraphs.

Step 1: Identification of Potential Alignments— To determine the initial alignments, a high-level analysis was completed that began with a review of the existing county roadway network on both sides of the Little Missouri River to determine where potential connections between them would be possible. This initial determination also included locating a potential crossing over the Little Missouri River. Locations were reviewed where the terrain would allow a roadway to be reasonably constructed, as well as locations along the Little Missouri River where a river crossing could be constructed. Through this evaluation, it was determined that if the terrain would allow a roadway, there typically was a roadway already built in those locations. It was also determined that utilizing and improving an existing roadway would generally have less impacts than constructing a new roadway on a new alignment. However, it was recognized that upgrading an existing roadway with environmentally sensitive resources/areas (e.g., Section 4(f) properties, cultural resources, threatened and endangered species) or other features (e.g., steep slopes) could result in greater impacts than constructing a new roadway.

Step 2: Identification of the Roadway Standards— The design guidelines for the alternatives are based on Billings County, USFS, NDDOT, and American Association of State Highway and Transportation Officials (AASHTO) standards for the facility type. The design criteria used during the analysis of alternatives include the following:

- Design Speed of 35 mph with minimum curve radius of 340 feet and minimum tangent between curves of 300 feet
- Maximum grade of 8 percent with exceptions to 10 percent
- Clear zone of 16 feet
- Anticipated minimum 150-foot-wide right-of-way (ROW)/easement corridor
- Bridge design for 25-year flood.

Roadway links refer to individual roadways on each side of the river that could be connected to meet up with the bridge.

Photos illustrate some of the various surveys, analyses, and input that helped to develop the alternatives for the Little Missouri River Crossing project.

The typical roadway section is graded 28 feet wide with 6 inches of gravel surfacing and two 12-foot-wide driving lanes at a cross slope of 3.57 percent. Ditches are 12 feet wide and provide 4 feet of vertical separation to the graded roadway. Normal inslope and back slopes rates are 4:1. In deep fill areas, the inslope rate is 4:1 to 16 feet off the driving lane, then slopes at 3:1 to existing ground. In deep cut areas, the back slope rate is 3:1, and in large deep cut sections the rate is 2:1.

Step 3: Comparing Available GIS Information and Potential Alignments— Step 3 included combining existing GIS data on roadways and environmentally sensitive resources/areas within the study area. Some of the environmentally sensitive resources/areas included land use, prime and unique farmlands, floodplains, wildlife (e.g., bald eagles, bighorn sheep, threatened and endangered species, USFS-designated sensitive species), Section 4(f) properties, cultural resources, and hazardous waste. All of the data was reviewed, and existing roadways approaching the Little Missouri River that best met the minimum roadway features were identified (with consideration given to minimizing potential impacts on environmentally sensitive resources/areas). Where the continued use of an existing roadway or improvement to an existing roadway to meet the minimum roadway features resulted in significant impacts on environmentally sensitive resources/areas, the roadways were eliminated from further consideration.

Step 4: Further Refining the Alignments— Step 4 included reviewing the initial alignments in comparison to the roadway standards and environmentally sensitive resources/areas. The roadways either met, or nearly met, county roadway standards and would not require any improvements. Potential roadway links resulting in significant impacts on environmentally sensitive resources/areas when compared to other alignments were eliminated from further consideration. During this step, roadway corridors and river crossing locations were ultimately identified for further analysis.

Step 5: Further Analysis— Field surveys and detailed analyses of potential roadway corridors and river crossing locations identified in Step 4 were conducted. The purpose of the field surveys and detailed analyses was to identify potential issues, feasibility, and location adjustments required to minimize potential impacts on environmentally sensitive resources/areas. Some of the field surveys and detailed analyses included architectural, cultural resources, and traditional cultural properties inventories; threatened and endangered species and botanical surveys; a noise study and analysis; identification of Section 4(f) properties; a field wetland delineation; and collection of ground survey data. The ground survey data that was collected for engineering analysis consisted of the centerline alignment and profile. This ground survey data was supplemented with aerial survey provided by the NDDOT. The relative accuracy of this data in non-vegetated areas is ±6 feet. As a result of the survey level of accuracy, the proposed vertical alignments, cross sections, construction limits, and earthwork quantities of the alternatives are estimates of actual construction limits. Based on the information obtained during the field surveys and detailed analyses, the potential roadway corridors and river crossing locations were further refined to minimize impacts, and additional analyses of modified routes and locations were conducted, as necessary.

Step 6: Solicitation of Input from Agencies and Public— The resulting range of reasonable alternatives for the roadway corridors, river crossing locations, and types of river crossings were presented to agencies and the public. Input received from agencies and the public was considered to further refine the range of reasonable alternatives.

3.2. What alternatives were eliminated from further detailed analysis?

3.2.1. 2006 and 2008

Since the EIS process began in 2006, there have been several modifications to the study area and range of reasonable alternatives due to public and agency input received during the early stages of the EIS. The 2006 study area was presented to agencies and the public, and in response to comments received, the southern boundary of the study area was moved north, from I-94 to the northern border of the TRNP–South Unit, and the options of a concrete plank and concrete arch structure were added to the river crossing options.

Alternatives were developed based on the 2008 study area. The alternatives focused on connecting Blacktail Road in Billings County with Forest Highway 2 and Belle Lake Road in Golden Valley County based on a goal previously identified by Billings and Golden Valley counties. A no-build and three build alternatives (Alternatives B, C, and D) were presented to the public at public alternatives workshops on July 17 and 22, 2008, and agencies at agency alternatives workshops on July 22, 2008. During the public and agency workshops, several comments were received that opposed the three build alternatives due to their proximity to the TRNP–Elkhorn Ranch Unit and the Elkhorn Ranchlands. Details regarding the Alternatives B, C, and D and the reasons they were eliminated from further detailed analysis are provided as follows:

- Alternative B
  - » Would connect the intersection of Belle Lake Road and Blacktail Road on the west side of the Little Missouri River with Blacktail Road on the east side of the Little Missouri River.
  - » A total of approximately 10 miles of roadway would need to be constructed/reconstructed.
  - » Eliminated from further detailed analysis due its proximity to the TRNP–Elkhorn Ranch Unit and the Elkhorn Ranchlands, the vertical alignment would not meet the 10 percent grade max on the west river approach, and flattening the two horizontal curves on the west river approach would be problematic.
- Alternative C
  - » Would connect the intersection of Beaver Creek Road and Blacktail Road on the west side of the Little Missouri River with Blacktail Road on the east side of the Little Missouri River.
  - » A total of approximately 8 miles of roadway would be constructed/reconstructed.

- » Eliminated from further detailed analysis due to its proximity to the TRNP–Elkhorn Ranch Unit and the Elkhorn Ranchlands; a bluff on the east side of the river would require 30-foot or more cut with approach grades between 8 and 10 percent; the river crossing would be marginal and would require a long bridge on a grade; and the west river approach would require a 10 percent grade for approximately 1,700 feet, and therefore, would not meet the grade max.

- Alternative D
  - » Would connect Belle Lake Road on the west side of the Little Missouri River with East River Road on the east side of the Little Missouri River.
  - » A total of approximately 7 miles of roadway would be constructed/reconstructed.
  - » Eliminated from further detailed analysis due to its proximity to the TRNP–Elkhorn Ranch Unit and the Elkhorn Ranchlands.

3.2.2. 2010, 2012, and 2015

The 2008 study area was revised and expanded: the northern boundary of the study area was moved north from the Billings County line to the southern border of the TRNP–North Unit (to include McKenzie County) and the TRNP–Elkhorn Ranch Unit was excluded from the study area.

Data collection was conducted for the current study area to identify the roadway network, locations of existing fords, and roadway links that could be used in the development of alternatives. Additional roadway links were identified in Billings, Golden Valley, and McKenzie counties that could provide logical termini (i.e., rational end points for the transportation improvements) for alternatives. Several other alternative routes (i.e., Alternatives E, F, G, H, and I) that would connect to roadway links within the study area and provide a new river crossing over the Little Missouri River were considered during the early stages of the EIS process. However, none of these alternatives were presented to agencies or the public, as they were ruled out during preliminary evaluation. Details regarding the Alternatives E, F, G, H, and I and the reasons they were eliminated from further detailed analysis are provided as follows:

- Alternative E
  - » Would connect the intersection of Beaver Creek Road and Belle Lake Road on the west side of the Little Missouri River with East River Road on the east side of the Little Missouri River.
  - » A total of approximately 6 miles of roadway would be constructed/reconstructed.
  - » Eliminated from further detailed analysis due to its proximity to the TRNP–Elkhorn Ranch Unit.
- Alternative F
  - » Would connect the intersection of Beaver Creek Road and Belle Lake Road on the west side of the Little Missouri River with East River Road on the east side of the Little Missouri River.
  - » A total of approximately 7.25 miles of roadway would be constructed/reconstructed.
  - » Would cross Dry Creek.
  - » Eliminated from further detailed analysis, because the vertical alignment would not meet the 10 percent grade max.
- Alternative G
  - » Would connect the intersection of Beaver Creek Road and Belle Lake Road on the west side of the Little Missouri River with East River Road on the east side of the Little Missouri River.
  - » A total of approximately 18.5 miles of roadway would be constructed/reconstructed.
  - » Would cross Dry Creek and Roosevelt Creek.
  - » Eliminated from further detailed analysis, because the vertical alignment would not meet the 10 percent grade max.
- Alternative H
  - » Would connect the intersection of Beaver Creek Road and Belle Lake Road on the west side of the Little Missouri River with East River Road on the east side of the Little Missouri River.
  - » A total of approximately 11 miles of roadway would be constructed/reconstructed.
  - » Would cross Dry Creek and Roosevelt Creek.
  - » Eliminated from further detailed analysis, because the vertical alignment would not meet the 10 percent grade max.
- Alternative I
  - » Would connect County Road 38 on the west side of the Little Missouri River with Beicegel Creek Road on the east side of the Little Missouri River.
  - » A total of approximately 11–11.75 miles of roadway would be constructed/reconstructed.
  - » Eliminated from further detailed analysis, because it would follow a narrow ridgeline, which would require significant grading to straighten, and the vertical alignment would not meet the 10 percent grade max.

In Billings and Golden Valley counties, two build alternatives (Alternatives A and K) were developed. In McKenzie County, one build alternative (Alternative J) was developed.

Alternative A would connect Forest Highway 2 in Golden Valley County with Magpie Creek Road in Billings County (further north of the TRNP–Elkhorn Ranch Unit). Alternative K would connect Belle Lake Road in Golden Valley County with East River Road in Billings County (further south of the TRNP–Elkhorn Ranch Unit). Alternative J would connect Hay Draw Road with County Road 50. These alternatives were presented to agencies at an agency alternatives workshop in May 2012 and the public at public alternatives workshops on June 5 and 7, 2012.

Alternative J (a total of approximately 8.8 miles long) was eliminated from further detailed analysis, because it was ultimately determined that Billings County had no mechanism to fund its construction in McKenzie County, and McKenzie County had no desire or intent to construct it. The remaining build alternatives (Alternatives A and K) and the no-build alternative (Alternative L) were carried forward for further detailed analysis.

Please refer to **'Figure 8, Alternatives Considered but Eliminated' on page 25** for a depiction of Alternatives B, C, D, E, F, G, H, I, and J.

In addition, several types of river crossing options (aside from a bridge) were considered during the early stages of the EIS process. The following paragraphs summarize the river crossing options (i.e., concrete plank, low-water crossing, concrete box culvert, and concrete arch structure) that were considered but eliminated from further detailed analysis.

A concrete plank uses strips or planks made of concrete, laid side by side to provide a firm driving surface through a river. The planks allow vehicles to drive through shallow water without sinking into the river bottom. This river crossing option was eliminated from further detailed analysis because it would be useable for the least amount of time throughout the year, as it would not elevate the roadway out of the water. Further, recreationists (e.g., canoes, kayaks) would likely need to detour around the crossing. Please refer to **'Figure 9, Concrete Plank' on page 25** for a photographic example of a concrete plank.

A low-water crossing creates a low profile roadway that passes over a river. In periods of normal river flows, the roadway is high enough to be out of the water, with the river flows passing under the roadway through one or more culverts or openings. During periods of high river flows, the roadway would be submerged, allowing the river to flow naturally, but not allowing traffic to cross the river. The height of the low-water crossing and the amount of precipitation received affects how often the roadway is closed due to high water. The low-water crossing is typically designed to allow for a smaller than 15-year flood event. This river crossing option was eliminated from further detailed analysis because it would not provide a reliable, year-round crossing over the Little Missouri River. Further, recreationists (e.g., canoes, kayaks) would need to detour around the crossing during low river flow conditions. Please refer to **'Figure 10, Low-Water Crossing' on page 25** for a photographic example of a low-water crossing.

A box culvert uses large concrete culvert openings to allow a river to flow under the roadway. The culvert openings are usually rectangular-shaped and include a concrete floor that sits slightly below the river bottom to allow for natural flow and siltation of the river channel. The culvert openings are generally large enough to allow a typical 15- to 25-year flood event to pass through the culverts. Storm events larger than these will submerge the culverts and potentially over top the roadway. This river crossing option was eliminated from further detailed analysis due to impacts on the Little Missouri River, including recreational navigation. Recreationists (e.g., canoes, kayaks) would likely need to detour around the crossing. Please refer to **'Figure 11, Concrete Box Culvert' on page 25** for a photographic example of a concrete box culvert.

A concrete arch structure is similar to a concrete box culvert, but has a rounded arch opening instead of a rectangular opening. The concrete arch structure does not have a concrete floor resting on the river bottom. Instead, the concrete arches are supported by a foundation wall (i.e., pier) on each side of the arch. The concrete arch structure is designed similar to a concrete box culvert in that, the culvert opening is typically large enough to accommodate a 15- to 25-year flood event. Storm events larger than these would raise the water to a level that could restrict recreationists (e.g., canoes, kayaks) from passing under the crossing, requiring them to detour around the crossing. This river crossing option was eliminated from further detailed analysis due to impacts on the Little Missouri River, including recreational navigation. Please refer to **'Figure 12, Concrete Arch Structure' on page 26** for a photographic example of a concrete arch structure.

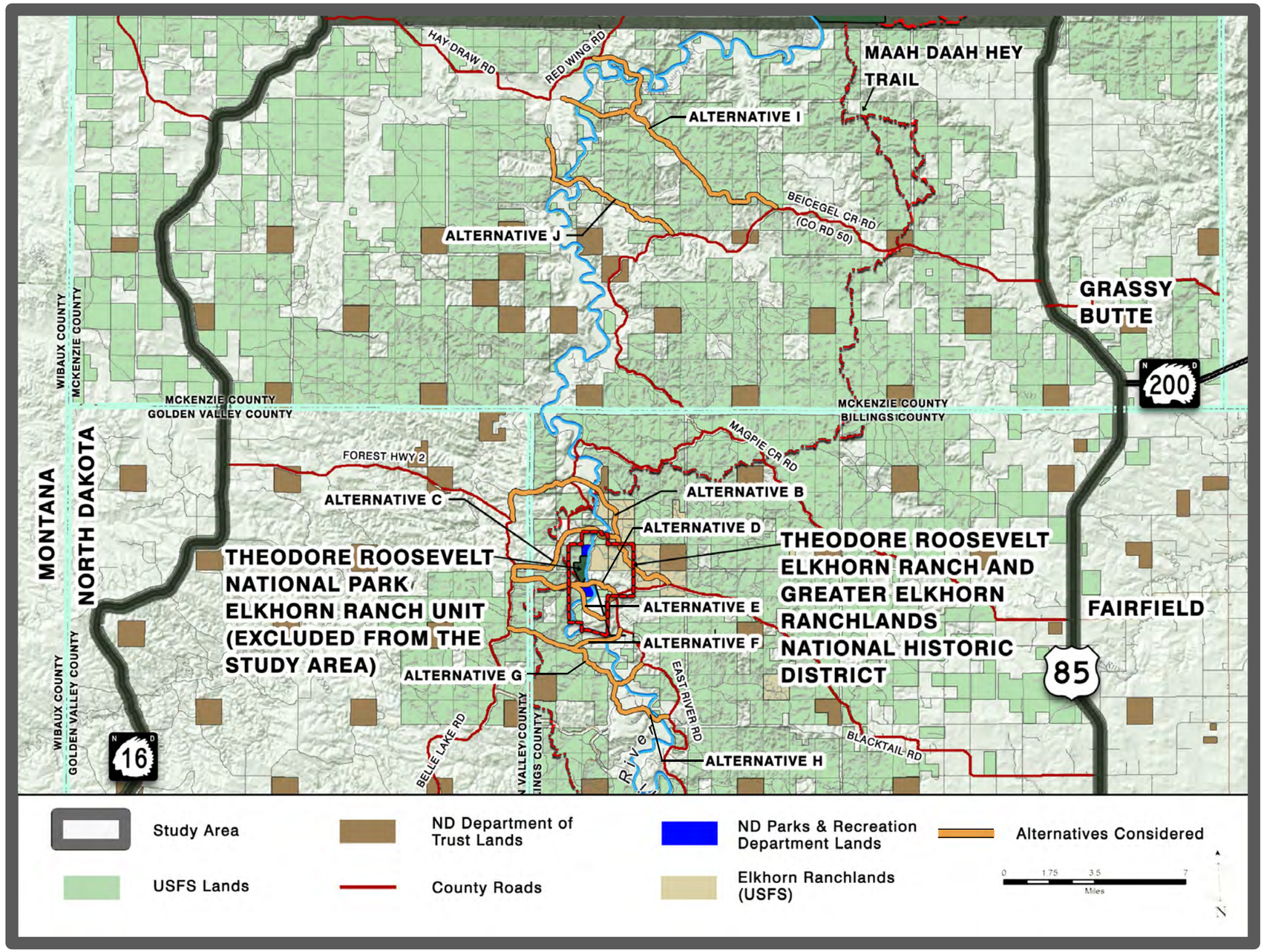


Figure 8, Alternatives Considered but Eliminated

Figure 9, Concrete Plank

Figure 10, Low-Water Crossing

Figure 11, Concrete Box Culvert

Figure 12, Concrete Arch Structure

3.3. What are the alternatives for the project?

This section describes the alternatives that were carried forward for further detailed analysis in this EIS: Alternative A and Alternative K (all options). Please refer to **'Figure 13, Alternatives A and K (all options)'**. As previously discussed, all of the alternatives considered except for Alternatives A and K (build) and Alternative L (no-build), were eliminated from further detailed analysis. These alternatives were presented to agencies and the public in 2015 via project website updates; newsletters; and a lead, cooperating, and participating agencies meeting.

The alternatives were developed to meet current Billings County, USFS, NDDOT, and AASHTO design standards/guidelines for the facility type; to improve the function and operational characteristics of the roadway; and to meet the purpose of, and need for, the project. All of the alternatives are based on the same typical roadway section. Please refer to **'Figure 14, Proposed Typical Section' on page 27**.

Design criteria that were utilized for the roadway include the following:

- Roadway would have a design speed of 35 mph with a minimum curve radius of 340 feet and minimum tangent between curves of 300 feet
- Roadway section would be graded 28 feet wide with two 12-foot-wide driving lanes at a cross slope of 3.57 percent
- Roadway would have 6 inches of gravel surfacing
- Ditches would be 12 feet wide and provide 4 feet of vertical separation to the graded roadway
- Normal inslope and backslope rates would be 4:1
- In deep fill areas, the inslope rate would be 4:1 to a horizontal distance of 16 feet off the driving lane, then the inslope would break to a 3:1 to tie into existing ground

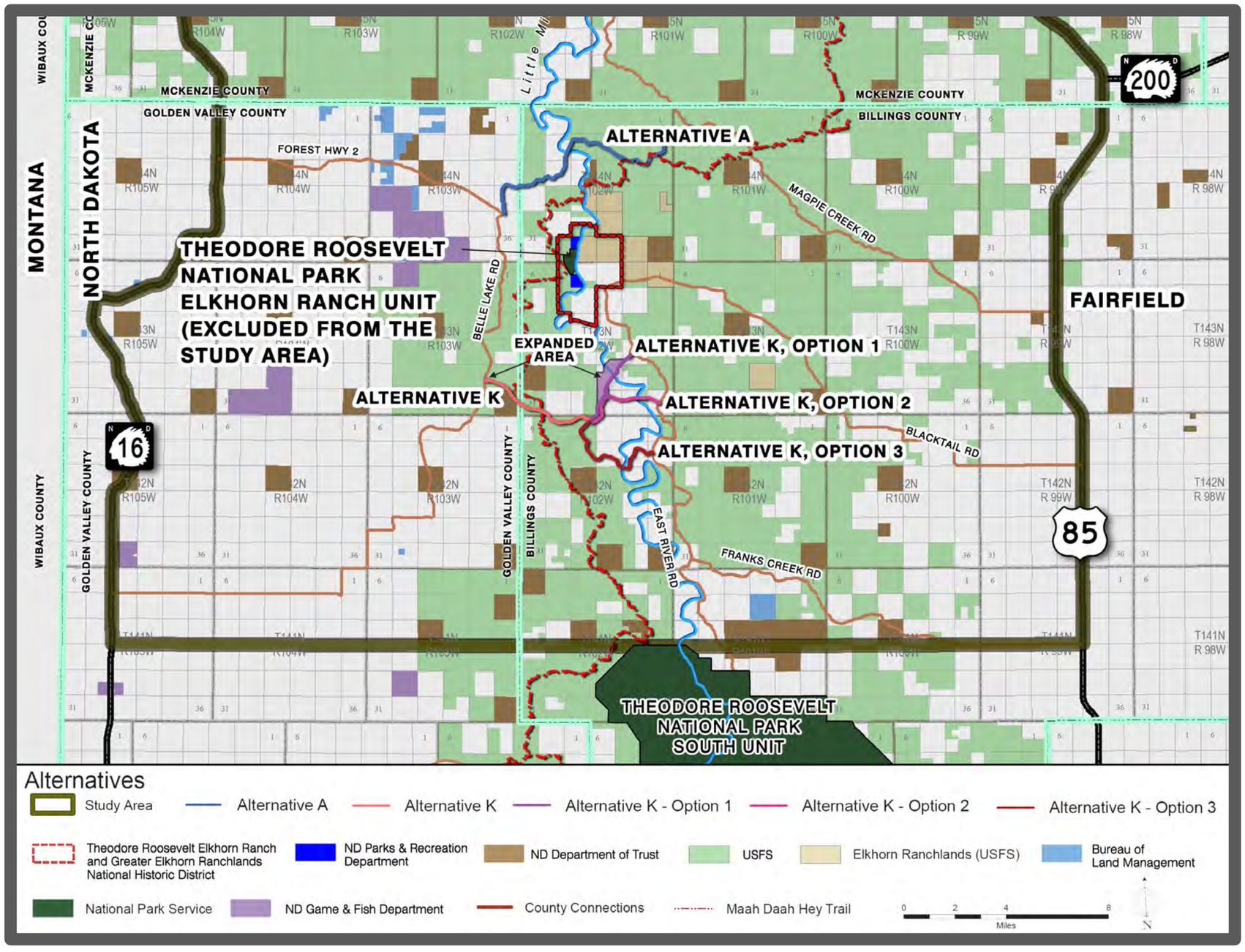


Figure 13, Alternatives A and K (all options)

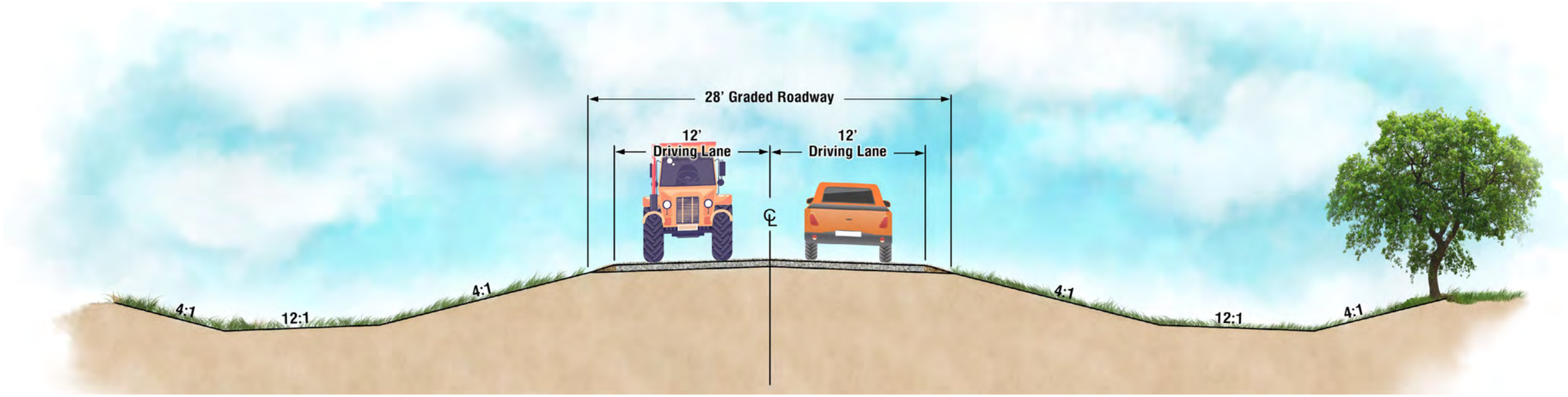


Figure 14, Proposed Typical Section

- In deep cut areas, the backslope rate would be 3:1, and in large deep cut sections the rate would be 2:1
- Alignment would have a maximum grade of 8 percent with exceptions to 10 percent

'Figure 15, Bridge Cross Section' provides a depiction of the bridge cross section. Design criteria that were utilized for the bridge include the following:

- Bridge design for 25-year flood
- Context-sensitive solutions: low-profile bridge constructed to blend with the surrounding environment.

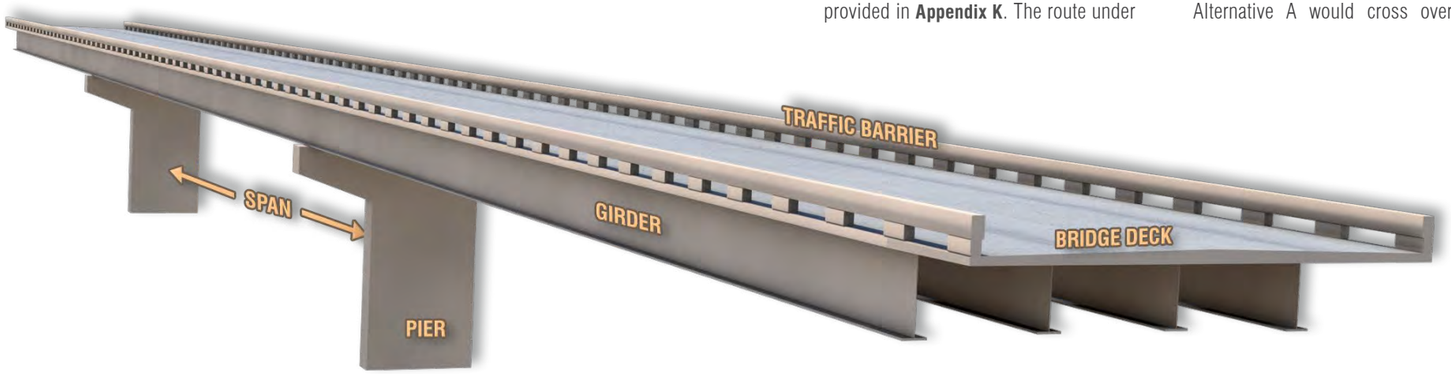


Figure 15, Bridge Cross Section

For Alternative A and Alternative K (all options) ROW and/or easements would be required for the roadway and bridge. A summary of the estimated ROW and/or easements that would need to be acquired from public and private landowners is provided in **'Table 1, Roadway and Bridge ROW/Easements'**.

3.3.1. Alternative A (Build)

Roadway— Alternative A would connect Belle Lake Road with Magpie Creek Road on the north end of Billings County. Please refer to **'Figure 16, Map of Alternative A' on page 28**. Directional maps developed for Alternative A, to aid in driving to the project area are provided in **Appendix K**. The route under Alternative A would be approximately 11 miles long; of which, 10.1 miles would closely follow the existing roadway alignment and 0.9 miles would be new roadway construction. Alternative A would cross over Buckhorn Creek, and therefore, one crossing would need to be installed within Buckhorn Creek to allow its waters to flow under the roadway. As shown in **'Table 1, Roadway and Bridge ROW/Easements'**, approximately 174 acres of permanent easements would need to be acquired from the USFS and approximately 73 acres of permanent ROW and 4 acres of temporary easements would need to be acquired from private landowners. Alternative A would cross over Buckhorn Creek, and therefore, one crossing would need to be installed within Buckhorn Creek to allow its waters to flow under the roadway.

Alternative A would be the longest of the build alternatives carried forward for further detailed analysis. This alternative has the most rugged terrain and would involve the most earthwork.

Table 1, Roadway and Bridge ROW/Easements

Land	Alternative			
	Alternative A (Acres) [a]	Alternative K, Option 1 (Preferred Alternative) (Acres) [a]	Alternative K, Option 2 (Acres) [a]	Alternative K, Option 3 (Acres) [a]
Permanent ROW/Easement [b]				
USFS	174	88	94	125
North Dakota Department of Trust	0	15	15	15
Private	73	62	55	61
Temporary Construction Easement [b]				
Private	4	13	1	11
Total	**251**	**178**	**165**	**212**

Notes:

a. Values are approximated.

b. For the roadway easements, the estimated acreages are for the full width of the ROW along the entire corridor, including both public and private lands. Billings County currently has a 150-foot-wide USDA Public Road Easement, which is centered on the existing roadway. For the project, the USFS would issue a new easement, through the FHWA, to replace the existing USDA Public Road Easement that is already in place. The actual acquisition of ROW or easements for these areas would be reduced by the amount of ROW or easement that currently exists; this determination would be made during the final design of the project.

Bridge— Alternative A would include construction of a bridge, approximately 850 feet long with five to seven spans, resulting in two to four piers located within the banks of the Little Missouri River. The final number of spans and piers would be determined during the final design phase and would be dependent on detailed hydraulic and geotechnical studies. The clear roadway width through the bridge would be a maximum of 36 feet.[1] The total width of the bridge would be a maximum of 38 to 40 feet, depending on the traffic barriers, which would be determined during final design. The bridge would be constructed where the current public unimproved ford is located. Please refer to **'Figure 17, Alternative A Bridge Simulation'** for a simulated view of the bridge across the Little Missouri River for Alternative A.[2]

3.3.2. Alternative K (Build)

There are three options under Alternative K, all of which would connect Belle Lake Road with East River Road. The western 4.9 miles is shared among all three options. Within this stretch, an existing 50-foot-long bridge that crosses over Roosevelt Creek would be replaced as a result of the roadway alignment and grade change required to improve the existing roadway. The replacement structure would be a bridge of similar size or a box culvert of equivalent water capacity.

In order to facilitate future landowner negotiations to minimize agricultural operations, two expanded areas were included to allow for flexibility in the alignment.

Expanded Area for all the options under Alternative K was located on the western most portion of the shared Alternative K alignments.

Expanded Area for Alternative K, Option 1 was located on the eastern portion of the Alternative K, Option 1 alignment.

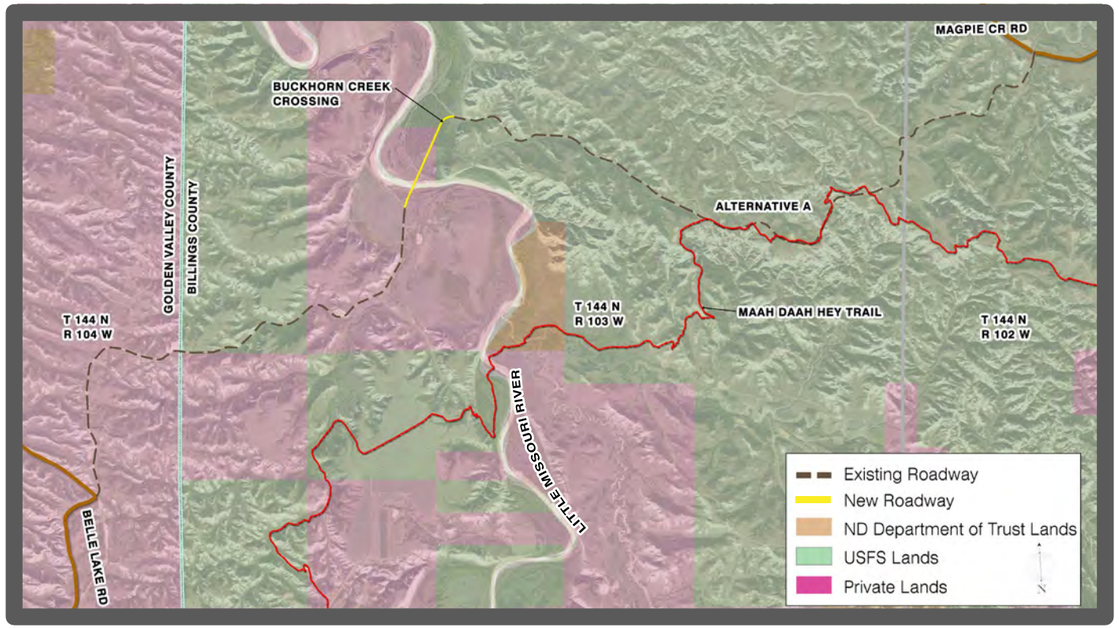


Figure 16, Map of Alternative A

Figure 17, Alternative A Bridge Simulation

An expanded area (approximately 2.5 acres) was added to the westernmost portion of the shared alignment under Alternative K. The expanded area, located in the SE ¼ of Section 26, Township 143 North, Range 103 West, was added to provide flexibility in aligning the intersection at Belle Lake Road.

Directional maps developed for Alternative K (all options), to aid in driving to the project areas are provided in **Appendix K**.

3.3.2.1. Alternative K, Option 1 (Preferred Alternative)

Roadway— Alternative K, Option 1 (Preferred Alternative) would be approximately 8.3 miles long; of which, 6.2 miles would closely follow the existing roadway alignment and 2.1 miles would be new roadway construction. As shown in **'Table 1, Roadway and Bridge ROW/ Easements' on page 27**, approximately 88 acres of permanent easements would need to be acquired from the USFS, approximately 15 acres of permanent ROW would need to be acquired from the North Dakota Department of Trust, and approximately 62 acres of permanent ROW and 13 acres of temporary easements would need to be acquired from private landowners.

The alignment would run from Belle Lake Road to Short Road, where it would run north, between a privately-owned feedlot on the west side of the roadway and privately-owned agricultural land on the east side of the roadway.

The process for roadway projects is to complete the environmental review, then the project moves toward final design. Once the design is more developed, landowner negotiations begin, and then ultimately construction begins. Since the new roadway under Alternative K, Option 1 (Preferred Alternative) lies primarily on privately-owned land and it would run in between a feed lot and agricultural land, it was necessary for the lead agencies to consider and evaluate a larger area for this alternative. This larger expanded area would facilitate future landowner negotiations to minimize impacts on agricultural operations. It is approximately 671.9 acres and located in portions of Sections 22, 23, 27, and 34, Township 143 North, Range 102 West. Please refer to **'Figure 18, Map of Alternative K, Option 1 (Preferred Alternative)' on page 29** for a depiction of the alignment and expanded area for Alternative K, Option 1 (Preferred Alternative).

Most of the time, during the EIS phase, the lead agencies only design alternatives to a certain point. The expanded area is evaluated to ensure that any portions of the alignment that are off the original Alternative K, Option 1 (Preferred Alternative) would be environmentally cleared. Therefore, any changes to the roadway and bridge

1 While the standard clear roadway width for bridges in Billings Count is 28 feet, Billings County has adopted a clear roadway criterion of up to 36 feet for the proposed bridge due to the relatively long length of the bridge and the type of traffic anticipated to utilize the bridge (e.g., farm equipment, oilfield loads). A larger roadway width on the bridge would reduce safety concerns related to head to head traffic and would provide additional space for snow storage.

2 The photographs for each simulation point were taken from a typical user's experience from an existing accessible residence or road. However, in some instances, the locations for photographs were refined to avoid vegetation obstruction or because access to the best location for photographs was restricted due to lack of landowner permission. Therefore, the photographs were taken from varying distances and angles, and the simulations are shown at varying distances and angles.

alignment after landowner negotiations are completed would have environmental clearance.

Bridge— Alternative K, Option 1 (Preferred Alternative) would include construction of a bridge, approximately 600 feet long with three to five spans, resulting in one to three piers located within the banks of the Little Missouri River. The final number of spans and piers would be determined during the final design phase and would be dependent on detailed hydraulic and geotechnical studies. The clear roadway width through the bridge would be a maximum of 36 feet. The total width of the bridge would be a maximum of 38 to 40 feet, depending on the traffic barriers, which would be determined during final design. Please refer to **'Figure 19, Alternative K, Option 1 (Preferred Alternative) Bridge Simulation'** for a simulated view of the bridge across the Little Missouri River for Alternative K, Option 1 (Preferred Alternative).[3]

3.3.2.2. Alternative K, Option 2

Roadway— Alternative K, Option 2 would be approximately 8.4 miles long; of which, 5.8 miles would closely follow the existing roadway alignment and 2.6 miles would be new roadway construction. Please refer to **'Figure 20, Map of Alternative K, Option 2' on page 30**. As shown in **'Table 1, Roadway and Bridge ROW/Easements' on page 27**, approximately 94 acres of permanent easements would need to be acquired from the USFS, approximately 15 acres of permanent ROW would need to be acquired from the North Dakota Department of Trust, and approximately 55 acres of permanent ROW and 1 acre of temporary easements would need to be acquired from private landowners.

Bridge— Alternative K, Option 2 would include construction of a bridge, approximately 800 feet long with five to seven spans, resulting in two to four piers located within the banks of the Little Missouri River. The final number of spans and piers would be determined during the final design phase and would be dependent on detailed hydraulic and geotechnical studies. The clear roadway width through the bridge would be a maximum of 36 feet. The total width of the bridge would be a maximum of 38 to 40 feet, depending on the traffic barriers, which would be determined during final design. Please refer to **'Figure 21, Alternative K, Option 2 Bridge Simulation' on page 30** for a simulated view of the bridge across the Little Missouri River for Alternative K, Option 2.[4]

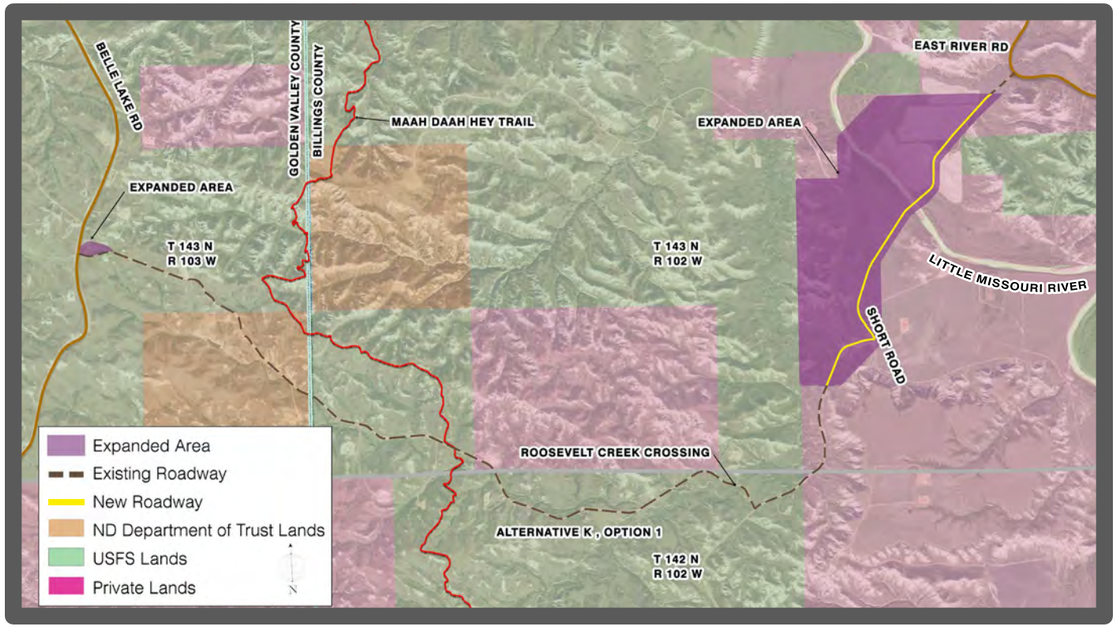


Figure 18, Map of Alternative K, Option 1 (Preferred Alternative)

Figure 19, Alternative K, Option 1 (Preferred Alternative) Bridge Simulation

3 *Ibid.*
4 *Ibid.*

3.3.2.3. Alternative K, Option 3

Roadway— Alternative K, Option 3 would be approximately 9.9 miles long; of which, 7.9 miles would closely follow the existing roadway alignment and 2 miles would be new roadway construction. Please refer to **'Figure 22, Map of Alternative K, Option 3' on page 30**. As shown in **'Table 1, Roadway and Bridge ROW/Easements' on page 27**, approximately 125 acres of permanent easements would need to be acquired from the USFS, approximately 11 acres of permanent ROW would need to be acquired from the North Dakota Department of Trust, and approximately 61 acres of permanent ROW and 16 acres of temporary easements would need to be acquired from private landowners. In addition to crossing over Roosevelt Creek, Alternative K, Option 3 would also cross over Crooked Creek. Therefore, the crossing over Crooked Creek would need to be replaced as a result of the roadway alignment and grade change required to improve the existing roadway. The replacement structure would be a crossing of similar size or a box culvert of equivalent water capacity.

Bridge— Alternative K, Option 3 would include construction of a bridge, approximately 600 feet long with three to five spans, resulting in one to three piers located within the banks of the Little Missouri River. The final number of spans and piers would be determined during the final design phase and would be dependent on detailed hydraulic and geotechnical studies. The clear roadway width through the bridge would be a maximum of 36 feet. The total width of the bridge would be a maximum of 38 to 40 feet, depending on the traffic barriers, which would be determined during final design. Please refer to **'Figure 23, Alternative K, Option 3 Bridge Simulation' on page 30** for a simulated view of the bridge across the Little Missouri River for Alternative K, Option 3.[5]

3.3.3. Alternative L (No-Build)

CEQ regulations require consideration of the No Action Alternative (no-build). The No Action Alternative serves as a baseline against which the impacts of potential build alternatives can be evaluated. Under Alternative L, construction of a new bridge across the Little Missouri River and associated roadway improvements would not occur. Existing roadways associated with Alternative A and Alternative K (all options) would persist. The width of these gravel roadways is variable and narrow (i.e., typically less than 24 feet). In addition, existing roadways have limited sight distance due to sharp curves and steep grades. Routine maintenance of existing roadways within the study area would continue.

5 *Ibid.*

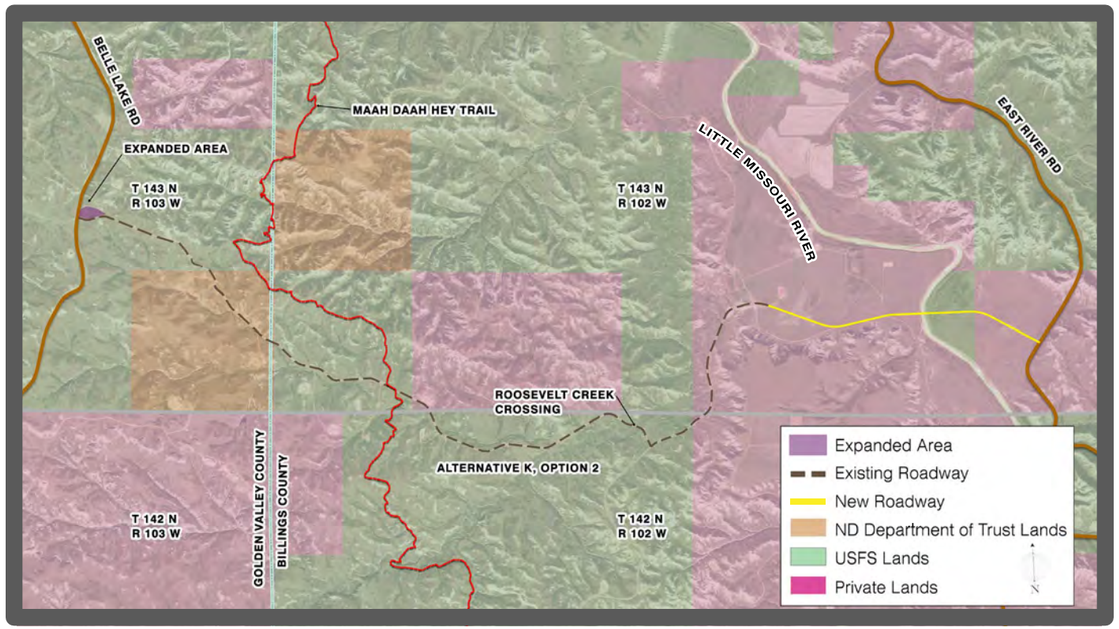


Figure 20, Map of Alternative K, Option 2

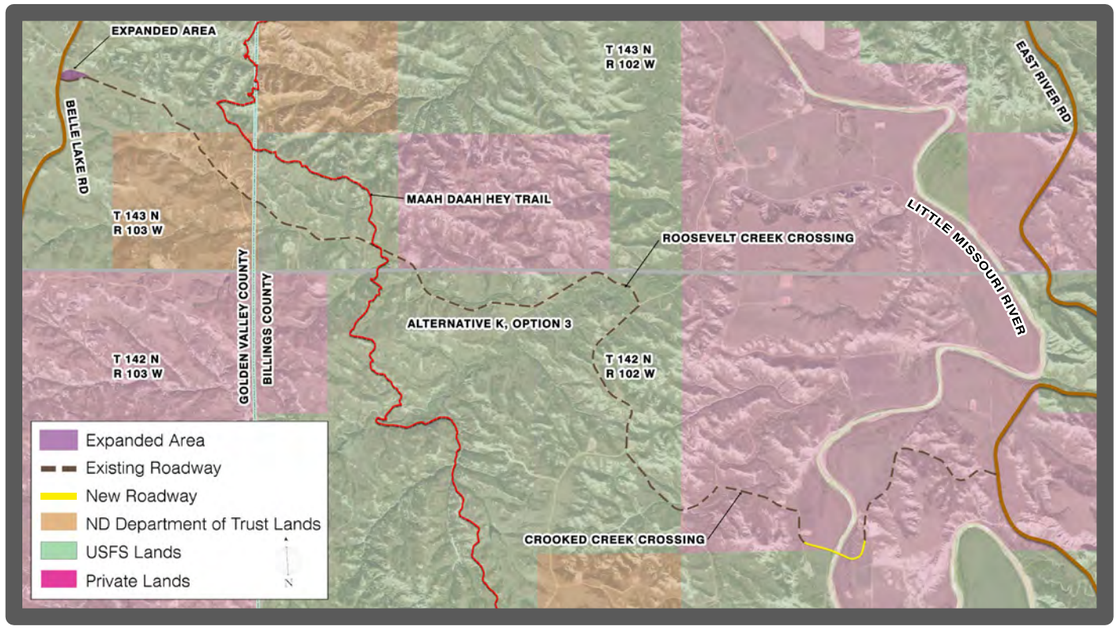


Figure 22, Map of Alternative K, Option 3

Figure 21, Alternative K, Option 2 Bridge Simulation

Figure 23, Alternative K, Option 3 Bridge Simulation

Under Alternative L, the transport of goods and services within the study area and system linkage between Billings and Golden Valley counties would not be improved. The public would not have a reliable connection between the roadways on the east and west sides of the Little Missouri River within Billings County and would continue to use fords (when possible in favorable weather conditions) to cross the Little Missouri River. Overall, the efficiency and reliability of the transportation system for existing users and accessibility for local traffic, emergency vehicles, and other users would not be improved.

3.3.4. What is a summary of all of the alternatives?

Table 2 provides a summary and side-by-side comparison of the alternatives carried forward for detailed analysis in this EIS. Please refer to **'Table 2, Summary of Alternatives'**.

3.4. What is the Preferred Alternative?

After nearly a decade of considering potential alternatives, collaborating with the public and cooperating and participating agencies, and conducting engineering and environmental studies for the project, the NDDOT, FHWA, and Billings County have recommended Alternative K, Option 1 as the Preferred Alternative. Alternative K, Option 1 would meet the project's purpose and need with minimal environmental impacts, as described in **Chapter 5**. The final Preferred Alternative will be identified in the Final EIS after comments to this EIS have been considered.

As previously stated, an expanded area (671.9 acres) was added to Alternative K, Option 1 to facilitate future land owner negotiations. The expanded area allows for a broader range of potential locations for the alignment and bridge. Under Alternative K, Option 1, the alignment and bridge would be constructed within the expanded area in a location to be determined during the final design phase of the project.

Alternative K, Option 1 would be designed to avoid or minimize traffic, noise, and viewshed impacts to the maximum extent practicable. It is anticipated that Alternative K, Option 1 would result in minimal impacts on wetlands; Other Waters; wildlife and their habitats; cultural resources; and other environmental, socioeconomic, and human-made resources.

Table 2, Summary of Alternatives

Alternative	Length (Miles)		Little Missouri River Bridge	Estimated Construction Cost [a]
	Total Length	New Roadway Construction		
Alternative A	11	0.9	850-foot-long, five-span bridge	$18.7 million
Alternative K, Option 1 (Preferred Alternative) [b]	8.3	2.1	600-foot-long, three-span bridge	$11.2 million
Alternative K, Option 2	8.4	2.6	800-foot-long, five-span bridge	$13.7 million
Alternative K, Option 3	9.9	2	600-foot-long, three-span bridge	$14.1 million
Alternative L (No-Build)	0	0	N/A	0

Notes:

a. *The estimated construction costs are based on 2015 typical roadway and bridge construction costs. These estimates include ROW/easement acquisition costs. Utility relocations are anticipated to add approximately $42 to $143 per foot of relocated pipeline and approximately $20 to $50 per foot of relocated electrical line. Utility impacts are discussed in* **section 5.19**.

b. *The alignment and bridge would be constructed within a 671.9-acre expanded area under Alternative K, Option 1 (Preferred Alternative).*

Chapter 4. Construction Activities

The construction activities associated with the project, including the expected sequencing and scheduling, are discussed in this chapter.

4.1. What must occur before construction can begin?

Once funding has been secured for the project, the project would move into the final design phase, in which permitting, ROW/easement acquisition, and utility coordination would occur. Construction phasing would depend upon how much funding is available. The first priority would be to construct the bridge and new roadway (2.1 miles for the preferred alternative) to tie into the existing roadway infrastructure. As funding is available, Billings County would reconstruct the existing roadways. This may be done in segments or as one project.

The utility companies would be contacted and coordination would begin with a more detailed set of plans and ROW/easement limits. During this coordination, temporary and permanent ROW and/or easements would be acquired, as necessary; coordination with regard to the movement of utility lines would be conducted; and applicable permits would be acquired. If the movement of utilities is required, utilities would typically be relocated back within the newly acquired ROW/easement or in a utility easement acquired by the utility company adjacent to the roadway ROW/easement. Construction associated with relocating utilities is dictated by the type and size of utility, construction constraints, soil or geologic conditions, regulatory requirements, and company preference. The amount of ground disturbing activities and temporary or permanent impact to resources is dependent on the construction method and location of the utility easement.

4.2. What construction equipment and activities are common to the Alternatives?

4.2.1. Roadway Construction

The first stage of construction would include establishing work zones, staging areas, and temporary work zone traffic-control signing. Temporary erosion-control devices would be installed, as necessary, prior to any ground-disturbing activities. Construction areas, including the work zone, staging areas, and borrow sources, would be cleared and grubbed, and topsoil would be removed and stockpiled for use during reclamation. Equipment for construction activities would be consistent with other rural roadway and bridge construction projects and may include cranes, ready-mix trucks, concrete pump trucks, loaders, bulldozers, scrapers, motor graders, backhoes, trucks, and rollers.

Earthwork would include a combination of hauling and placing fill material (e.g., dirt or other suitable material) for construction in areas that require additional material (i.e., widening and new construction) and removing material in cut areas (e.g., ditch sections). The contractor would remove existing topsoil in areas that require additional fill or removal of existing material (cut areas). The topsoil would be placed to the side and replaced once the fill or cut operations have occurred. Best construction practices would be used to prevent erosion. Work on approaches (e.g., field drives, section lines, and private driveways) would include placement of fill material to widen existing approaches and to construct new approaches, as necessary. The design of the roadway would be completed to avoid placement or waste (removal) of excess material, where possible. Drainage structures, including pipe, would be replaced and/or installed as required through the roadway and approaches to maintain existing drainage patterns. Bypasses and stream diversions would be utilized as necessary for construction of drainage structures/creek crossings.

Once the contractor constructs the roadway, topsoil would be spread on the disturbed areas and gravel would be spread on the top of the roadway. Additional topsoil, if required, would be imported from a material source in areas where salvaged topsoil is insufficient to cover the disturbed areas.

Upon completion of roadway improvements and construction of the new roadways, temporary work zone traffic control would be removed and permanent signs (e.g., curve warning signs, speed limit signs) and erosion-control protection (e.g., seeding and straw mulch) would be installed.

Fill, topsoil, and gravel source locations and material waste disposal areas would be determined by the contractor and approved through the appropriate agencies.

4.2.2. Construction Phasing on Existing Roadways

Improvements to the existing roadways, such as widening and placement of the gravel surfacing, would occur on one side of the roadway at a time. One lane of traffic would be maintained during these operations. Construction of new roadways would be completed prior to opening to traffic. Installation of drainage structures, including pipe, would either be completed through one-half of the roadway at a time in order to maintain one lane of traffic or the contractor would be required to construct a bypass around the location. In locations where roadway improvements intersect the Maah Daah Hey Trail, temporary access would be constructed to maintain access for trail users.

Construction of the roadway, including installation of drainage structures, would take an estimated seven months to complete and would be completed during the construction season (i.e., April through October), as weather permits.

4.2.3. Little Missouri River Crossing

Bridge substructures (e.g., piers and abutments) would be constructed of concrete and supported by a driven pile system. A pier is a bridge component used to support the part of the bridge that carries traffic (superstructure). A typical pier consists of foundation piling, a footing, and columns (or wall). Please refer to **'Figure 24, Example Bridge Pier'**. Riprap (i.e., loose field or quarry stone used to form a foundation) would be added at each abutment (i.e., bridge end) and pier to reduce stream channel erosion. The bridge superstructure would consist of a reinforced concrete deck, supported by steel plate girders. Clear roadway width through the bridge would be a maximum of approximately 36 feet to provide two 12-foot-wide driving lanes and 6-foot-wide shoulders (accommodating large farm and industrial equipment). The total width of the bridge would be a maximum of 38 to 40 feet, depending on the traffic barriers, which would be determined during final design.

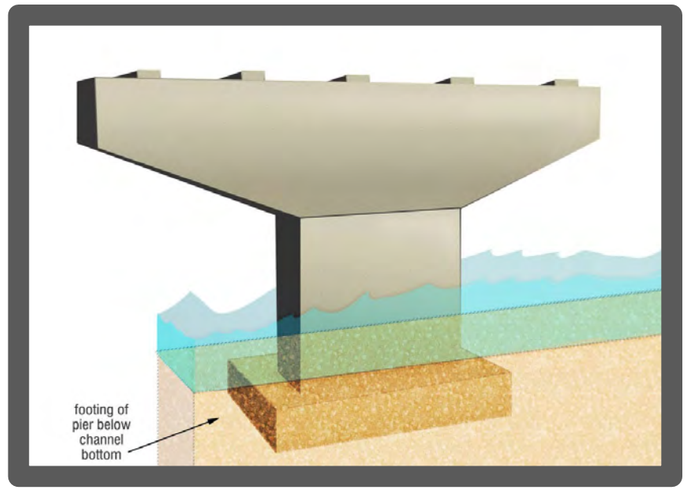


Figure 24, Example Bridge Pier

To facilitate access for construction equipment, materials, and labor forces, the bridge contractor would need to place temporary fill in the channel to construct a causeway or bypass. River flow would be maintained by the installation of temporary culverts or by leaving part of the channel open. Depending on the water depths at the time of construction, the contractor may construct a temporary work bridge in lieu of a causeway. Additionally, depending on the location of the piers relative to water flow at the time of construction, temporary steel cofferdams or earthen ring dikes may also be required around the pier footings to provide a dry work area to construct the piers. Once the cofferdams or ring dikes are in place, the contractor would need to excavate the channel bottom inside the cofferdam to the required pier foundation elevation. After the footing is constructed, the excavated material would be backfilled and any excess material would be removed from the channel and disposed of at an approved location. Upon completion of construction, all temporary fills and structures would be removed and the stream bed and banks would be restored to pre-construction condition.

The land adjacent to a bridge under construction is often used to facilitate construction by providing areas for the following:

- Construction equipment staging and maintenance
- Stockpile areas of raw materials prior to their incorporation into the construction operation
- Temporary field office(s) and storage facilities
- Access to the bridge work area
- Staging area

To provide the contractor potential land to use for these purposes, a temporary construction easement, approximately 400 feet wide and 1,500 feet long, would be obtained for the project.

Bridge construction over the Little Missouri River could be completed concurrent with roadway construction, but would likely require a longer timeframe and may take up to two construction seasons.

4.2.4. Utility Relocation

Below-ground electrical and communication utilities are typically installed though use of a plow on tracked equipment, backhoe excavator, and boring machines. Lines that would extend parallel to the roadway would typically be plowed in to a depth of 36 inches (dependent on utility preference or regulatory requirement) below the ground surface. Tracked equipment with a reel holder for holding the line, and a plow in the back for installing the line, would travel down the utility easement. Where splices in the line are necessary, a backhoe excavator is typically used to dig a pit to maintain burial depth of the line and install an above ground control box or manhole to access below-ground equipment.

In situations requiring roadway crossings, areas of construction constraints, or other factors that prohibit or limit ground disturbing activities, HDD would be used, leaving no surface disturbance apart

from entry and exit holes. Bell holes are typically dug by a backhoe excavator on both sides of the proposed bore. A bore machine is set up on one side of the drill location and drill pipe is drilled below the area to be avoided. Depth of the drill is based largely on soil conditions, resource or infrastructure being avoided, and/or regulatory requirements. Once the bore hole has been drilled between the bell holes, a casing or the utility line is attached to the drill pipe and pulled back through the hole before being spliced to the line in an above or below-ground facility.

In areas of rocky conditions, backhoe excavators may be used to remove rock, or may be used instead of a plow to install the line. In addition, trenchers may be used per contractor preference, or for constructability reasons in certain soil types or rocky conditions. Typically, a narrow area of temporary disturbance consisting of a 3- to 12-inch-wide trench occurs from use of a plow or trencher. A slightly wider disturbance is likely from use of a backhoe excavator installing the line, digging the bell hole for drilling, installing above or below-ground facility, or removing rock.

Pipelines are typically installed below-ground using a backhoe excavator or trencher. Smaller flexible lines may be installed through use of a plow. Installation method can vary greatly based on the type of pipeline. Water lines are typically installed at a minimum of a 7-foot depth to protect against freezing over winter. Gas, oil, or other lines are typically buried 48 inches to the top of the pipe. Burial depth is largely dependent on regulatory requirements for the type of product being transported, temperature considerations, or for protection of the pipeline integrity.

For larger pipelines paralleling the roadway that require use of a backhoe excavator or large trencher for digging a trench, initial construction would involve ground clearing and grading per design specifications. This would involve leveling and smoothing the construction area to create an even working surface for equipment and vehicles. Prior to trench excavation, individual joints of the pipe would be strung along the project ROW/easement and arranged to be accessible to construction personnel. Trenching in uplands would consist of excavating the trench for the pipeline with a backhoe excavator or trencher. Excavated material would be sidecast within the approved construction area, separate from topsoil, to prevent soil mixing during construction. The pipeline joints would then be welded or connected through other means, depending on pipeline material, before being placed in the trench through use of a stringing machine, boom truck, or other equipment. Backfilling would follow pipe installation and generally consists of replacing the material excavated from the trench starting with subsoil, and followed by topsoil. Trench breakers would be installed, as necessary in sloped areas, to protect against subsurface water flow erosion along the pipe after the trench is backfilled.

In situations requiring roadway crossings, areas of construction constraints, or other factors that prohibit or limit ground disturbing activities, HDD would be used leaving no surface disturbance apart from entry and exit holes. Bell holes are typically dug by a backhoe excavator on both sides of the proposed bore. A bore machine is set up on one side of the drill location and drill pipe is drilled below the area to be avoided. Depth of the drill is based largely on soil conditions, resource or infrastructure being avoided, or regulatory requirement. Once the bore hole has been drilled between the bell holes, casing or the pipeline is attached to the drill pipe and pulled back through the hole before being welded or connected through other means.

Chapter 5. Affected Environment, Environmental Consequences, & Mitigation

This chapter describes the current conditions of the physical, biological, cultural, economic, and social resources that could be affected by implementation of the alternatives, as well as the potential impacts on these resources from the alternatives. This chapter also summarizes best management practices, mitigation methods, and environmental commitments implemented as part of the project, as well as permits and approvals required for the project.

< chapter listing continued on page 38 >

This chapter describes the current conditions of the physical, biological, cultural, economic, and social resources that could be affected by Alternative L (no-build), Alternative A, and Alternative K (all options). In compliance with NEPA and implementing regulations and related guidance outlined in 23 U.S.C. § 109(h) and 23 CFR § 771, the description of the affected environment focuses on those environmental, cultural, socioeconomic, and human-made resources potentially subject to impacts. Though the study area encompasses Billings, Golden Valley, and McKenzie counties, Alternative A and Alternative K (all options) would be constructed entirely within Billings and Golden Valley counties. Therefore, only the environmental, cultural, socioeconomic, and human-made resources in Billings and Golden Valley counties are evaluated.

This chapter also summarizes the potential direct and indirect impacts on environmental, cultural, socioeconomic, and human-made resources from Alternative L (no-build), Alternative A, and Alternative K (all options). Direct and indirect impacts were evaluated for the project areas of the build alternatives, which are defined as follows:

- Alternative A — the project area includes a 500-foot-wide corridor (i.e., 250 feet from the centerline of the existing and new roadways). Within this corridor, environmental, cultural, socioeconomic, and human-made resources potentially subject to impacts were evaluated. Please refer to **'Figure 25, Alternative A Project Area'**.
- Alternative K, Option 1 (Preferred Alternative) — the project area includes a 500-foot-wide corridor, an approximate 671.9-acre expanded area on the eastern portion of the alignment, and an approximate 2.5-acre expanded area on the westernmost portion of the alignment. Within the boundaries of this project area, environmental, cultural, socioeconomic, and human-made resources potentially subject to impacts were evaluated. Please refer to **'Figure 26, Alternative K, Option 1 (Preferred Alternative) Project Area'**.
  - Inside the 671.9-acre expanded area, the new roadway and bridge would be constructed in a location that would be determined during the final design phase of the project. To evaluate potential impacts on environmental, cultural, socioeconomic, and human-made resources inside the expanded area, reasonable engineering design was applied to determine a hypothetical alignment that would have the greatest potential for impacts. All of the environmental resources within a 500-foot-wide corridor for this hypothetical alignment are assumed to be permanently impacted,

Direct impacts are caused by the action and occur at the same time and place when the action is implemented. Indirect impacts are also caused by the action, but occur later in time or farther removed in distance, but are still reasonably foreseeable.

Indirect impacts might include growth-inducing impacts and other impacts related to induced changes in the pattern of land use, population density, or growth rate and related impacts on air and water and other natural systems, including ecosystems (40 CFR § 1508.8).

In order to facilitate future landowner negotiations to minimize agricultural operations, two expanded areas were included to allow for flexibility in the alignment.

Expanded Area for all the options under Alternative K was located on the western most portion of the shared Alternative K alignments.

Expanded Area for Alternative K, Option 1 was located on the eastern portion of the Alternative K, Option 1 alignment.

The documents referenced in this chapter and appended by reference are as follows:

- Little Missouri River Crossing Traffic Operations Memorandum, KLJ (2015).
- Field Wetland Delineation Report – Little Missouri River Crossing, KLJ (2016).
- Field Wetland Delineation Report – Little Missouri River Crossing Expanded Study Area, KLJ (2016).
- Biological Assessment of Threatened & Endangered Species & Biological Evaluation of Sensitive Species – Little Missouri River Crossing, Alternative A, KLJ (2016).
- Biological Assessment of Threatened & Endangered Species & Biological Evaluation of Sensitive Species – Little Missouri River Crossing, Alternative K (All Options), KLJ (2016).
- Addendum to: Biological Assessment of Threatened & Endangered Species & Biological Evaluation of Sensitive Species – Little Missouri River Crossing, Alternative K (All Options), KLJ (2016).
- Biological Assessment – Little Missouri River Crossing (Preferred Alternative), KLJ (2016).
- Noise Report – Little Missouri River Crossing, KLJ (2016).
- Little Missouri River Crossing: A Class III Cultural Resource Inventory in Billings, Golden Valley, and McKenzie Counties, North Dakota, KLJ (2015).
- Little Missouri River Crossing: Evaluation Plan for Sites 32BI234, 32BI272, 32BI290, 32BI713, 32BI1127, 32GV299, and 32GV300 in Billings and Golden Valley Counties, North Dakota, KLJ (2015).
- Evaluative Testing at 32BI713 for the Little Missouri River Crossing, KLJ (2016).
- Addendum to "The Little Missouri River Crossing: A Class III Cultural Resource Inventory in Billings, Golden Valley, and McKenzie Counties, North Dakota" For the Expanded Alternative K, Option 1 Area, KLJ (2016).
- Little Missouri River Crossing Cultural Resource Discovery Plan, KLJ (2017).

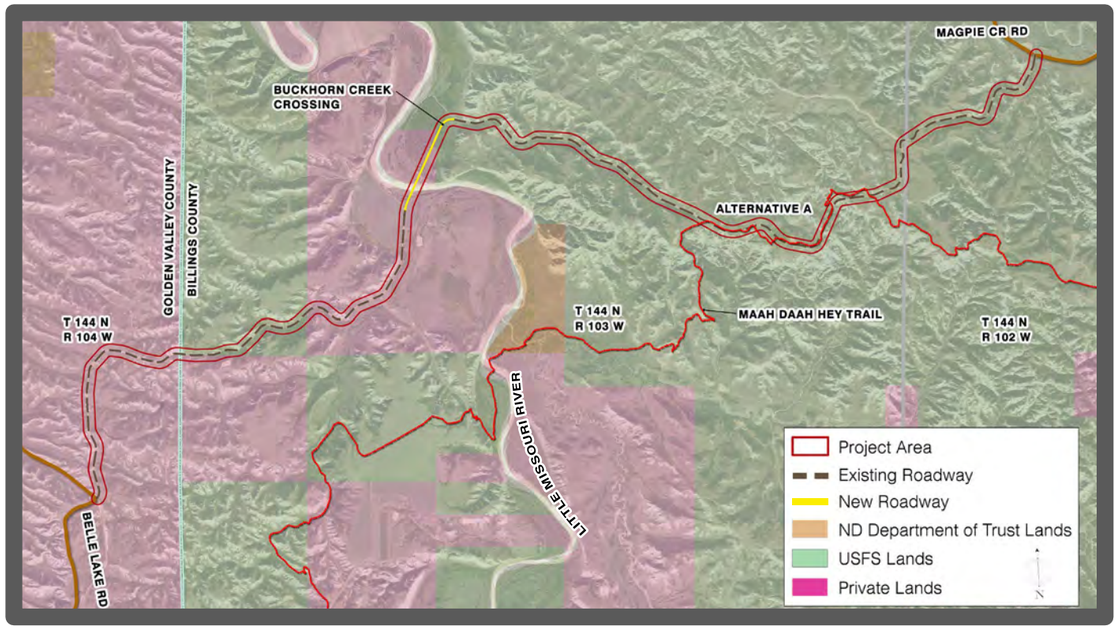


Figure 25, Alternative A Project Area

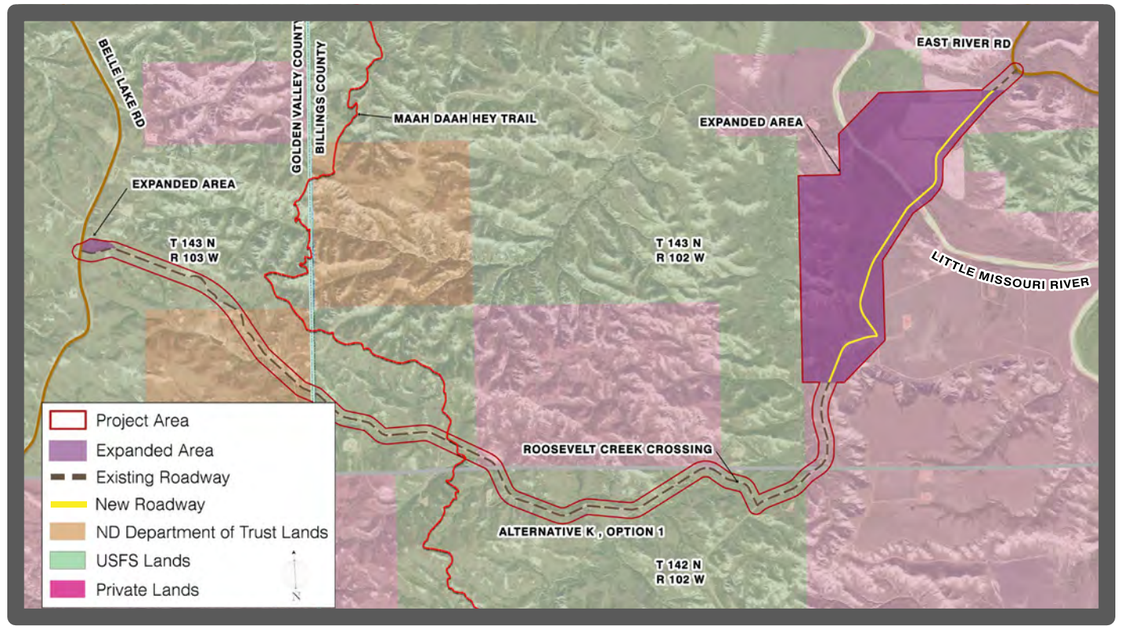


Figure 26, Alternative K, Option 1 (Preferred Alternative) Project Area

since the construction limits cannot be determined until final design.
  - » Outside the expanded area, the alignment has been determined, and therefore, the construction limits have also been determined. All of the environmental resources within these construction limits are assumed to be permanently impacted.
  - » Using this methodology, the impacted resources for the hypothetical alignment within the expanded area were added to the impacted resources for the known alignment outside the expanded area to determine the total permanent impacts from Alternative K, Option 1 (Preferred Alternative). However, the alignment ultimately constructed within the expanded area would likely result in less impacts than identified in this EIS.
- Alternative K, Option 2— the project area includes a 500-foot-wide corridor and an approximate 2.5-acre expanded area on the westernmost portion of the alignment. Within this corridor, environmental, cultural, socioeconomic, and human-made resources potentially subject to impacts were evaluated. Please refer to **'Figure 27, Alternative K, Option 2 Project Area'**.
- Alternative K, Option 3— the project area includes a 500-foot-wide corridor and an approximate 2.5-acre expanded area on the westernmost portion of the alignment. Within this corridor, environmental, cultural, socioeconomic, and human-made resources potentially subject to impacts were evaluated. Please refer to **'Figure 28, Alternative K, Option 3 Project Area'**.

Where applicable, best management practices (BMPs) and avoidance, minimization, and mitigation measures for adverse impacts are also discussed in this chapter.

5.1. What environmental resource categories were omitted from this EIS?

All potentially relevant resource categories were initially considered for analysis in this EIS. However, some environmental resource categories that are often analyzed in environmental documents have been omitted from this EIS. The basis for such exclusions is provided as follows:

- Coastal Barriers and Coastal Zone— The project is not located in a coastal barrier or coastal zone area. Therefore, analysis of coastal barriers and coastal zone is omitted from this EIS.
- Relocations— The project would not require the relocation of any households or businesses. Therefore, analysis of relocations is omitted from this EIS.
- Joint Development— No joint development measures are included as part of the project. Therefore, joint development is omitted from this EIS.
- Section 6(f) of the Land and Water Conservation Act— According to correspondence received from the NDPRD, no Land and Water Conservation Fund project sites are located near the project areas. Therefore, analysis of Section 6(f) of the Land and Water Conservation Act is omitted from this EIS.
- Wild and Scenic Rivers— There are no designated wild and scenic rivers in North Dakota. Therefore, analysis of wild and scenic rivers is omitted from this EIS.

5.2. Land Use

5.2.1. What is the character of, and land use in, the study area?

The term 'land use' refers to real property classifications that indicate either natural conditions or the types of human activity occurring on a parcel. Two main objectives of land use planning are to ensure orderly growth and compatible uses among adjacent property parcels or areas.

The study area is characterized as a diverse landscape comprised of grasslands, badlands, buttes, and plateaus accented by wooded draws, all of which support a variety of vegetation types. Cultivated fields are scattered throughout the area, and the Little Missouri River flows north through the rugged topography in the area. For a depiction of the land uses within the project areas, please refer to **'Figure 29, Alternative A Land Use' on page 41**; **'Figure 30, Alternative K, Option 1 (Preferred Alternative) Land Use' on page 41**; **'Figure 31, Alternative K, Option 2 Land Use' on page 41**; and **'Figure 32, Alternative K, Option 3 Land Use' on page 41**.

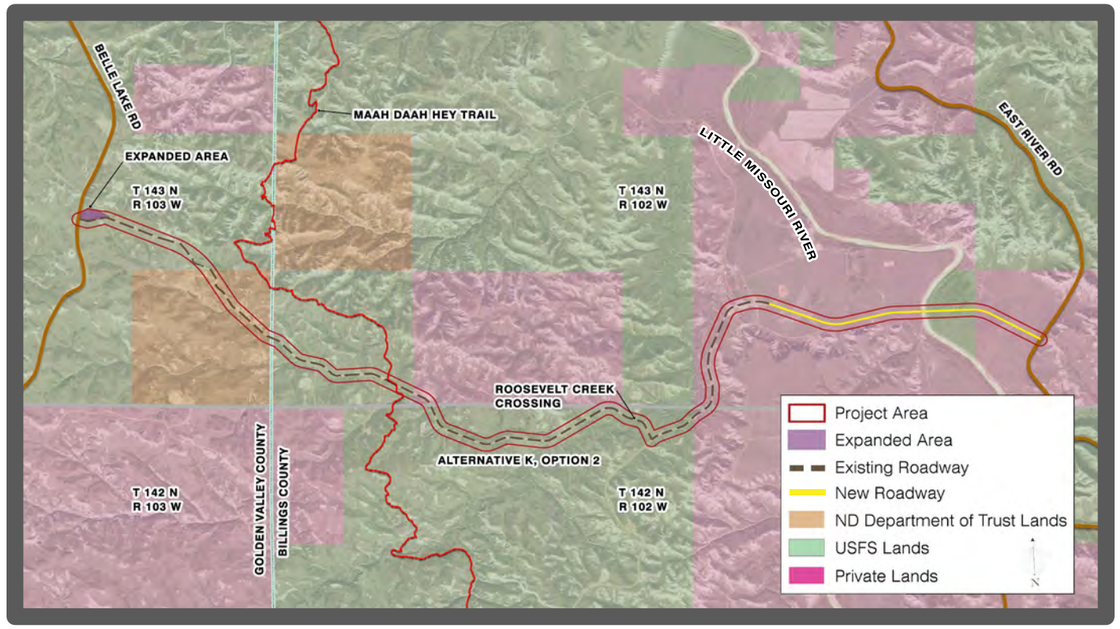


Figure 27, Alternative K, Option 2 Project Area

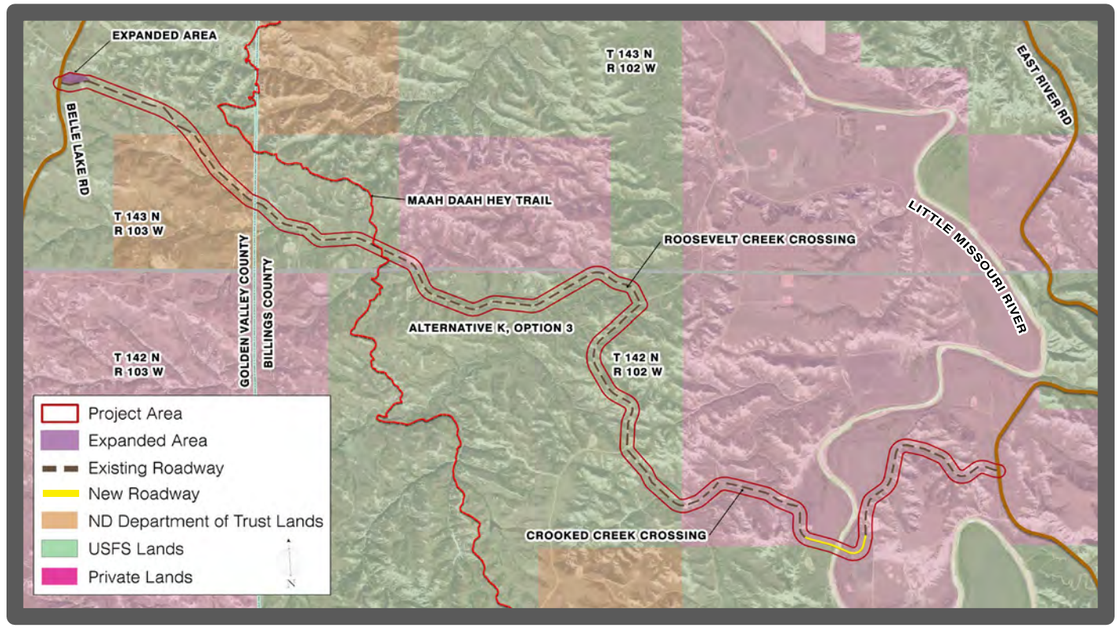


Figure 28, Alternative K, Option 3 Project Area

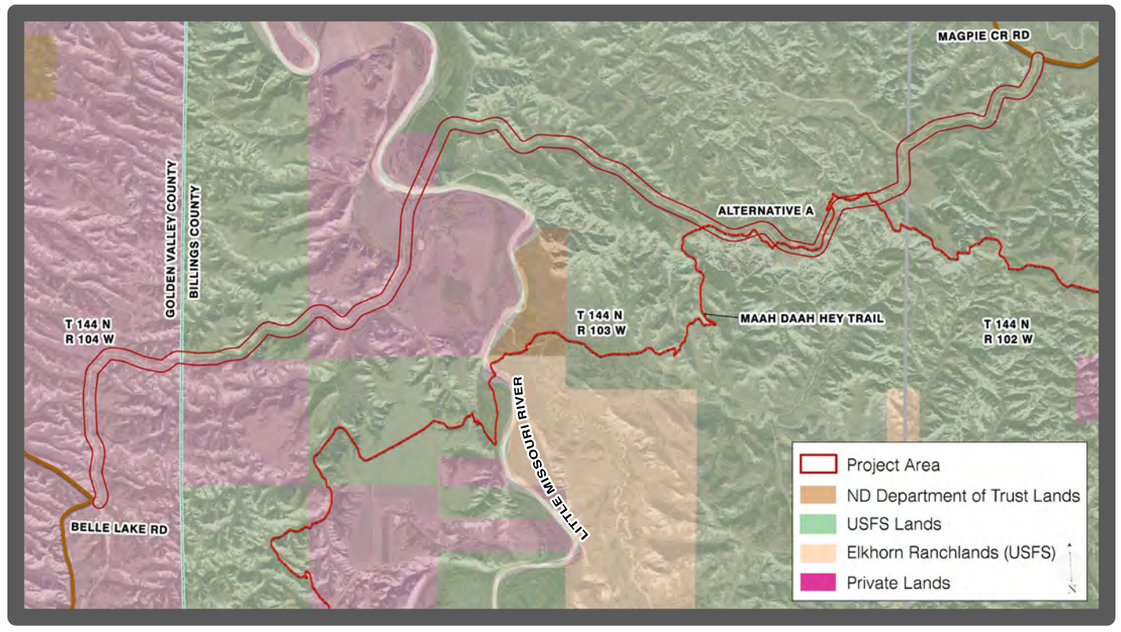


Figure 29, Alternative A Land Use

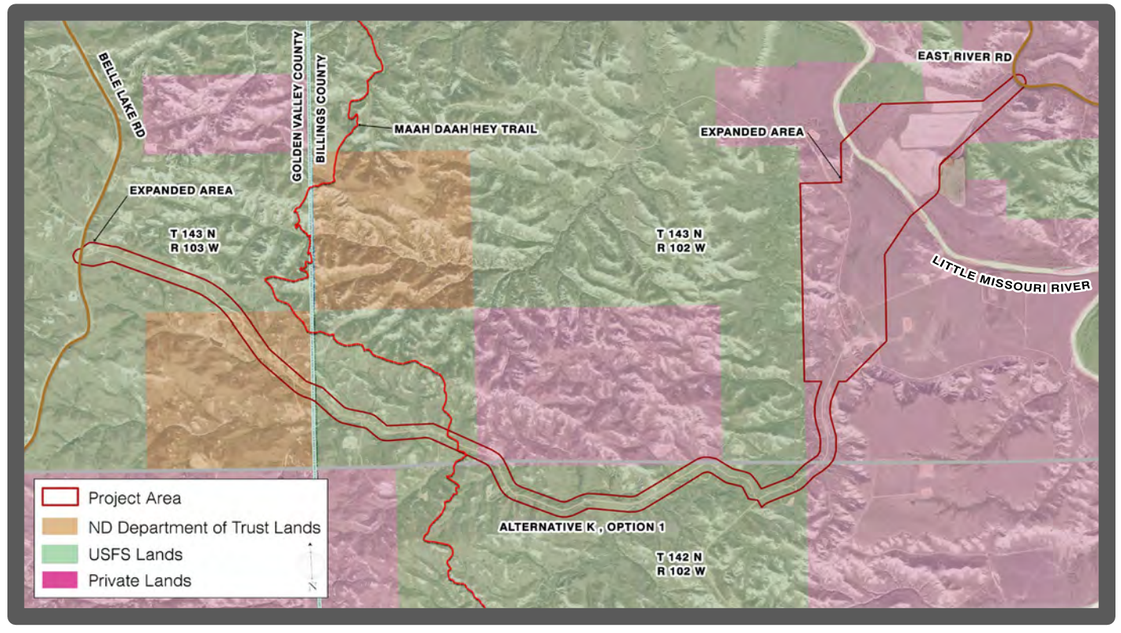


Figure 30, Alternative K, Option 1 (Preferred Alternative) Land Use

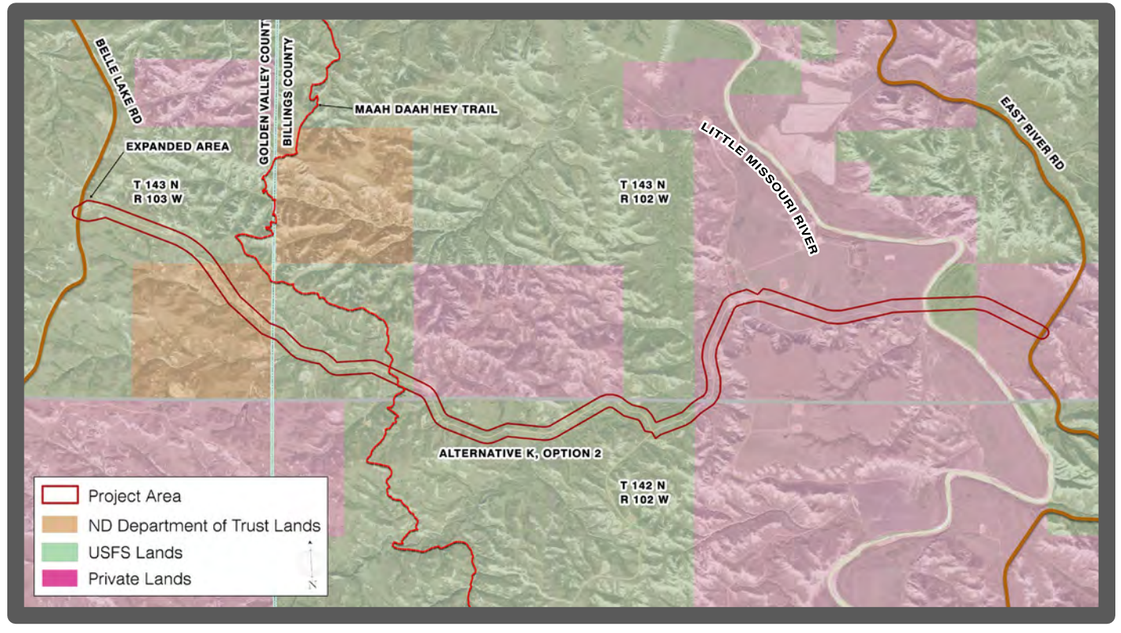


Figure 31, Alternative K, Option 2 Land Use

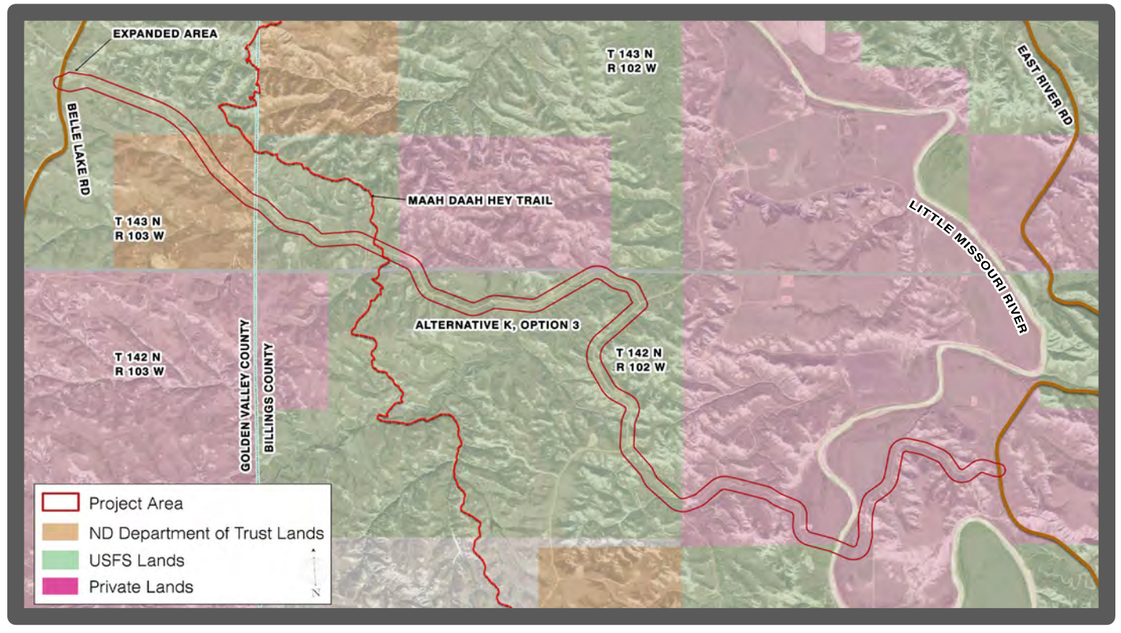


Figure 32, Alternative K, Option 3 Land Use

Land within the study area is currently used for a variety of purposes including ranching, farming, tourism, recreation, and oil and gas exploration and production. Historically, agricultural uses dominated the landscape. According to the Census of Agriculture (2012), over the years, the number of farms and ranches in Billings and Golden Valley counties has decreased, while the size of the farms and ranches has increased. In 2012, Billings County contained 197 farms (approximately 722,275 acres) and Golden Valley County contained 251 farms (approximately 562,453 acres) (USDA 2012).

Development in the area has increased in recent years, particularly due to oil and gas exploration and production. The development of hydrocarbon production in the Williston Basin increased due to advancements in deep HDD techniques and subsequent oil extraction in the Bakken and Three Forks shale formations. From 2009 to 2016, annual crude oil production in North Dakota increased approximately 377 percent (from 79.7 to 380.3 million barrels). However, the price per barrel of oil began falling in 2015 due to a worldwide surplus in the crude oil supply. From 2014 to 2015, the number of active drilling rigs in North Dakota declined from 195 to 71. Oil production has leveled off into 2017. Between January and October 2017,[1] there was a total of approximately 322.3 million barrels of oil produced, which is approximately 1 percent more than what was produced between January and October in 2016 (approximately 320.0 million barrels) (NDDMR 2015, NDDMR 2016, NDDMR 2018, UP 2014). There are several existing roadways in the area that were constructed for the oil and gas developments.

Much of the land within the study area is public property, managed by the federal and state government, including the USFS, NPS, BLM, NDGFD, NDPRD, and North Dakota Department of Trust. However, privately-owned land is scattered throughout the project areas as well. Alternative A would cross through public lands managed by the USFS and privately-owned land, and Alternative K (all options) would cross through public lands managed by the USFS, the North Dakota Department of Trust, and privately-owned land.

5.2.1.1. What public lands are in the study area?

Figure 33 shows the study area in relation to the TRNP (all units), Elkhorn Ranchlands, Theodore Roosevelt Elkhorn Ranch and Greater Elkhorn Ranchlands National Historic District (also contains private-owned land), NDPRD lands, BLM lands, NDGFD lands, North

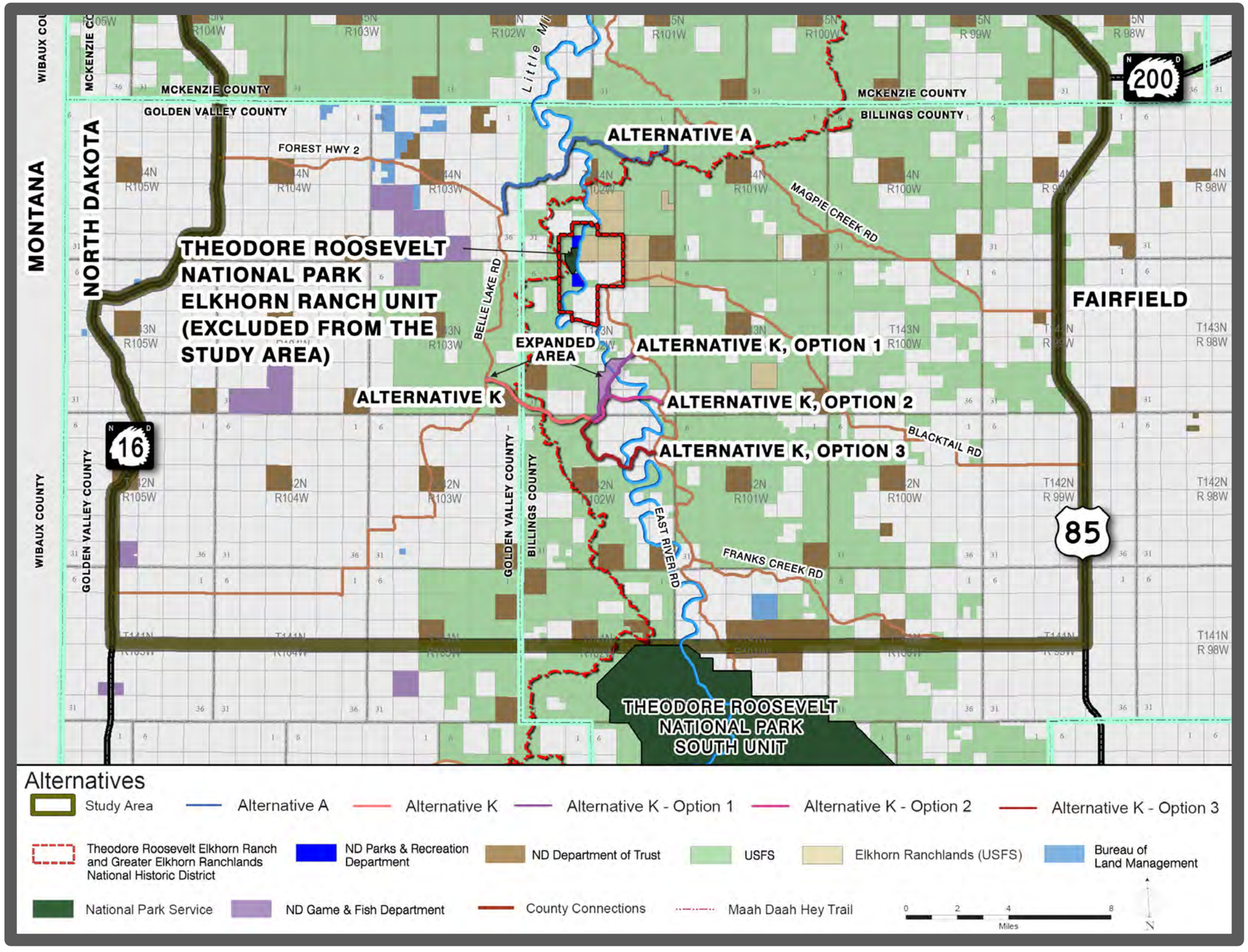


Figure 33, Federal and State Lands

1 Annual statistics for oil and gas production in 2017 are not yet available from the North Dakota Industrial Commission, Department of Mineral Resources, Oil and Gas Division. Therefore, the available monthly statistics from January to October are used.

Dakota Department of Trust lands, USFS, and Maah Daah Hey Trail. Please refer to **Figure 33**.

The study area is bounded to the north by the southern border of the TRNP—North Unit. The TRNP—Elkhorn Ranch Unit is located in the center of the study area; however, it is excluded from the study area. The TRNP preserves land that profoundly affected President Theodore Roosevelt and is a beacon for nature lovers and outdoor enthusiasts (NPS 2016). The TRNP—North Unit comprises a total of approximately 24,070 acres. The TRNP—South Unit is the largest of all three units, comprised of approximately 46,159 acres. The TRNP—Elkhorn Ranch Unit is the smallest of all three units, comprised of approximately 218 acres (NPS Undated a). All three units of the TRNP are excluded from the study area.

The Elkhorn Ranchlands comprise 5,200 acres and are located south of Alternative A and north and east of Alternative K (all options). The Elkhorn Ranchlands were acquired by the USFS in 2007 (USFS 2015). There are existing roads and facilities within the Elkhorn Ranchlands that are used to access the fields and livestock management facilities. There is also a road network associated with oil and gas production that has been constructed in the area.

The Theodore Roosevelt Elkhorn Ranch and Greater Elkhorn Ranchlands National Historic District (established on September 28, 2012) comprises 4,402 acres of land that spans the Little Missouri River, near the center of the study area. The National Historic District lies south of Alternative A and north of Alternative K (all options). Within the boundaries of the National Historic District, there is public land managed by the NDPRD, USFS, and NPS, as well as privately-owned land (USFS 2015). Blacktail Road also runs through the National Historic District. It is a federal aid route and major roadway in Billings County that receives regular maintenance.

NDPRD lands lie within the center of the study area directly north and south of the TRNP—Elkhorn Ranch Unit. The lands are owned and managed by the NDPRD. The lands are managed to provide undeveloped areas with little amenities and to preserve natural areas.

BLM lands are located within the study area and are managed for a variety of uses, such as energy development, livestock grazing, recreation, and timber harvesting, while protecting a wide array of natural, cultural, and historical resources (BLM 2012).

NDGFD lands are located within the study area and are managed for fishing, boating, hunting, and fish and wildlife conservation (NDGFD Undated).

North Dakota Department of Trust lands are located throughout the study area. The primary responsibility of the Department is to manage the permanent educational trust funds and assets under the Board of University and School Lands' control, as outlined in the North Dakota Constitution. State law also gives the Department the responsibility for managing several mineral acres in addition to the trust funds and assets, operating the state Unclaimed Property Division and the Energy Infrastructure and Impact Office (NDDTL Undated).

The USFS administers the LMNG as part of the DPG. The LMNG is a National Forest unit composed of more than 1 million acres in parts of McKenzie, Billings, Slope, and Golden Valley counties. Predominant features of the LMNG include badlands and rugged terrain extensively eroded by wind and water. Within the boundaries of the LMNG are significant portions of state- and privately-owned land, much of which is utilized by cattle ranchers for grazing (USDA Undated).

The Maah Daah Hey Trail is an approximate 140-mile-long, non-motorized trail that runs from the USFS CCC Campground near the TRNP—North Unit, south to the TRNP—South Unit, ending at the USFS Burning Coal Vein Campground. The trail is nationally recognized as a premier backpacking, mountain biking, and horseback riding trail (NPS 2016, NDPRD Undated a).

What DPG Management Areas are in the study area?

In accordance with the National Forest Management Act of 1976, NEPA, and other laws and associated regulations, a revised Land and Resource Management Plan was developed in 2001 for the DPG. The Land and Resource Management Plan provides guidance for all resource management activities on the DPG; identifies management standards and guidelines; and describes resource management practices, levels of resource use and protection, and the availability and suitability of lands for resource management (USFS 2001b).

Within the Land and Resource Management Plan, Management Areas (MAs) are identified. A MA is a parcel of land, point, or linear path within the DPG that is managed for a particular emphasis and has a prescription that outlines the desired conditions, standards, and guidelines that apply to it. The prescriptions are broken out into the following six major categories in the Land Resource Management Plan, which range from the least evidence of disturbance (i.e., Category 1) to the most evidence of disturbance (i.e., Category 6) (USFS 2001b).

The study area contains MAs under Categories 1, 2, 3, 4, and 6. Please refer to **'Figure 34, DPG Management Areas' on page 44**. Since MAs 3.51A, 3.51B, 3.65, 4.22, and 6.1 are the only MAs within the study area that could potentially be impacted by Alternative A and Alternative K (all options), these MAs are discussed in the following subsections.

- Category 3 – MAs 3.51A, 3.51B, and 3.65

Areas included in MA 3.51A—Bighorn Sheep Habitat with Non-Federal Mineral Ownership and MA 3.51B—Bighorn Sheep Habitat with Non-Federal Mineral Ownership are managed to provide quality forage, cover, escape terrain, and solitude for bighorn sheep. However, for MA 3.51A, the areas also provide for the possible development of the federal mineral ownership if the non-federal minerals are developed and the federal minerals can be developed without significant impacts on bighorn sheep. In addition, MA 3.51A is managed to provide lambing areas. For MA 3.51B, the areas also provide for the development of the federal and non-federal mineral ownership and are leased with controlled surface-use and timing stipulations intended to minimize impacts on bighorn sheep and protect their habitat (USFS 2001b, USFS 2002). There are areas designated as MA 3.51B immediately north of Alternative K (all options) and south of Alternative K, Option 3, and the existing roadway under Alternative A crosses through portions of MA 3.51A and MA 3.51B.

Areas included in MA 3.65—Rangelands with Diverse Natural-Appearing Landscapes are managed with emphasis on maintaining or restoring a diversity of desired plants and animals and ecological processes and functions. This MA also provides a mix of other rangeland values and uses with limits on facilities to maintain a natural-appearing landscape. These areas have relatively few livestock grazing developments, such as fences and water tanks, resulting in a mosaic of livestock grazing patterns and diverse vegetation composition and structure (USFS 2001b). The existing roadways under Alternative A and Alternative K (all options) cross through portions of MA 3.65.

- Category 4 – MA 4.22

Areas included in MA 4.22—Scenic Areas, Vistas, or Travel Corridors (River and Travel Corridors) are managed to protect or preserve the scenic values and recreational uses of the Little Missouri River Corridor and Grand River Scenic Travel Route. The Little Missouri River Corridor is defined as National Grasslands contained within a 0.25-mile-wide zone on each side of the river. The Grand River Scenic Travel Route is an 11-mile-long (driving) route through a central portion of the Grand River National Grassland (located in South Dakota). Generally, the Little Missouri River Corridor areas are a natural-appearing landscape, but modifications on a small scale that blend with the area's natural features are acceptable. Existing facilities, such as power lines and roads, may be obvious to the casual observer, but scenic vistas are emphasized. Transportation corridors may be present, including interstate highways. Vegetation management activities are visually subordinate to the surrounding landscape (USFS 2001b). There are areas designated as MA 4.22 immediately north and less than 2 miles south of the project area for Alternative K, Option 1 (Preferred Alternative). The new roadways under Alternative A; Alternative K, Option 2; and Alternative K, Option 3 would cross through portions of MA 4.22.

- Category 6 – MA 6.1

Areas included in MA 6.1—Rangeland with Broad Resource Emphasis are primarily rangeland ecosystems managed to meet a variety of ecological conditions and human needs. These lands often display high levels of development, commodity uses, and activity; density of facilities; and evidence of vegetative manipulation. In addition, this MA displays low to high levels of livestock grazing developments (e.g., fences and water developments), oil and gas facilities, and roads (USFS 2001b). There are areas designated as MA 6.1 approximately 2 miles south of Alternative A. The existing roadway under Alternative K (all options) would cross through portions of MA 6.1.

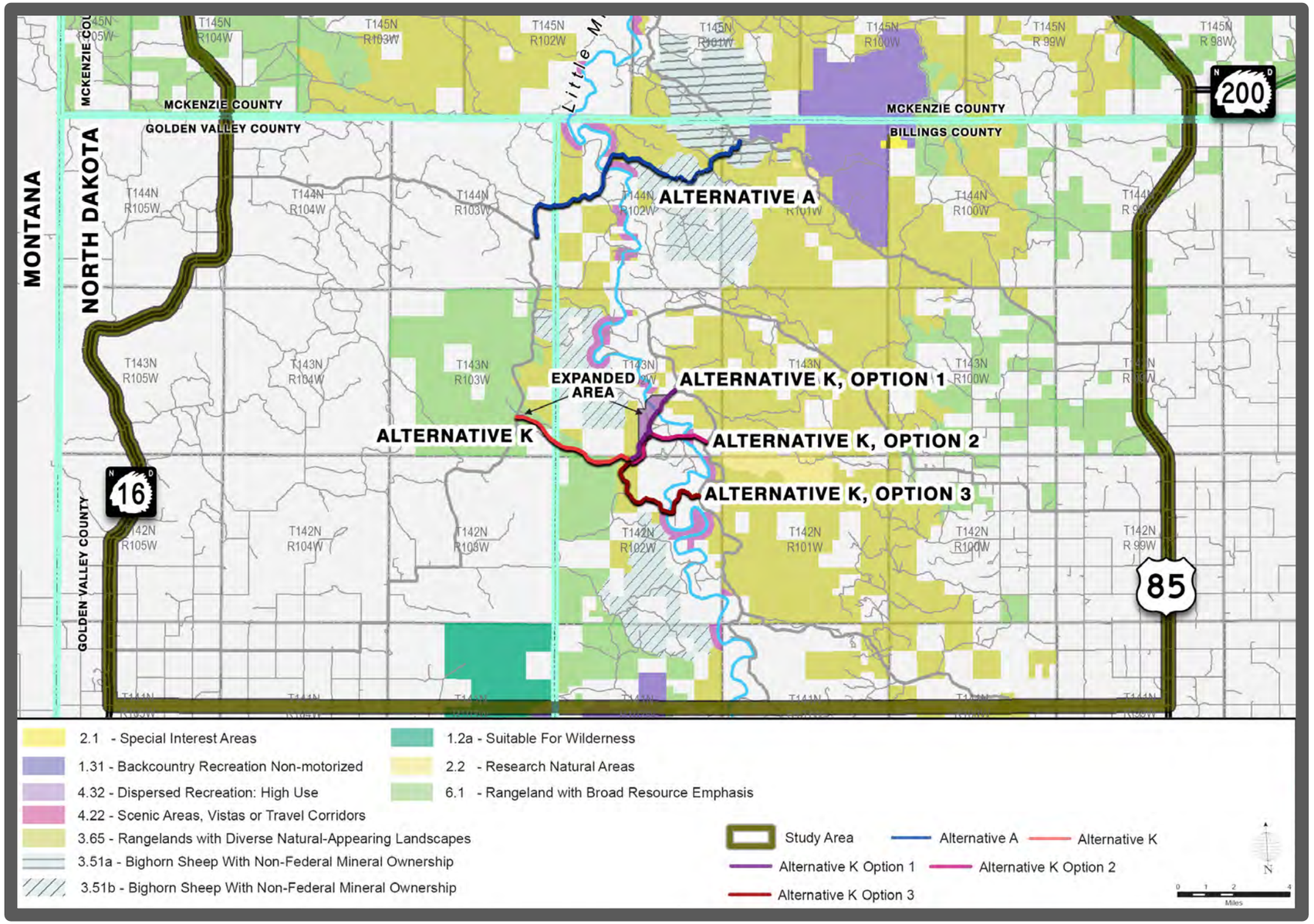


Figure 34, DPG Management Areas

5.2.1.2. What are the county comprehensive plans?

Billings County Comprehensive Plan

The Billings County Comprehensive Plan provides an overall description of the land, demographics, economy, and future growth of Billings County. In addition, the plan identifies five goals, each of which outlines objectives and associated policies. These goals combine to provide guidelines to ensure appropriate land use and development in Billings County.

The first goal identified is to "protect and guide development of non-urban areas of Billings County." One of the objectives of this goal is to "promote a safe and adequate transportation system within Billings County." The associated policies for this objective are as follows (Billings County 1998):

- Ensure an adequate and convenient local transportation network within Billings County.
- Ensure adequate, efficient, and reliable routes for the transfer of agricultural products from farms/ranches to markets.
- Ensure adequate, efficient, and reliable transportation routes for purposes of emergency vehicle access.
- Encourage a cooperative working relationship with officials from bordering counties to meet transportation system objectives.
- Take advantage of available outside funds for the construction and maintenance of transportation facilities.
- Promote adequate roads and bridges, including a bridge crossing over the Little Missouri River in the northern portion of Billings County.

The third goal identified is to "provide for emergency management." The objective of this goal is to "facilitate provision of adequate and efficient public services." Two of the associated policies for this objective include ensuring efficient and reliable access routes for emergency service providers to all residents of Billings County and promoting adequate roads and bridges, including a bridge crossing over the Little Missouri River in the northern portion of Billings County.

The remaining three goals identified in the Billings County Comprehensive Plan focus on regulating the construction, alteration, repair or use of buildings; conserving and developing natural resources; and lessening governmental expenditures (Billings County 1998).

Golden Valley County Comprehensive Plan

The Golden Valley County Comprehensive Plan serves as a basis for making decisions on long-range development. It indicates in a general

way, the thoughts the people and local decision makers have about their county and its communities and the way they want to develop over the years to come. In addition, the plan identifies six goals, each of which outlines objectives and associated implementation strategies. The goals, objectives, and implementation strategies are based on input received from the public and the conclusions of the various characteristics and problems, as determined through an analysis of the background information and subsequently adopted by the Board of County Commissioners (Golden Valley County 2010).

The sixth goal identified in the Golden Valley County Comprehensive Plan is to "provide and maintain an adequate transportation system within Golden Valley County." Two of the objectives of this goal are to "provide reliable routes for the transfer of agricultural products from farms to markets" and "integrate county road improvements with land use needs and public service areas." Some of the associated implementation strategies for this goal include ensuring access by county residents to necessary facilities, services, and public transportation systems; developing a road improvement and bridge replacement program; using low-water crossings as an alternative to over-designed bridges and structures, where appropriate; conducting regular assessments of the rural roads system to determine maintenance scheduling and road access needs; and updating the county's subdivision regulations to establish requirements for developer financing of paving access roads between the paved highway system and the local streets within the development (Golden Valley County 2010).

5.2.2. What happens if the Little Missouri River crossing is not constructed?

Would land uses, public lands, and MAs be affected?

Under Alternative L (no-build), no impacts on land uses, public lands, or MAs would be expected.

Would the alternative be consistent with county planning?

Alternative L (no-build) would not be consistent with two of the goals listed in the Billings County Comprehensive Plan: (1) protect and guide development of non-urban areas of Billings County and (2) provide for emergency management. The objectives under these two goals (i.e., promote a safe and adequate transportation system within Billings County and facilitate provision of adequate and efficient public services) would not be met. Furthermore, Alternative L would not be in compliance with several of the policies listed for these two goals, including ensuring an adequate and convenient local transportation network within Billings County; ensuring adequate, efficient, and reliable routes for the transfer of agricultural products from farms/ranches to markets; ensuring adequate, efficient, and reliable transportation routes for purposes of emergency vehicle access; and promoting adequate roads and bridges (including a bridge crossing over the Little Missouri River in the northern portion of Billings County).

One of the goals listed in the Golden Valley County Comprehensive Plan is to provide and maintain an adequate transportation system within the county. Alternative L would not be consistent with this goal or its associated objectives, which are to (1) provide reliable routes for the transfer of agricultural products from farms to markets and (2) integrate county road improvements with land use needs and public service areas.

Under Alternative L, the existing roadway would not be improved and a local and reliable crossing over the Little Missouri River would not be constructed. Some vehicles would continue to use fords when possible in favorable weather conditions, while other vehicles that could not use fords would be required to travel approximately 70 highway miles to the next nearest crossing. Emergency vehicles (either locally or through mutual aid) who are required to cross the river during emergency situations would be restricted to using fords or travelling approximately 70 highway miles to the nearest bridge, which could result in delayed response times.

Other local users (e.g., industries, recreation) would not have easier access to assets and interests on the opposite side of the river. Costs would continue to be higher due to the cost of time and fuel required to travel to the nearest bridge.

5.2.3. What happens if the Little Missouri River crossing is constructed?

5.2.3.1. Alternative A

Would land uses be affected?

The majority of Alternative A (i.e., approximately 10.1 of the total 11 miles) would closely follow an existing roadway alignment; therefore, it is not anticipated that the disturbance of existing lands, the majority of which are grasslands, would result in a trend toward modification of existing land use patterns.

Temporary impacts during construction activities would be minimized with implementation of BMPs, such as installing temporary erosion-control measures (e.g., fiber rolls, straw waddles, erosion mats, silt fencing, and turbidity barriers). Therefore, impacts during construction would be minor.

Would private lands be affected?

As previously discussed in **section '3.3. What are the alternatives for the project?' on page 26**, the following are the ROW/easements that would need to be acquired from private landowners:[2]

- Approximately 73 acres of permanent ROW
- Approximately 4 acres of temporary easements

Temporary impacts during construction activities would be minimized with implementation of BMPs, such as installing temporary erosion-control measures (e.g., fiber rolls, straw waddles, erosion mats, silt fencing, and turbidity barriers). Therefore, impacts during construction would be minor.

Would public lands be affected?

As previously discussed in **section '3.3. What are the alternatives for the project?' on page 26**, a total of approximately 174 acres of permanent easements would need to be acquired from the USFS for Alternative A.[3]

Upon completion of construction activities, disturbed areas would be restored as near as practicable to the original contours. Therefore, impacts on the DPG upon completion of construction would be minor.

The Maah Daah Hey Trail, Elkhorn Ranchlands, TRNP – Elkhorn Ranch Unit, National Historic District, NDGFD lands, and North Dakota Department of Trust lands are located in the vicinity of the project area, but would not be directly impacted from Alternative A. These public lands could be temporarily impacted by noise and fugitive dust emissions. Construction would generate fugitive dust emissions, which would be greatest during initial site-preparation activities and would vary from day to day, depending on the construction phase, level of activity, and prevailing wind and weather conditions. All fugitive dust emissions from construction activities would be localized and temporary in nature. Noise emanating from construction equipment would be localized, short-term, and intermittent during machinery operations. The Elkhorn Ranchlands are approximately 1 to 2 miles away from Alternative A, the TRNP – Elkhorn Ranch Unit is approximately 3 miles away, and the National Historic District is approximately 2 to 3 miles away. Due to the distance, noise and fugitive dust is anticipated to dissipate, so impacts on the Elkhorn Ranchlands, TRNP – Elkhorn Ranch Unit, and National Historic District would be negligible or minor.

Temporary impacts on the DPG would be expected during construction activities. However, these impacts would be minimized with implementation of BMPs, such as installing temporary erosion-control measures (e.g., silt fencing, straw bales, slope breakers, trench breakers, erosion-control fabric, mulch). Therefore, impacts on the DPG during construction would be minor.

Would MAs be affected?

Alternative A would not be developed within MA 6.1. Therefore, no impacts on this MA would be expected. The portion of Alternative A that follows the existing roadway crosses through MAs 3.51A, 3.51B, and 3.65, while the new roadway portion would cross through MA 4.22. The following references the standards and guidelines listed in the Land and Resource Management Plan (USFS 2001b) for MAs 3.51A, 3.51B, 3.65, and 4.22:

- For MAs 3.51A and 3.51B, construction of new roadway across bighorn sheep habitat is prohibited, with exception to valid existing rights, such as oil and gas leases. Since no new roadways would be constructed through MAs 3.51A or 3.51B, Alternative A would be in compliance with this guideline listed in the Land and Resource Management Plan.
- For MA 4.22, construction of fords, bridges, and roads is allowed, only if no suitable alternative exists (Little Missouri River only). As previously discussed in **Chapter 3**, the alternatives have been rigorously evaluated, and those determined to be reasonable and feasible with respect to meeting the project's purpose and need were presented to agencies and the public. After considering public and agency input, Alternative A was carried forward for further consideration as a suitable alternative. Therefore, Alternative A would be in compliance with this standard listed in the Land and Resource Management Plan.
- For MAs 3.51A, 3.51B, 3.65, and 4.22, a site-specific roads analysis (including public involvement) is required to be performed prior to making any decisions on road construction, reconstruction, maintenance, and decommissioning. Since this EIS (including public involvement efforts) is being conducted for the project, Alternative A would be in compliance with this guideline listed in the Land and Resource Management Plan.

2 There may be locations along the existing roadway segments where ROW and/or easements have been previously acquired. The actual acquisition of ROW or easements for these areas would be reduced by the amount of ROW or easement that currently exists; this determination would be made during the final design of the project.

3 *Ibid.*

Would the alternatives be consistent with county planning?

Alternative A would provide an efficient and reliable connection between the roadways on the east and west sides of the river and improve connectivity and system linkage between Billings County and Golden Valley County roadway networks. Local users (e.g., residents, industries, recreation, emergency services) would no longer be required to cross the river using fords or travel approximately 70 miles to the next nearest bridge, which would reduce time and fuel costs and improve emergency response times. Alternative A would be consistent with the goals, objectives, and policies listed in the Billings and Golden Valley counties comprehensive plans.

5.2.3.2. Alternative K (All Options)

Would land uses be affected?

Temporary impacts during construction of Alternative K (all options) would be similar to those described for Alternative A.

The majority of Alternative K, Option 1 (Preferred Alternative) (i.e., approximately 6.2 of the total 8.3 miles); Alternative K, Option 2 (i.e., approximately 5.8 of the total 8.4 miles); and Alternative K, Option 3 (i.e., approximately 7.9 of the total 9.9 miles) would closely follow an existing roadway alignment. Therefore, it is not anticipated that the disturbance of existing lands, the majority of which are grasslands, within the project corridors would result in a trend toward modification of existing land use patterns.

Would private lands be affected?

Impacts on private lands from Alternative K (all options) would be similar to those described for Alternative A. As previously discussed in **section '3.3. What are the alternatives for the project?' on page 26**, the following are the ROW/easements that would need to be acquired from private landowners:[4]

- Alternative K, Option 1 (Preferred Alternative)
  - Approximately 62 acres of permanent ROW
  - Approximately 13 acres of temporary easements
- Alternative K, Option 2
  - Approximately 55 acres of permanent ROW
  - Approximately 1 acre of temporary easements
- Alternative K, Option 3
  - Approximately 61 acres of permanent ROW
  - Approximately 11 acres of temporary easements

Would public lands be affected?

As previously discussed in **section '3.3. What are the alternatives for the project?' on page 26**, the following are the ROW/easements that would need to be acquired from the North Dakota Department of Trust and USFS:[5]

- Alternative K, Option 1 (Preferred Alternative)
  - Approximately 15 acres of permanent ROW would need to be acquired from the North Dakota Department of Trust.
  - Approximately 88 acres of permanent easements would need to be acquired from the USFS.
- Alternative K, Option 2
  - Approximately 15 acres of permanent ROW would need to be acquired from the North Dakota Department of Trust.
  - Approximately 94 acres of permanent easements would need to be acquired from the USFS.
- Alternative K, Option 3
  - Approximately 15 acres of permanent ROW would need to be acquired from the North Dakota Department of Trust.
  - Approximately 125 acres of permanent easements would need to be acquired from the USFS.

Similar to Alternative A, the Maah Daah Hey Trail, Elkhorn Ranchlands, TRNP—Elkhorn Ranch Unit, National Historic District, NDGFD lands, and North Dakota Department of Trust lands would not be directly impacted from Alternative K (all options). These public lands could be temporarily impacted by noise and fugitive dust emissions. Construction would generate fugitive dust emissions, which would be greatest during initial site-preparation activities and would vary from day to day, depending on the construction phase, level of activity, and prevailing wind and weather conditions. All fugitive dust emissions from construction activities would be localized and temporary in nature. Noise emanating from construction equipment would be localized, short-term, and intermittent during machinery operations.

The Elkhorn Ranchlands are approximately 2 to 3 miles away from Alternative K, Option 1 (Preferred Alternative); 4 to 5 miles away from Alternative K, Option 2; and 6 to 7 miles away from Alternative K, Option 3. The TRNP—Elkhorn Ranch Unit is approximately 3 to 4 miles away from Alternative K, Option 1 (Preferred Alternative); 4 to 5 miles away from Alternative K, Option 2; and 5 to 6 miles away from Alternative K, Option 3. The National Historic District is approximately 1 to 2 miles away from Alternative K, Option 1 (Preferred Alternative); 2 to 3 miles away from Alternative K, Option 2; and 3 to 4 miles away from Alternative K, Option 3. Due to the distance, noise and fugitive dust is anticipated to dissipate, so impacts on the Elkhorn Ranchlands, TRNP—Elkhorn Ranch Unit, and National Historic District from Alternative K (all options) would be negligible or minor.

Upon completion of construction activities, disturbed areas would be restored as near as practicable to the original contours. Therefore, impacts on the DPG upon completion of construction would be minor.

Would MAs be affected?

Alternative K (all options) would not be developed within MAs 3.51A or 3.51B. Therefore, no impacts on these MAs would be expected. The existing roadway under Alternative K (all options) crosses through MAs 3.65 and 6.1, and the new roadways under Alternative K, Option 2 and Alternative K, Option 3 would cross through MA 4.22. The following references the standards and guidelines listed in the Land and Resource Management Plan (USFS 2001b) for MAs 3.65, 4.22, and 6.1:

- For MA 4.22, construction of fords, bridges, and roads is allowed, only if no suitable alternative exists (Little Missouri River only). As previously discussed in **Chapter 3**, the alternatives have been rigorously evaluated, and those determined to be reasonable and feasible with respect to meeting the project's purpose and need were presented to agencies and the public. After considering public and agency input, Alternative K, Option 2 and Alternative K, Option 3 were carried forward for further consideration as suitable alternatives. Therefore, Alternative K, Option 2 and Alternative K, Option 3 would be in compliance with this standard listed in the Land and Resource Management Plan.
- For MAs 3.65, 4.22, and 6.1, a site-specific roads analysis (including public involvement) is required to be performed prior to making any decisions on road construction, reconstruction, maintenance, and decommissioning. Since this EIS (including public involvement efforts) is being conducted for the project, Alternative K (all options) would be in compliance with this guideline listed in the Land and Resource Management Plan.

Would county planning be affected?

Impacts on Billings and Golden Valley counties planning from Alternative K (all options) would be the same as those described for Alternative A.

5.2.4. What mitigation measures and BMPs would be implemented?

During the initial project design phase, impacts on land use and the DPG were minimized to the maximum extent practicable. For all of the alternatives, the alignment would follow an existing roadway as closely as possible to minimize new roadway construction.

Prior to construction activities, the contractor would be required to obtain a North Dakota Pollutant Discharge Elimination System (NDPDES) permit and develop a SWPPP. The SWPPP would outline phasing for erosion- and sediment-controls, stabilization measures, pollution-prevention measures, and prohibited discharges. The SWPPP would also include dust-control measures and BMPs to minimize erosion, sedimentation, and stormwater runoff (e.g., fiber rolls, straw waddles, erosion mats, silt fencing, turbidity barriers, mulching, filter fabric fencing, sediment traps and ponds, surface water interceptor swales, ditches). The SWPPP would require that secure and contained refueling areas are located away from surface waters, maintenance and monitoring measures are implemented to reduce the potential for spills and leaks, and the amount of stockpiled material is minimized and stored away from surface waters. In addition, waste material would be disposed of in accordance with state and federal laws and in a manner that avoids impacts on the Little Missouri River channel.

Upon completion of construction activities, Billings County would implement dust control, such as applying water, calcium chloride, and/or magnesium chloride to the roadway, as necessary and when feasible to prevent traffic hazards, damages, and nuisances to adjacent property owners. In addition, the county uses clay in their surface aggregate to help control dust.

5.3. Prime and Unique Farmlands

5.3.1. What prime and unique farmlands are in the project areas?

Prime farmland, unique farmland, and farmland of statewide or local importance are provided protection by the Farmland Protection Policy Act (FPPA) of 1981 (7 U.S.C. § 4201 *et seq.*). The NRCS is responsible for overseeing compliance with the FPPA and has developed the rules

Prime farmland is defined as land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops, and is also available for these uses. Unique farmland is defined as land that is used for protection of specific high-value food, feed, and forage crops. Farmland of statewide or local importance can be nearly prime or designated by law or an agency to be important.

4 *Ibid.*

5 *Ibid.*

and regulations for implementation of the Act. For projects that have a linear- or corridor-type configuration connecting two distant points and crossing several different tracts of land, an NRCS-CPA-106 Form, Farmland Conversion Impact Rating for Corridor Type Projects is prepared. The NRCS-CPA-106 Form provides a ranked score based on a variety of metrics, including total acres of prime or unique farmland, percent of the corridor that is being farmed, amount of on-farm investments, and corridor compatibility with agricultural use. Alternatives can receive a score of up to 260, where a higher score indicates greater impacts on farmland; the relative impacts of alternatives on farmlands can therefore be compared.

Alternative A and Alternative K (all options) contain farmland of statewide importance within the project areas. No prime or unique farmland is located within the project areas. Please refer to **'Figure 35, Alternative A Farmlands'** and **'Figure 36, Alternative K, Option 1 (Preferred Alternative) Farmlands'**, and **'Figure 37, Alternative K, Option 2 Farmlands'**, and **'Figure 38, Alternative K, Option 3 Farmlands' on page 48**.

5.3.2. What happens if the Little Missouri River crossing is not constructed?

Under Alternative L (no-build), no impacts on prime or unique farmlands would be expected.

5.3.3. What happens if the Little Missouri River crossing is constructed?

5.3.3.1. Alternative A

Approximately 16 acres of farmland of statewide importance would be permanently converted to a transportation network. Temporary impacts on farmlands of statewide importance would be expected during construction activities. However, these impacts would be minimized with implementation of BMPs, such as installing temporary erosion-control measures (e.g., fiber rolls, straw waddles, erosion mats, silt fencing, and turbidity barriers). An NRCS-CPA-106 Form was not completed for Alternative A, because it is not identified as the Preferred Alternative. If Alternative A is later determined to be the Preferred Alternative, an NRCS-CPA-106 Form would be completed and coordination with the NRCS would occur.

5.3.3.2. Alternative K (All Options)

Impacts on prime and unique farmlands from Alternative K (all options) would be similar to those described for Alternative A. For Alternative K, Option 1 (Preferred Alternative), approximately 119 acres of farmland of statewide importance would be permanently converted to a transportation network. However, the alignment ultimately constructed within the expanded area would likely result in less impacts than identified in this EIS. An NRCS-CPA-106 Form was completed for Alternative K, Option 1 (Preferred Alternative). Please refer to **'Appendix H. NRCS-CPA-106 Form'**. As stated in the form, the approximate 119 acres of farmland of statewide importance that would be permanently converted as a result of Alternative K, Option 1 equates to 0.002 percent of the farmland in Billings County. Alternative K, Option 1 received a total score of 126 out of 260.

For Alternative K, Option 2, approximately 48 acres of farmland of statewide importance would be permanently converted to a transportation network. For Alternative K, Option 3, approximately 15 acres of farmland of statewide importance would be permanently converted to a transportation network. An NRCS-CPA-106 Form was not completed for Alternative K, Option 2 or Alternative K, Option 3, because they are not identified as the Preferred Alternative. If either Alternative K, Option 2 or Alternative K, Option 3 is later determined to be the Preferred Alternative, an NRCS-CPA-106 Form would be completed and coordination with the NRCS would occur.

5.3.4. What mitigation measures and BMPs would be implemented?

During the initial project design phase, impacts on prime and unique farmlands and farmland of statewide importance were minimized to the maximum extent practicable. For all of the alternatives, the alignment would follow an existing roadway as closely as possible to minimize conversion of farmlands.

Prior to construction activities, the contractor would be required to obtain an NDPDES permit and develop a SWPPP. The SWPPP would outline phasing for erosion- and sediment-controls, stabilization measures, pollution-prevention measures, and prohibited discharges. The SWPPP would also include BMPs to minimize erosion, sedimentation, and stormwater runoff (e.g., fiber rolls, straw waddles, erosion mats, silt fencing, turbidity barriers, mulching, filter fabric fencing, sediment traps and ponds, surface water interceptor swales, ditches). In addition, waste material would be disposed of in accordance with state and federal laws.

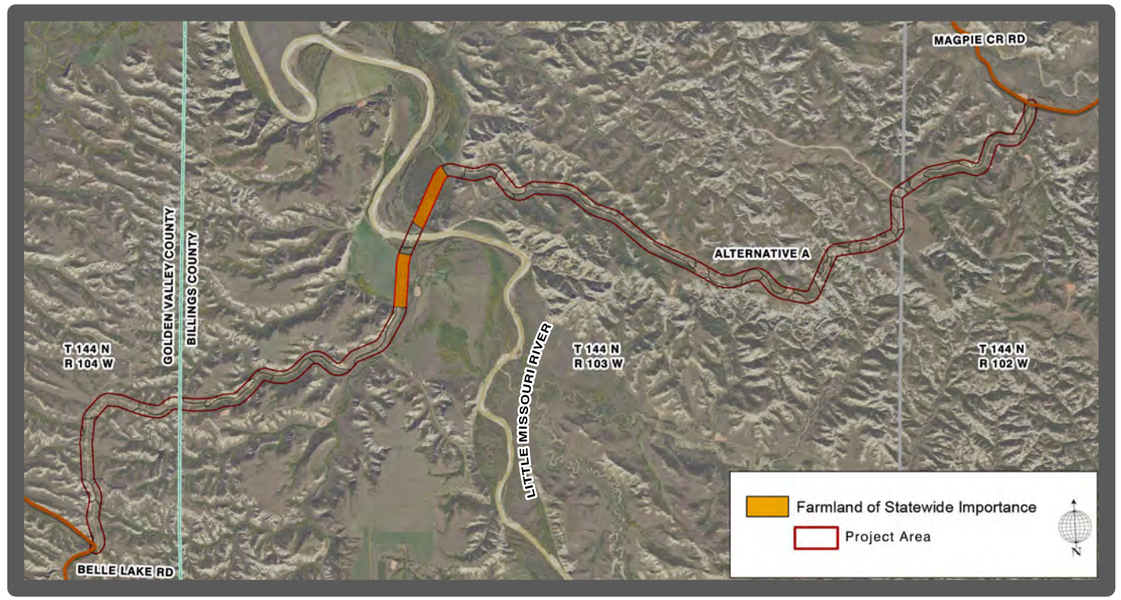


Figure 35, Alternative A Farmlands

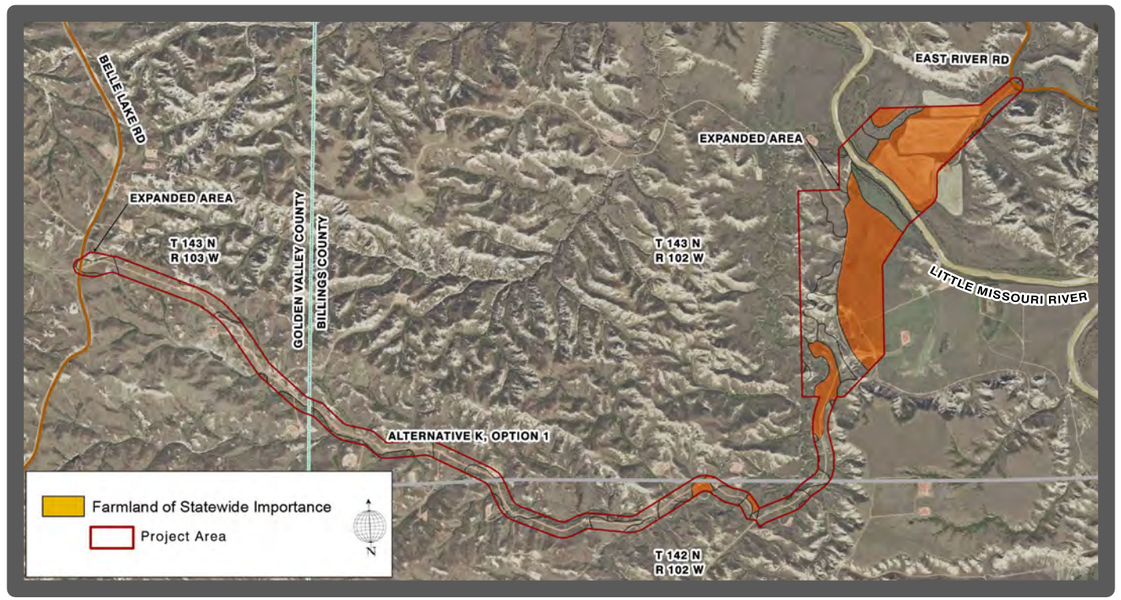


Figure 36, Alternative K, Option 1 (Preferred Alternative) Farmlands

Figure 37, Alternative K, Option 2 Farmlands

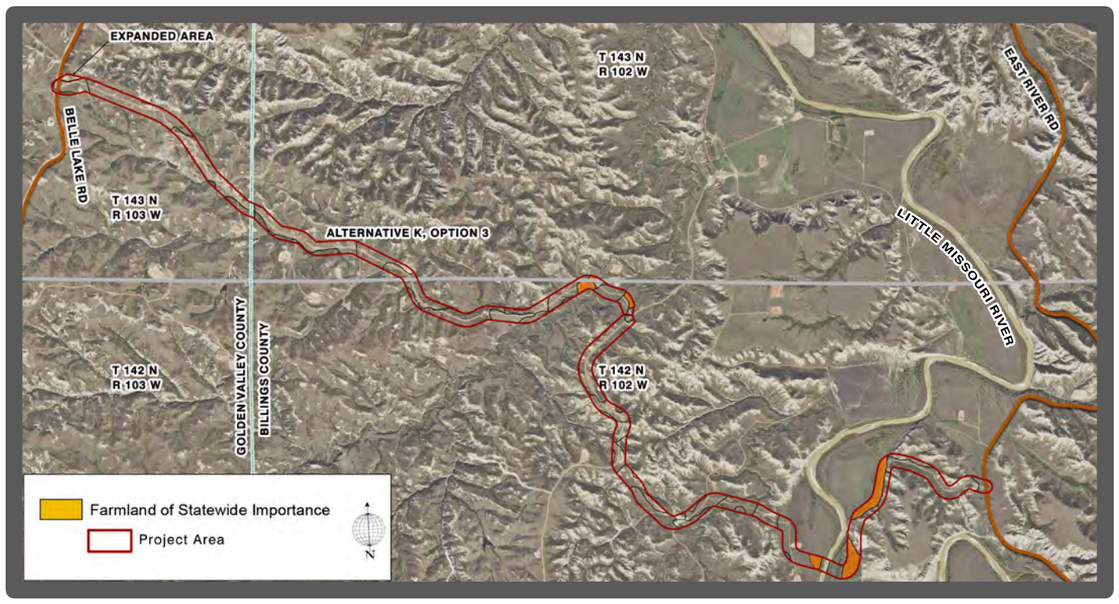


Figure 38, Alternative K, Option 3 Farmlands

5.4. Social

This section describes the social and community characteristics of the study area, as well as the potential impacts on people and communities within the study area from the project. This section includes discussion of the following:

- Travel patterns
- Schools
- Recreation areas
- Churches and businesses
- Police and fire protection.

5.4.1. What are the travel patterns in the study area?

This subsection discusses the existing transportation network and traffic conditions within the study area. Information regarding the existing traffic conditions was derived from the Little Missouri River Crossing Traffic Operations Memorandum developed by KLJ (2015).

The transportation system within the study area is composed of rural, unpaved gravel/graded roads, primitive roadways, and trails. There are no paved roadways within the study area except for US Highway 85 and ND-16. The unpaved rural roadways provide local access and connectivity within the study area, but minimal mobility or connectivity benefit to regional traffic movements. The major roadways that provide access to the study area include North Dakota Highway 68 (ND-68) to the north, US Highway 85 and North Dakota Highway 200 (ND-200) to the east, I-94 to the south, and ND-16 to the west.

Traffic generated within the study area consists primarily of oil and gas-related, recreational, agricultural, and local traffic. Most of the existing roadways within the study area carry less than 100 vehicles per day (approximately 50 percent are heavy trucks). Travel patterns throughout the study area are generally concentrated on Belle Lake Road, Forest Highway 2, County Road 50, Magpie Creek Road, Blacktail Road, East River Road (north segment), East River Road (south segment), and Franks Creek Road. Please refer to **'Figure 39, Roadways' on page 49** for an overview of these roadways and **Table 3** for a summary of the 2014 traffic conditions on these roadways. Traffic on these roadways is expected to grow approximately 2.5 percent each year. This growth rate is consistent with typical NDDOT projections for rural infrastructure within oil and gas-producing areas of North Dakota.

How the project area is accessed is a social consideration. Shown above are examples of area gravel roads, private road access, and a ford location.

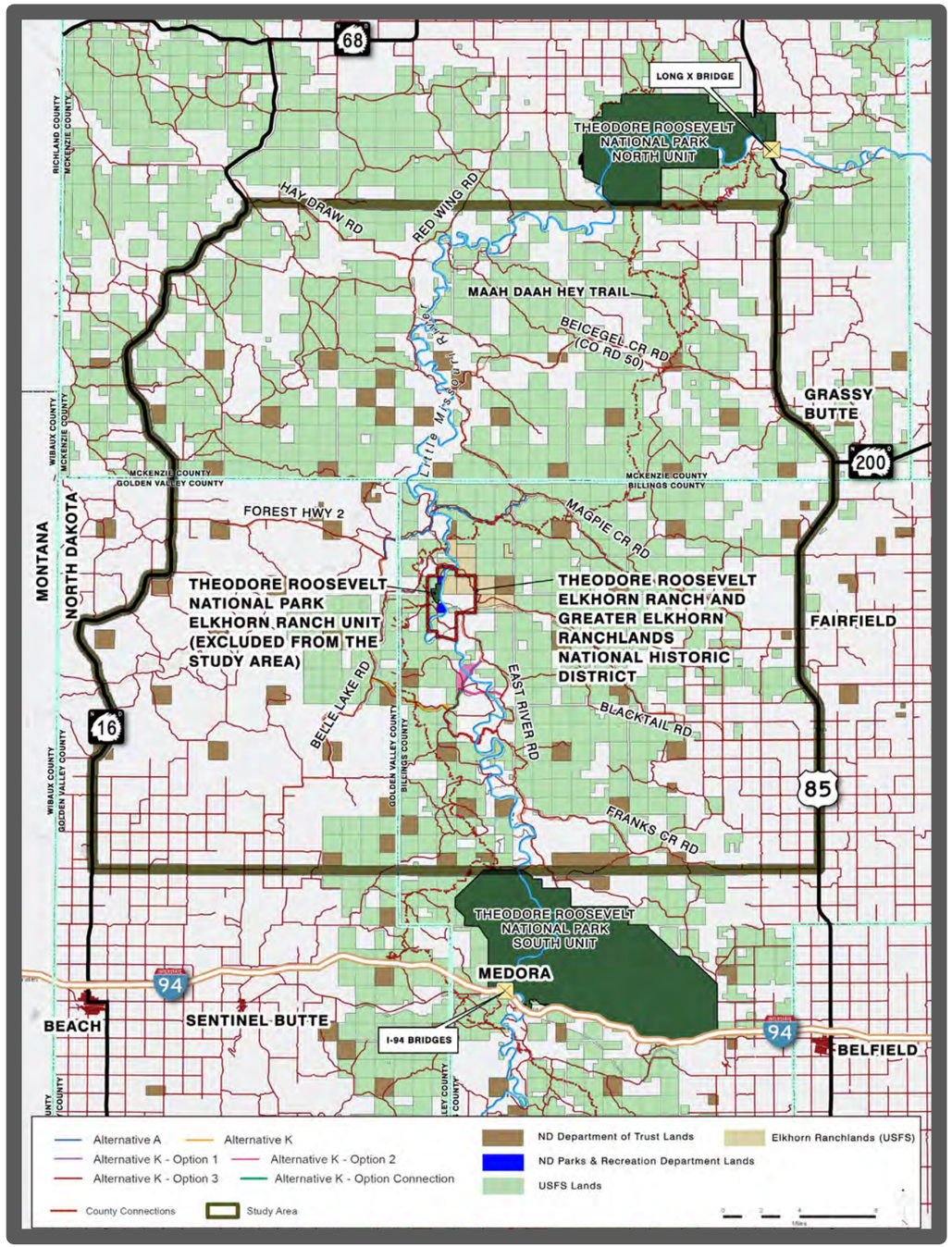


Figure 39, Roadways

Table 3, 2014 Traffic Conditions

Roadway	Vehicles Per Day*
Belle Lake Road	95
Forest Highway 2	75
County Road 50	165
Magpie Creek Road	80
Blacktail Road	115
East River Road (North Segment)	52
East River Road (South Segment)	214
Franks Creek Road	138

**Approximately 50 percent were heavy trucks*

There are two bridges that provide crossing over the Little Missouri River near the study area: the Long X Bridge, northeast of the study area, and the I-94 bridges, south of the study area. The driving distance between the two existing bridges is approximately 70 miles. There are 19 identified fords within the study area, which are sometimes crossed by vehicles. However, the fords are inaccessible for some types of vehicles, unreliable depending on seasonal conditions, and often require landowner permission to cross. Additionally, some of the fords have only one roadway on one side of the river and a two-track trail on the other side of the river.

5.4.2. What school districts are in the study area?

The Billings County School District has two pre-kindergarten through eighth grade public schools. There are two public elementary schools and one public high school in Golden Valley County (Public School Review Undated a). None of these public schools in Billings and Golden Valley counties are located within the vicinity of any of the alternatives.

EO 13045, Protection of Children from Environmental Health Risks and Safety Risks, states that each federal agency "(a) shall make it a high priority to identify and assess environmental health risks and safety risks that may disproportionately affect children and (b) shall ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks."

5.4.3. What recreation areas are in the study area?

Major tourist and recreation areas within and near the study area include the TRNP (North, South, and Elkhorn Ranch units), Elkhorn Ranchlands, Theodore Roosevelt Elkhorn Ranch and Greater Elkhorn Ranchlands National Historic District, LMNG, Little Missouri River (State Scenic River), and Maah Daah Hey Trail. Further descriptions of these recreation areas are as follows:

- TRNP—There are three units of the TRNP, including the North, South, and Elkhorn Ranch units. The TRNP–North Unit and TRNP–South Unit are located adjacent to the study area. The TRNP–Elkhorn Ranch Unit is located near the center of the study area; however, it is excluded from the study area. The TRNP preserves land that profoundly affected President Theodore Roosevelt. Numerous recreational activities are provided, including camping, hiking, picnicking, horseback riding, water sports, and backcountry camping. In addition, there are numerous species of wildlife within the TRNP, including bison (NPS Undated a, NPS 2016).
- Elkhorn Ranchlands— The viewshed of the TRNP–Elkhorn Ranch Unit overlooks the Elkhorn Ranchlands. The Elkhorn Ranchlands comprise 5,200 acres near the northern end of the Medora Ranger District of the LMNG, in the center of the study area. In 2007, the Elkhorn Ranchlands were acquired by the USFS, in part to restore the viewshed as seen from Theodore Roosevelt's Elkhorn Ranch site. The Elkhorn Ranchlands support multiple uses including recreational activities (e.g., driving for pleasure, sight-seeing) (USFS 2015).

Elkhorn Ranchlands viewshed

Theodore Roosevelt Elkhorn Ranch and Greater Elkhorn Ranchlands National Historic District

- Theodore Roosevelt Elkhorn Ranch and Greater Elkhorn Ranchlands National Historic District—In 2012, the Theodore Roosevelt Elkhorn Ranch and Greater Elkhorn Ranchlands were added to the NRHP as a National Historic District. The National Historic District comprises 4,402 acres of land in the center of the study area. Within the boundaries of the National Historic District, there is public land managed by the NDPRD, USFS, and NPS, as well as privately-owned land (USFS 2015). Blacktail Road also runs through the National Historic District. It is a federal aid route and major roadway in Billings County that receives regular maintenance.
- LMNG—The LMNG is located in western North Dakota and is the largest grassland in the country. The LMNG was once part of the Custer National Forest, but is now a part of the DPG, a National Forest unit consisting entirely of National Grasslands. The LMNG runs throughout the central portion of the study area. The LMNG provides opportunities for camping, hiking, picnicking, horseback riding, and hunting (USDA Undated).
- Little Missouri River (State Scenic River)—The Little Missouri River is designated as a State Scenic River that runs north, through the center of the study area. The Little Missouri River provides fishing, rafting, and canoeing (USFS 2015).
- Maah Daah Hey Trail—The Maah Daah Hey Trail is approximately 140 miles long and runs from the USFS CCC Campground near the TRNP–North Unit, through the TRNP–South Unit, ending at the USFS Burning Coal Vein Campground. The trail runs through the center of the study area and is open to horseback riders, hikers, and bicyclists (NPS 2016, NDPRD Undated a).

5.4.4. What churches and businesses are in the study area?

The study area is in a rural part of western North Dakota. There are three unincorporated communities within the study area: Fairfield, on the eastern boundary of the study area; Gorham, near the eastern boundary of the study area in Billings County; and Trotters, on the western boundary of the study area in Golden Valley County. There is one church located immediately south of Fairfield (i.e., St. Demetrius Church) and the following businesses located in Fairfield: Four Corners Café; Club 85; Fairfield Post Office; various welding, construction, and trucking businesses; and J Lazy J Ranch. There are no churches or businesses located within Gorham or Trotters. Other businesses in the study area include rural oilfield, farming, and ranching operations.

5.4.5. What police and fire protection services are in the study area?

Police protection is provided to the study area by the Sheriff's Offices in Billings and Golden Valley counties. As previously discussed in **Chapter 2**, there are five fire districts within the study area (i.e., Billings County, Central-Beach, Grassy Butte, McKenzie County, and Sentinel Butte). The USFS has primary jurisdiction over wild fires in the area of the TRNP and USFS-managed land (i.e., DPG). Western North Dakota (including the study area) is known for its grass fire potential due to the semi-arid climate of the area. Mutual aid and resource sharing between the fire districts, which lend assistance across jurisdictional boundaries during times of emergency, are common.

5.4.6. What are the highway, traffic, and overall public safety concerns in the study area?

The study area is situated in a rural area, far from emergency services. At times, emergency service personnel are unsure of which side of the Little Missouri River a call for service is located and are forced to backtrack to an existing bridge to reach their destination, which adds to emergency response times. Alternately, emergency services, in addition to other vehicles, attempt to cross the river using unimproved fords. These fords pose safety concerns because they are unreliable due to seasonal conditions and inaccessible to many types of vehicles. In addition, existing roadways are narrow (i.e., typically less than 24 feet) and have limited sight distance due to sharp curves and steep grades.

5.4.7. What happens if the Little Missouri River crossing is not constructed?

Would travel patterns and accessibility be affected?

Under Alternative L (no-build), the efficiency of the transportation system for existing users and local accessibility would not be improved. Local vehicles would continue to use fords (when possible in favorable weather conditions), while other vehicles that could not use fords would be required to travel approximately 70 highway miles to the next nearest crossing. An annual baseline traffic growth rate of 2.5 percent would be expected under Alternative L (no-build condition), which is consistent with typical NDDOT projections for rural infrastructure within oil and gas producing areas of North Dakota.

Would schools be affected?

Buses transporting students would continue to use the existing bridges to get across the river. However, in the event that buses were required to transport students from one side of the river to the other within the study area, the buses would be required to travel approximately 70 miles to the next nearest bridge.

Would recreation areas be affected?

Local access to some of the major recreational and tourist facilities in the study area, such as the TRNP–Elkhorn Ranch Unit and Maah Daah Hey Trail, would not be improved. Recreational enthusiasts and tourists would continue to travel approximately 70 highway miles to the nearest bridge to get to these facilities, depending on which side of the river they were on.

Would churches and businesses be affected?

Local access to Fairfield from the western side of the river would not be improved. Locals traveling to the churches and/or businesses from the western side of the river to Fairfield would continue to cross the river using fords (when possible in favorable weather conditions) or travel approximately 70 highway miles to the nearest bridge. Local access for rural business operations would not be improved for operators and customers that would be able to cross the river locally, instead of using fords or travelling approximately 70 highway miles to the nearest bridge.

Would police and fire protection services be affected?

Long-term, adverse impacts would be expected. Emergency vehicles (either locally or through mutual aid) who are required to cross the river during emergency situations would continue to be restricted to using fords (when possible in favorable weather conditions) or travelling approximately 70 highway miles to the nearest bridge, resulting in continued delayed response times.

How would highway, traffic, and overall public safety compare?

Long-term, adverse impacts would be expected. Local users would continue to cross the river using fords, which pose safety concerns because they are unreliable due to seasonal conditions and inaccessible to many types of vehicles.

5.4.8. What happens if the Little Missouri River crossing is constructed?

5.4.8.1. Alternative A

Would travel patterns and accessibility be affected?

Upon completion of Alternative A, the efficiency and reliability of the transportation system for existing users and local accessibility would be improved. Alternative A would provide an efficient, reliable connection between the roadways on the east and west sides of the Little Missouri River and improve the connectivity and system linkage between Billings and Golden Valley County roadway networks. Local users could cross the river using the new bridge, rather than using fords or travelling approximately 70 miles to the next nearest bridge.

Alternative A is not expected to generate new traffic. An additional 1 percent would be added to the 2.5-percent annual baseline traffic growth rate to account for the redistribution of local trips that may be attracted to the new bridge. Therefore, under Alternative A, a total annual traffic growth rate of 3.5 percent would be expected for roads associated with the alternative and adjacent roadways.

During roadway and bridge construction, speed limits within construction zones would be reduced. However, the reduction in speed limits would result in minimal impacts on the travel patterns of drivers.

Would schools be affected?

Buses transporting students would continue to use the existing bridges to get across the river. However, in the event that buses were required to transport students from one side of the river to the other within the study area, a beneficial impact would be expected, as the buses could cross the river locally instead of having to travel approximately 70 miles to the next nearest bridge.

Would recreation areas be affected?

Upon completion of Alternative A, local access to some of the major recreational and tourist facilities in the study area, such as the TRNP–Elkhorn Ranch Unit and Maah Daah Hey Trail, would be improved. Recreational enthusiasts and tourists would be able to cross the river locally, instead of travelling approximately 70 highway miles to the nearest bridge.

Alternative A would improve an existing roadway, Magpie Creek Road. Magpie Creek Road runs parallel to, and in one location crosses, the Maah Daah Hey Trail. Therefore, Alternative A would also run parallel to, and have one crossing of, the Maah Daah Hey Trail. Please refer to **'Figure 39, Roadways' on page 49**.

During roadway construction, notice of temporary construction activities would be provided to recreationists using the trail; appropriate safety mechanisms (e.g., fencing, signs) would be provided, as necessary; and the current trail route would be maintained through the construction work zone. During bridge construction, short-term impacts on recreationists using the Little Missouri River would be expected, as portions of the river within the immediate project area would be closed. Notice of temporary construction activities would be provided to recreationists using the Little Missouri River and appropriate safety mechanisms (e.g., fencing, signs) would be provided, as necessary, to direct recreationists around the construction work zone. Potential impacts resulting from the temporary closure of the Little Missouri River are anticipated to be minor.

The Maah Daah Hey Trail would be temporarily impacted by noise and fugitive dust emissions generated during construction. Construction activities would generate particulate matter emissions as fugitive dust and noise from ground-disturbing activities. Fugitive dust emissions from construction activities would be greatest during initial site-preparation activities and would vary from day to day, depending on the construction phase, level of activity, and prevailing wind and weather conditions. All fugitive dust emissions from construction activities would be localized and temporary in nature. Noise emanating from construction equipment would be localized, short-term, and intermittent during machinery operations. The Elkhorn Ranchlands are approximately 1 to 2 miles away from Alternative A, the TRNP–Elkhorn Ranch Unit is approximately 3 miles away, and the National Historic District is approximately 2 to 3 miles away. Due to the distance, noise and fugitive dust is anticipated to dissipate, so impacts on the Elkhorn Ranchlands, TRNP–Elkhorn Ranch Unit, and National Historic District would be negligible or minor.

Would churches and businesses be affected?

Local access to Fairfield from the western side of the river would be improved. Locals traveling to churches and/or businesses from the western side of the river to Fairfield would be able to cross the river locally, instead of using fords or travelling approximately 70 highway miles to the nearest bridge. Local access for rural business operations would also be improved for operators and customers that would be able to cross the river locally, instead of using fords or travelling approximately 70 highway miles to the nearest bridge.

Would police and fire protection services be affected?

Long-term, beneficial impacts would be expected. Emergency response times would be improved, as emergency vehicles would be able to cross the river locally, instead of crossing the river using fords or travelling approximately 70 miles to the next nearest crossing.

How would highway, traffic, and overall public safety compare?

Upon completion of Alternative A, the existing roadway would be improved to meet current design standards and the reliability of the transportation system for existing users would be improved. It is anticipated that fewer vehicles would cross the river using unimproved fords, relieving some of the safety concerns posed by these unreliable and/or inaccessible crossings. The improved reliablility fo the transportation system is anticipated to have a beneficial impact on emergency response times.

No impacts on highway, traffic, or overall public safety would be expected during roadway or bridge construction. During roadway construction, speed limits within construction zones would be reduced. During bridge construction, portions of the Little Missouri River within the immediate project area would be closed.

5.4.8.2. Alternative K (All Options)

Impacts on travel patterns and accessibility; schools; recreation areas; churches; businesses; police and fire protection services; and highway, traffic, and overall public safety from Alternative K (all options) would be the same as those described for Alternative A. Alternative K (all options) would improve an existing roadway, Forest Service Road 722, which crosses the Maah Daah Hey Trail in one location. Therefore, Alternative K (all options) would also have one crossing of the Maah Daah Hey Trail. Please refer to **'Figure 39, Roadways' on page 49**. During roadway construction, notice of temporary construction activities would be provided to recreationists using the trail; appropriate safety mechanisms (e.g., fencing, signs) would be provided, as necessary; and the current trail route would be maintained through the construction work zone.

Similar to Alternative A, the Maah Daah Hey Trail would be temporarily impacted by noise and fugitive dust emissions generated during construction. Construction activities would generate particulate matter emissions as fugitive dust and noise from ground-disturbing activities. Fugitive dust emissions from construction activities would be greatest during initial site-preparation activities and would vary from day to day, depending on the construction phase, level of activity, and prevailing wind and weather conditions. All fugitive dust emissions from construction activities would be localized and temporary in nature. Noise emanating from construction equipment would be localized, short-term, and intermittent during machinery operations. The Elkhorn Ranchlands are approximately 2 to 3 miles away from Alternative K, Option 1 (Preferred Alternative); 4 to 5 miles away from Alternative K, Option 2; and 6 to 7 miles away from Alternative K, Option 3. The TRNP–Elkhorn Ranch Unit is approximately 3 to 4 miles away from Alternative K, Option 1 (Preferred Alternative); 4 to 5 miles away from Alternative K, Option 2; and 5 to 6 miles away from Alternative K, Option 3. The National Historic District is approximately 1 to 2 miles away from Alternative K, Option 1 (Preferred Alternative); 2 to 3 miles away from Alternative K, Option 2; and 3 to 4 miles away from Alternative K, Option 3. Due to the distance, noise and fugitive dust is anticipated to dissipate, so impacts on the Elkhorn Ranchlands, TRNP–Elkhorn Ranch Unit, and National Historic District from Alternative K (all options) would be negligible or minor

5.4.9. What mitigation measures and BMPs would be implemented?

Prior to construction activities, the contractor would be required to obtain an NDPDES permit and develop a SWPPP. The SWPPP would outline phasing for erosion- and sediment-controls, stabilization measures, pollution-prevention measures, and prohibited discharges. The SWPPP would also include dust-control measures and BMPs to minimize erosion, sedimentation, and stormwater runoff (e.g., fiber rolls, straw waddles, erosion mats, silt fencing, turbidity barriers, mulching, filter fabric fencing, sediment traps and ponds, surface water interceptor swales, ditches). In addition, waste material would be disposed of in accordance with state and federal laws and in a manner that avoids impacts on the Little Missouri River channel.

Upon completion of construction activities, Billings County would implement dust control, such as applying water, calcium chloride, and/or magnesium chloride to the roadway, as necessary and when feasible to prevent traffic hazards, damages, and nuisances to adjacent property owners. In addition, the county uses clay in their surface aggregate to help control dust.

Access for area cattle ranchers is an economical consideration.

5.5. Economics

5.5.1. What are the employment characteristics of the study area?

Employment data for 2016 and 2017 are not yet available for Billings or Golden Valley counties; therefore, data from the US Department of Commerce, Bureau of Economic Analysis 2015 estimates are used.

In Billings and Golden Valley counties, there were 901 and 1,379 jobs in 2015, respectively. In Billings County, the three largest industries were Farming, Government and Government Enterprises, and Transportation and Warehousing. In Golden Valley County, the three largest industries were Farming, Government and Government Enterprises, and Health Care and Social Assistance (BEA 2015). Please refer to **'Table 4, Employment by Major Industries' on page 52** for a summary of employment data for the major industries in Billings and Golden Valley counties.

5.5.2. What are the major industries in the study area?

The major industries in the study area include agriculture, oil and gas development and production, and recreation/tourism.

The US Department of Agriculture National Agricultural Statistics Service conducted a Census of Agriculture in 2012, which provides a comprehensive picture of American agriculture in 2012. According to the Census, Billings County contained 197 farms (approximately 722,275 acres) that primarily produced cattle, forage, and wheat. The market value of saleable agricultural products produced in Billings County was approximately $36.7 million. Golden Valley County contained 251 farms (approximately 562,453 acres) that primarily

produced forage, cattle, and wheat. The market value of saleable agricultural products produced in Golden Valley County was approximately $59.6 million (USDA 2012).

There are numerous oil and gas developments throughout the study area. Hydrocarbon production began in Billings County in 1953 during the first oil boom. The first oil boom began in the early 1950s and peaked in the 1960s. Golden Valley County began producing oil in 1969 right before the second oil boom. The second oil boom began in the 1970s and peaked in the 1980s. Due to the advancement in deep HDD techniques in the Bakken and Three Forks formations, the third oil boom began in the early 2000s and peaked in 2012. In 2014, North Dakota became the second-largest oil producing state in the United States (NDDMR 2016, SHSND 2016).

From 2009 to 2015, annual crude oil production in North Dakota increased approximately 442.2 percent (from 79.7 to 432.3 million barrels) (NDDMR 2015). The price per barrel of oil began falling in 2015 due to a worldwide surplus in the crude oil supply. From 2013 to 2014, there was an approximate 21 percent annual increase in oil production, but from 2014 to 2015, there was only an approximate 8.9 percent annual increase in oil production. By 2015 to 2016, there was an approximate 12 percent annual decrease in oil production. Oil production has leveled off into 2017. Between January and October 2017,[6] there was a total of approximately 322.3 million barrels of oil produced, which is approximately 1 percent more than what was produced between January and October in 2016 (approximately 320.0 million barrels) (NDDMR 2015, NDDMR 2016, NDDMR 2018).

Although recent trends in the oil and gas industry have significantly reduced new well development, United States crude oil production is forecasted to average 9.9 million barrels per day in 2018, which is approximately 10 percent higher than crude oil production in 2016 (8.9 million barrels per day) (EIA 2017B). Please refer to **'Table 5, Oil and Gas Wells within 0.5 miles of the Alternatives'** for a summary of the oil and gas wells within 0.5 miles of the alternatives and their status and **'Figure 40, Oil and Gas Wells' on page 53** for an overview of the oil and gas wells within the study area.

According to the Billings County Comprehensive Plan, tourism has been a part of the area since the days of Theodore Roosevelt. Hunting activities have been a primary reason for people to visit the area. In addition to hunting activities, the tourism industry in the area includes outdoor recreation and services and other activities associated with events in and around Medora and the TRNP (Billings County 1998). According to the North Dakota Tourism Annual Report (2015) produced by the NDTD, a total of 21.9 million people visited North Dakota in 2015, and all 53 counties experienced visitor spending increases. Tourism generates 5.8 percent of state and local taxes. From 2015 to 2016, the number of tourists visiting national parks increased 30 percent (NDTD 2016).

6 Annual statistics for oil and gas production in 2017 are not yet available from the North Dakota Industrial Commission, Department of Mineral Resources, Oil and Gas Division. Therefore, the available monthly statistics from January to October are used.

Table 4, Employment by Major Industries

Occupation	Number Employed	
	Billings county [a]	Golden Valley county [b]
Accommodation and Food Services	N/A [c]	N/A [c]
Administrative Support and Waste Management and Remediation Services	N/A [c]	N/A [c]
Arts, Entertainment, and Recreation	N/A [c]	N/A [c]
Construction	17 (1.8 percent)	N/A [c]
Farming	181 (20 percent)	247 (17.9 percent)
Government and Government Enterprises	164 (18.2 percent)	198 (14.4 percent)
Finance and Insurance	14 (1.6 percent)	59 (8.5 percent)
Forestry, Fishing, and Related Activities	N/A [c]	N/A [c]
Health Care and Social Assistance	N/A [d]	146 (10.6 percent)
Manufacturing	N/A [d]	N/A [c]
Mining, Quarrying, and Oil and Gas Extraction	N/A [c]	102 (7.4 percent)
Other Services, Except Public Administration	N/A [c]	63 (4.6 percent)
Professional, Scientific, and Technical Services	N/A [c]	28 (3 percent)
Real Estate, Rental, and Leasing	N/A [c]	27 (6.5 percent)
Retail Trade	37 (4.1 percent)	128 (6.5 percent)
Transportation and Warehousing	73 (8.1 percent)	N/A [c]
Utilities	N/A [c]	N/A [c]
Wholesale Trade	N/A [c]	116 (8.4 percent)

Sources: BEA 2015

Notes:

a. *The approximate percentages of jobs within each occupation were calculated from the total jobs in Billings County (901 people).*
b. *The approximate percentages of jobs within each occupation were calculated from the total jobs in Golden Valley County (1,379 people).*
c. *Not available: estimates are not shown to avoid disclosure of confidential information; however, the estimates for this industry are included in the total estimated jobs for the county (BEA 2015).*
d. *Less than 10 Jobs. Estimates for this item are included in County employment totals.*

5.5.3. What happens if the Little Missouri River crossing is not constructed?

How would employment compare?

Since construction of a new bridge across the Little Missouri River and associated roadway improvements would not occur under Alternative L (no-build), a temporary increase in construction employment opportunities and subsequent increase in payroll taxes, sales receipts, and indirect purchases of goods and services would not occur.

Would industries be affected?

Farmers and ranchers within the study area that own land on both sides of the Little Missouri River would continue to experience higher farm-to-market costs. They would still need to use fords (when possible in favorable weather conditions) or drive approximately 70 highway miles to the next nearest crossing to manage their land and access livestock on both sides of the river. Similarly, oil and gas developers and producers that own and operate oil and gas wells within the study area on both sides of the river would also continue to experience higher costs. Trucks transporting oil and gas from wells within the study area to the market would still need to drive approximately 70 highway miles to the next nearest crossing to get across the river. Local access to some of the major recreational and tourist facilities in the study area (e.g., TRNP–Elkhorn Ranch Unit and Maah Daah Hey Trail) would not be improved. Depending on which side of the river they were on, recreational enthusiasts and tourists would still need to travel approximately 70 highway miles to the nearest bridge to get to these facilities.

Table 5, Oil and Gas Wells within 0.5 miles of the Alternatives

Oil and Gas Wells	Within 0.5 miles of Alternative A	Within 0.5 miles of Alternative K (All Options)
Permitted for Drilling	0	7
Active	7	25
Inactive	0	3
Plugged and Abandoned	14	20
Other (e.g., Canceled, Dry, Permanently/ Temporarily Abandoned)	14	13
Total	**35**	**68**

Source: NDDMR 2018

5.5.4. What happens if the Little Missouri River crossing is constructed?

5.5.4.1. Alternative A

How would employment compare?

Construction activities associated with Alternative A would result in a temporary increased need for local construction contractors, which would result in an increase in construction employment opportunities. Contractors for construction would be obtained from the local area to the extent practicable. Additional construction contractors would be obtained outside of the local area, when needed. Accordingly, there would be increases in demand for local services associated with the additional contractors temporarily relocating to the area. However, the demand for local services during construction is not anticipated to exceed the existing capacities of the local services in the area. Construction would provide a net economic benefit to the region due to increases in payroll taxes, sales receipts, and the indirect purchase of goods and services.

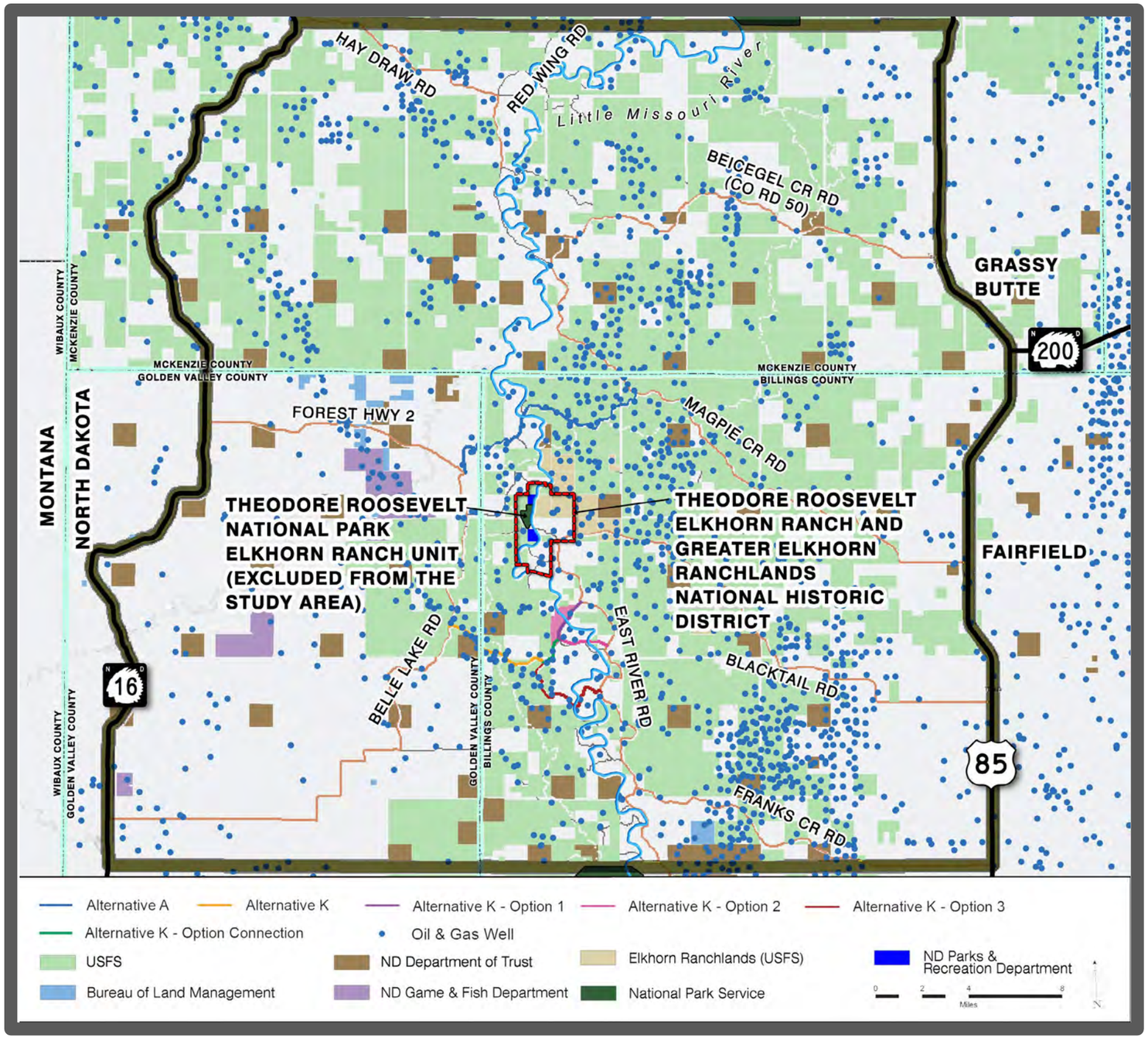


Figure 40, Oil and Gas Wells

Would industries be affected?

Farmers and ranchers within the study area that own land on both sides of the Little Missouri River would have local access across the river. They would be able to manage their land and livestock on both sides of the river more efficiently, lowering their farm-to-market costs. Land use changes would result in the conversion of minor amounts of cropland and/or rangeland into a transportation corridor. This minor conversion is anticipated to have a negligible economic impact on farmers and ranchers.

Similarly, oil and gas developers and producers that own and operate oil and gas wells within the study area on both sides of the river would also have local access across the river. They would be able to transport oil and gas from their wells within the study area to the market more efficiently.

Access to some of the major recreational and tourist facilities on both sides of the river within the study area (e.g., TRNP–Elkhorn Ranch Unit and Maah Daah Hey Trail) would be improved. Recreational enthusiasts and tourists would have easier access to facilities on both sides of the river and would not have to travel approximately 70 highway miles to the nearest bridge.

5.5.4.2. Alternative K (All Options)

How would employment compare?

Impacts on employment in Billings and Golden Valley counties from Alternative K (all options) would be the same as those described for Alternative A.

Would industries be affected?

Impacts on agriculture, oil and gas development and production, and tourism from Alternative K (all options) would be the same as those described for Alternative A.

5.5.5. What mitigation measures and BMPs would be implemented?

No adverse impacts on economics are anticipated from Alternative A or Alternative K (all options); therefore, no mitigation measures or BMPs would be required.

5.6. Environmental Justice

Environmental justice acknowledges that the quality of our environment affects the quality of our lives, and that adverse environmental effects should not disproportionately burden low-income or minority communities. EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, was signed into order on February 11, 1994. This EO requires each federal agency to "make environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations." Therefore, every agency undertaking a transportation project that is fully or partially funded by the federal government must consider the impact of such a project on minority populations and low-income groups.

The CEQ and several federal agencies (including the US Department of Transportation and FHWA) have since issued guidance addressing minority, low-income, and vulnerable-age populations and how they should be considered during planning for transportation projects:

- US Department of Transportation Order 5610.2(A), *Final US Department of Transportation Environmental Justice Order*, issued May 2, 2012, to comply with EO 12898.
- FHWA Order 6640.23A, *FHWA Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, issued June 14, 2012.

These orders ensure that agency actions do not have disproportionately high and adverse effects on environmental justice populations. A disproportionately high and adverse effect is defined as the following:

- An effect that is predominantly carried by a minority population or low income population.
- An effect that will be suffered by the minority population or low income population and is appreciably more sever or greater in magnitude than the adverse effect that will be suffered by the non-minority population or non-low-income population (FHWA 2015).

EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations requires that federal agencies' actions substantially affecting human health or the environment do not exclude persons, deny persons' benefits, or subject persons to discrimination because of their race, color, or national origin. Consideration of environmental justice concerns includes races, ethnicity, and the poverty status of populations in the vicinity of a project.

EO 13166, *Improving Access to Services for Persons with Limited English Proficiency*, was issued on August 11, 2000, to provide guidance regarding coordination with populations that have difficulty understanding English. This EO requires federal agencies to examine the services they provide, identify any need for services to those with limited English proficiency (LEP), and develop and implement a system to provide those services so individuals with LEP can have meaningful access to them.

The following three fundamental principles are at the core of the environmental justice requirements:

- To avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority populations and low-income populations.
- To ensure the full and fair participation by all potentially affected communities in the transportation decision-making process.
- To prevent the denial of, or reduction or significant delay in, the receipt of benefits by minority and low-income populations (FHWA 2012B).

The primary source for information on racial, ethnic, and low-income statistics is the US Census Bureau. Data on minorities, age, and income from the 2015 five-year average American Community Survey (ACS) (part of the Census) were analyzed to determine the characteristics (e.g., minority, age, languages spoken, and income) of the population in the vicinity of the alternatives. Data were analyzed to the smallest geographic unit available (i.e., census tract data on a county-wide basis). The Census Tracts for Golden Valley and Billings counties are 9631 and 9629, respectively (US Census Bureau Undated).

LEP populations were identified to determine if there are any barriers to effective communication within the study area. Census tract data for languages spoken were analyzed to determine the percentage of individuals for whom English is not their primary language.

5.6.1. Are there minority, low-income, vulnerable-age, or LEP populations in the study area?

Minority populations, as defined by CEQ guidance under NEPA (40 CFR § 1500–1508), US Department of Transportation Order 5610.2(a), and FHWA Order 6640.23A include individuals in the following population groups: American Indian and Alaska Native, Asian, Black or African American, Hispanic or Latino (of any race), and Native Hawaiian and Other Pacific Islander. Environmental justice populations should be identified where either: (a) the minority population of the affected area exceeds 50 percent or (b) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis. For the purposes of this EIS, minority population percentages that are 'meaningfully greater' are at least 10 percentage points higher than for the entire State of North Dakota. An environmental justice population also exists if there is more than one minority group present and the minority percentage, as calculated by aggregating all minority persons, meets one of the previously stated thresholds.

A low-income individual is defined as a person whose median income is at or below the Department of Health and Human Services poverty guidelines. Low-income population means any readily identifiable group of low-income individuals who live in geographic proximity and, if circumstances warrant, geographically dispersed/transient persons who would be similarly affected by a proposed project. Low-income populations are determined by the US Census Bureau and the Department of Health and Human Services based on poverty thresholds and guidelines developed each year (DHHS Undated). US Census Bureau data is also utilized for determining LEP populations (i.e., those of whom English is not their first spoken language) and vulnerable-age populations (i.e., populations under the age of 18 and over the age of 65). CEQ guidance does not provide specific criteria for determining low-income, vulnerable-age, or LEP populations as it does for minority populations. Therefore, for purposes of this analysis, the criteria for minority populations, which are previously discussed, will be used.

5.6.1.1. What are the race and ethnicity characteristics of the study area?

Race and ethnicity characteristics data for 2016 and 2017 are not yet available for North Dakota, Census Tract 9631 (Billings County), or Census Tract 9629 (Golden Valley County); therefore, data from the US Census Bureau 2011–2015 American Community Survey (ACS) Survey are used. Please refer to **'Table 6, Race and Ethnicity Characteristics'** for a summary of race and ethnicity characteristics for North Dakota and Census Tracts 9631 and 9629. The minority and LEP populations within Census Tracts 9631 and 9629 do not meet the thresholds to be considered environmental justice populations.

5.6.1.2. What are the income characteristics of the study area?

Median household income data for 2016 and 2017 are not yet available for North Dakota, Census Tract 9631 (Billings County), or Census Tract 9629 (Golden Valley County); therefore, data from the US Census Bureau 2011–2015 ACS are used. Please refer to **'Table 7, Income and Population Characteristics' on page 55** for a summary of the income and population characteristics for North Dakota and Census Tracts 9631 and 9629. The low-income and vulnerable-age populations within Census Tracts 9631 and 9629 do not meet the thresholds to be considered environmental justice populations.

Table 6, Race and Ethnicity Characteristics

Race and Origin [a]	State of North Dakota	Census Tract 9631	Census Tract 9629
Percent American Indian and Alaska Native	5.3	0.5	0.4
Percent Asian	1.2	3	0
Percent Black or African American	1.6	0.8	0
Percent Hispanic [b] or Latino (of any race)	2.9	4.3	2.0
Percent Native Hawaiian and Other Pacific Islander	0	0	0
Percent White	88.7	91.6	98.0
Percent Other Race	0.8	1.3	0.1
Percent Two or More Races	2.2	2.7	2.0
Percent Speak a Language Other Than English	5.6	9.4	0.08

Sources: US Census Bureau 2015A, US Census Bureau 2015B

Notes:

a. *Data are based on a sample and are subject to sampling variability. The degree of uncertainty for an estimate arising from sampling variability is represented through the use of a 90 percent margin of error. In addition to sampling variability, the US Census Bureau 2011–2015 ACS estimates are subject to non-sampling error, which is not represented in these tables.*

b. *Hispanic denotes a place of origin.*

Table 7, Income and Population Characteristics

Parameter*	State of North Dakota	Census Tract 9631	Census Tract 9629
Population	704,925	969	1,822
Percent Under 18 Years of Age	22.5	16.9	26.3
Percent 65 Years of Age and Over	14.3	16.8	18.7
Median Household Income	$57,181	$70,469	$40,179
Percent of Individuals Living Below Poverty	11.5	10.3	10.0

Sources: US Census Bureau 2015A, US Census Bureau 2015B

**Data are based on a sample and are subject to sampling variability. The degree of uncertainty for an estimate arising from sampling variability is represented through the use of a 90 percent margin of error. In addition to sampling variability, the US Census Bureau 2011–2015 ACS estimates are subject to non-sampling error, which is not represented in these tables.*

5.6.2. What happens if the Little Missouri River crossing is not constructed?

Under Alternative L (no-build), no environmental justice populations would be disproportionately affected, as there are no environmental justice populations identified within Census Tracts 9631 and 9629 (Billings and Golden Valley counties, respectively).

5.6.3. What happens if the Little Missouri River crossing is constructed?

5.6.3.1. Alternative A

Alternative A would be constructed entirely within Census Tracts 9631 and 9629 (Billings and Golden Valley counties, respectively), which do not have any environmental justice populations. Therefore, no environmental justice populations would be disproportionately affected from Alternative A.

5.6.3.2. Alternative K (All Options)

Alternative K (all options) would be constructed entirely within Census Tracts 9631 and 9629 (Billings and Golden Valley counties, respectively), which do not have any environmental justice populations. Therefore, no environmental justice populations would be disproportionately affected from Alternative K (all options).

5.6.4. What mitigation measures and BMPs would be implemented?

No disproportionate affects to environmental justice populations are anticipated from Alternative A or Alternative K (all options); therefore, no mitigation measures or BMPs would be required.

5.7. Pedestrians and Bicyclists

5.7.1. What pedestrian and bicyclist facilities are available in the study area?

This section discusses the existing pedestrian and bicycle activities and facilities within the study area including applicable regulations and standards.

The Maah Daah Hey Trail is a nationally recognized, scenic and historic trail located within the study area. The Maah Daah Hey Trail is a 140-mile-long, shared-use trail that is primarily used for mountain biking, horseback riding, hiking, and backpacking. The trail runs from the USFS CCC Campground near the TRNP–North Unit, south to the TRNP–South Unit, ending at the USFS Burning Coal Vein Campground (NPS 2016).

There are several minor, unimproved pedestrian/bicycle trails within the study area.

5.7.2. What happens if the Little Missouri River crossing is not constructed?

Under Alternative L (no-build), no impacts on pedestrians or bicyclists would be expected.

5.7.3. What happens if the Little Missouri River crossing is constructed?

5.7.3.1. Alternative A

No additional pedestrian and bicycle facilities would be developed as part of Alternative A.

Alternative A would improve an existing roadway, Magpie Creek Road. Magpie Creek Road runs parallel to, and in one location crosses, the Maah Daah Hey Trail. Therefore, Alternative A would also run parallel to, and have one crossing of, the Maah Daah Hey Trail. Therefore, no additional, long-term impacts would be expected. Please refer to **'Figure 39, Roadways' on page 49**. During roadway construction, notice of temporary construction activities would be provided to recreationists using the trail; appropriate safety mechanisms (e.g., fencing, signs) would be provided, as necessary; and the current trail route would be maintained through the construction work zone.

Construction activities would generate particulate matter emissions as fugitive dust and noise from ground-disturbing activities. Fugitive dust emissions from construction activities would be greatest during initial site-preparation activities and would vary from day to day, depending on the construction phase, level of activity, and prevailing weather conditions. All fugitive dust emissions from construction activities would be localized and temporary in nature. Pedestrians and bicyclists using the Maah Daah Hey Trail would not be exposed to substantially increased pollutant concentrations. Noise generated during construction activities would only last for the duration of the construction activities and would vary depending on the type of equipment used, the area that the construction activity would occur in, and the distance from the noise source.

5.7.3.2. Alternative K (All Options)

Impacts on pedestrians and bicyclists from Alternative K (all options) would be similar to, but less than, those described for Alternative A, as less of the Maah Daah Hey Trail would be impacted under Alternative K (all options). The only portion of the Maah Daah Hey Trail temporarily impacted under Alternative K (all options) would be where the existing roadway (i.e., Forest Service Road 722) crosses the Maah Daah Hey Trail. Please refer to **'Figure 39, Roadways' on page 49**. Similar to Alternative A, notice of temporary construction activities would be provided to recreationists using the trail; appropriate safety mechanisms (e.g., fencing, signs) would be provided, as necessary; and the current trail route would be maintained through the construction work zone.

No additional pedestrian and bicycle facilities would be developed as part of Alternative K (all options).

5.7.4. What mitigation measures and BMPs would be implemented?

Prior to construction activities, the contractor would be required to develop a SWPPP, which would include dust-control measures during construction. Upon completion of construction activities, Billings County would implement dust control, such as applying water, calcium chloride, and/or magnesium chloride to the roadway, as necessary and when feasible to prevent traffic hazards, damages, and nuisances to adjacent property owners. In addition, the county uses clay in their surface aggregate to help control dust.

5.8. Air Quality

5.8.1. What are the National and State Ambient Air Quality Standards?

Under the Clean Air Act (CAA), the USEPA developed numerical concentration-based standards, or National Ambient Air Quality Standards (NAAQS), that represent the maximum allowable concentrations for six criteria pollutants: ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), respirable particulate matter (including particulate matter equal to or less than 10 microns in diameter [PM_{10}] and particulate matter equal to or less than 2.5 microns in diameter [$PM_{2.5}$]), and lead (Pb) (40 CFR § 50). As precursors to O_3, volatile organic compounds (VOCs) and nitrogen oxides (NO_x) are criteria pollutants regulated under the NAAQS program; however, no ambient air quality standards have been set for them. The State of North Dakota has adopted the NAAQS and promulgated additional State Ambient Air Quality Standards (SAAQS) for criteria pollutants (North Dakota Century Code [NDCC] Chapter 33-15-02-04). In addition, the State of North Dakota has set ambient air quality standards for hydrogen sulfide (H_2S). There are no NAAQS or SAAQS for ammonia (NH_3); however, because NH_3 concentrations are an important factor

In accordance with federal CAA requirements, the air quality in a given region or area is measured by the concentration of criteria pollutants in the atmosphere. The air quality in a region is a result of not only the types and quantities of atmospheric pollutants and pollutant sources in an area, but also surface topography, the size of the topological 'air basin', and the prevailing meteorological conditions.

in the secondary formation of fine particulate matter through reactions with NO_x and SO_2, the NDDH maintains a select number of NH_3 monitors throughout North Dakota. The NAAQS and SAAQS for federally listed criteria pollutants are summarized in **'Table 8, National and State Ambient Air Quality Standards'**.

The USEPA classifies the air quality based on ambient concentrations of criteria pollutants in areas designated as either 'attainment', 'nonattainment', 'maintenance', or 'unclassifiable' for each of the six criteria pollutants. Attainment means that the air quality within an area meets the NAAQS; nonattainment indicates that one or more criteria pollutant ambient concentrations are greater than NAAQS; maintenance indicates that an area was previously designated nonattainment, but is now in attainment; and an unclassifiable air quality designation by the USEPA means that there is not enough information to appropriately classify an area, so the area is considered as being in attainment. As of February 13, 2017, the USEPA has determined the entire State of North Dakota is in attainment for NAAQS (USEPA 2017). The NDDH has also determined that the entire State of North Dakota is in attainment for all SAAQS (NDDH 2016c).

The NDDH operates and maintains a network of Ambient Air Quality Monitoring (AAQM) sites throughout the state. The nearest AAQM sites to Alternative A and Alternative K (all options) are the TRNP–North Unit AAQM site and Painted Canyon AAQM site. The TRNP–North Unit AAQM site is located approximately 23 miles north of Alternative A and approximately 32 miles north of Alternative K (all options). The AAQM site is used to evaluate background concentrations, long-range transport, and welfare-related impacts of pollutants. The AAQM site monitors SO_2, NO_2, O_3, $PM_{2.5}$, and PM_{10}. The Painted Canyon AAQM site is located approximately 30 miles south of Alternative A and approximately 20 miles south of Alternative K (all options). The AAQM site monitors general background conditions and provides data for dispersion modeling input, calibration, and validation. The AAQM site monitors SO_2, O_3, and $PM_{2.5}$ (NDDH 2015b).

Monitoring data indicate that federal and state ambient air quality standards were met at both of the AAQM sites in 2015 (NDDH 2016c). Please refer to **Table 9** for a summary of the monitoring results reported in 2014 for the TRNP–North Unit AAQM site and Painted Canyon AAQM site.[7]

7 Monitoring results for 2016 and 2017 for the TRNP–North Unit AAQM site and Painted Canyon AAQM site are not yet finalized; therefore, monitoring results from 2015 are used.

Table 8, National and State Ambient Air Quality Standards

Pollutant	Averaging Time	Primary Standard		Secondary Standard
		Federal	State	
CO	8-hour	9 ppm [a]	9 ppm	None
	1-hour	35 ppm [a]	35 ppm	None
Pb	Rolling 3-Month Average	0.15 $\mu g/m^3$ [b]	0.15 $\mu g/m^3$	Same as Primary
NO_2	Annual Arithmetic Mean	53 ppb [c]	0.053 ppm	Same as Primary
	1-hour	100 ppb [d]	0.1 ppm	None
PM_{10}	24-hour	150 $\mu g/m^3$ [e]	150 $\mu g/m^3$	Same as Primary
$PM_{2.5}$	Annual Arithmetic Mean	12 $\mu g/m^3$ [f]	12 $\mu g/m^3$	15 $\mu g/m^3$ [g]
	24-hour	35 $\mu g/m^3$ [h]	35 $\mu g/m^3$	Same as Primary
O_3	8-hour	0.070 ppm [i]	0.075 ppm	Same as Primary
SO_2	3-hour	—	0.5 ppm	0.5 ppm [j]
	1-hour	75 ppb [k]	0.075 ppm	None
H_2S	Instantaneous	None	10 ppm	None
	1-Hour	None	0.2 ppm	None
	24-Hour	None	0.1 ppm	None
	3-Month	None	0.02 ppm	None

Sources: USEPA 2016b, NDCC Chapter 33-15-02-04

Key: ppm = parts per million; ppb = parts per billion; µg/m3 = micrograms per cubic meter

Notes:

a. *Not to be exceeded more than once per year.*
b. *In areas designated nonattainment for the Pb standards prior to the promulgation of the current (2008) standards, and for which implementation plans to attain or maintain the current (2008) standards have not been submitted and approved, the previous standards (1.5 µg/m3 as calendar quarter average) also remain in effect. Final rule signed 15 October 2008.*
c. *The official level of the annual NO2 standard is 0.053 ppm, equal to 53 ppb, which is shown here for the purpose of cleaner comparison to the 1-hour standard.*
d. *To attain this standard, the 3-year average of the 98th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 100 ppb (effective 22 January 2010).*
e. *Not to be exceeded more than once per year on average over 3 years.*
f. *To attain this standard, the 3-year average of the weighted annual mean PM2.5 concentrations from single or multiple community-oriented monitors must not exceed 12 µg/m3.*
g. *To attain this standard, the 3-year average of the weighted annual mean PM2.5 concentrations from single or multiple community-oriented monitors must not exceed 15 µg/m3.*
h. *To attain this standard, the 3-year average of the weighted annual of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 35 µg/m3.*
i. *In 2015, the USEPA revised primary and secondary standard levels from 0.075 to 0.070 ppm. To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.070 ppm.*
j. *Not to be exceeded more than once per year.*
k. *To attain this standard, the 3-year average of the 99th percentile of daily maximum 1-hour average at each monitor within an area must not exceed 75 ppb. Final rule signed 2 June 2010.*

Table 9, 2014 Monitoring Results for TRNP North Unit and Painted Canyon AAQM Sites

Criteria Pollutant Monitored	TRNP–North Unit AAQM Site	Painted Canyon AAQM Site
SO_2 (1-hour)	6 ppb	5 ppb
NO_2 (1-hour)	12 ppb	—
NO_2 (Annual Average)	1.66 ppb	—
O_3 (8-hour)	58 ppb	58 ppb
$PM_{2.5}$ (24-hour)	18 $\mu g/m^3$	17 $\mu g/m^3$
$PM_{2.5}$ (3-year Average)	3.4 $\mu g/m^3$	4.9 $\mu g/m^3$
PM_{10} (24-hour)	57 $\mu g/m^3$	—

Source: NDDH 2016c

Key: ppb = parts per billion; µg/m3 = micrograms per cubic meter

5.8.2. What are Air Resource Regulatory Programs?

Air quality and resources are regulated under several state and federal programs. Prevention of Significant Deterioration applies to new major sources or major modifications at existing sources for pollutants where the area in which the source is located is designated as either in attainment or unclassifiable with the NAAQS. The NDDH implements the Prevention of Significant Deterioration Program as part of the State Implementation Plan (SIP). SIPs are prepared by states and submitted to the USEPA for approval to meet specific requirements of the CAA, including the requirement to attain and maintain the NAAQS. SIPs describe how the plan, including any rules or other requirements, will comply with these requirements and maintain the NAAQS.

Class I areas are afforded special protection under the CAA, including national parks, wilderness areas, and national monuments. There are four Class I areas in North Dakota including the TRNP–North Unit, TRNP–South Unit, TRNP–Elkhorn Ranch Unit, and Lostwood National Wildlife Refuge Wilderness Area (Burke County). The nearest Class I area to Alternative A and Alternative K (all options) is the TRNP–Elkhorn Ranch Unit. The TRNP–North Unit is located adjacent to the north of the study area, the TRNP–South Unit is located adjacent to the south of the study area, and the Lostwood National Wildlife Refuge Wilderness Area is located more than 70 miles northeast of the study area.

In July 1999, the USEPA finalized the Regional Haze Rule to determine existing visual impairment in Class I areas. The Rule requires states to adopt SIPs to address (1) existing impairment from major stationary facilities (Reasonably Attributable Visibility Impairment) and (2) regional haze that can be generated in the local vicinity or transported by wind (hundreds or thousands of miles from where the pollutants originated) (40 CFR §§ 51.300-309). In 2010, the NDDH developed the North Dakota SIP for Regional Haze, which amends the SIP for the Control of Air Pollution for the State of North Dakota and meets the requirements of Section 308 of the federal visibility regulations (NDDH 2010a).

In accordance with 40 CFR § 51.308(d)(4)(v), a statewide inventory of emissions of pollutants that are reasonably anticipated to cause or contribute to visibility impairment in any mandatory Class I area is required to be included in the SIP. Emissions in North Dakota are both naturally occurring (e.g., wildfires, windblown dust) and anthropogenic (i.e., human-caused) (e.g., electric utility steam generating units,

energy production and processing sources, agricultural production and processing sources, prescribed burning, fugitive dust sources). North Dakota's contribution to visibility impairment in Class I areas is generally small (sulfates and nitrates are the primary pollutants of concern). For sulfates, the contributing sources are primarily point sources (i.e., localized, stationary sources), and for nitrates, the contributing sources are primarily point, area, and mobile sources. Though mobile sources (e.g., vehicles, airplanes, locomotives) are a significant contributor to North Dakota's emissions that form nitrates, they only contribute 4 to 6 percent of the total nitrate concentration in the Class I areas in North Dakota during the 20 percent worst days. NO_x emissions from mobile sources are expected to decline by 51 percent by 2018. Therefore, efforts to reduce sulfates and nitrates in North Dakota are primarily directed towards point sources of SO_2 and NO_x emissions (NDDH 2010A, NDDH 2010B).

The average wind speed in Billings County is about 10.8 mph, and the prevailing wind is from the northwest (USDA 2005). The average wind speed in Golden Valley County is about 12 mph, and the prevailing wind is from the west-northwest (USDA 1985). Dickinson, North Dakota, is the nearest weather station for which a number of years of data are available. Please refer to **Table 10** for a summary of the average values of monthly wind speed and direction in 2015 from the Dickinson weather station.

Table 10, Average Monthly Wind Speeds and Direction (2015)

Month	Wind Speed (mph)	Prevailing Wind Direction
January	14.2	Northwest
February	12.1	Northwest
March	12.9	West-Northwest
April	12.6	West-Northwest
May	11.7	Northwest
June	9.4	South-Southwest
July	10.5	West
August	9.2	West-Northwest
September	10.9	West-Northwest
October	12.4	West-Northwest
November	11.4	Northwest
December	10.8	West-Northwest

Source: NOAA 2015

5.8.3. Is fugitive dust a concern in the study area?

Particulate matter is defined as the tiny particles of solid or semi-solid material found in the atmosphere. Fugitive dust is particulate matter that becomes airborne and has the potential to adversely affect human health and the environment (NDDH 2015B). Common sources of fugitive dust include unpaved roads, agricultural tilling operations, aggregate storage piles, and heavy construction operations (including combinations thereof). The impact of fugitive dust sources on air pollution depends on the quantity and drift potential of the dust particles injected into the atmosphere. In addition to large dust particles that settle out near the source (often creating a local nuisance problem), considerable amounts of fine particles are also emitted and dispersed over much greater distances from the source (USEPA 1995).

The study area consists exclusively of unpaved rural roadways. When a vehicle travels on an unpaved road, the force of the wheels on the road surface causes pulverization of surface material. Particles are lifted and dropped from the rolling wheels and the road surface is exposed to strong air currents in turbulent shear with the surface. The turbulent wake behind the vehicle continues to act on the road surface after the vehicle has passed. The quantity of dust emissions from a given segment of unpaved road varies linearly with the volume of traffic (USEPA 1995).

In 2015, the Little Missouri River Crossing Traffic Operations Memorandum was developed for the project. Results of the traffic study indicate that most of the roadways within the study area carried less than 150 vehicles per day in 2014 (approximately 50 percent were heavy trucks). Travel patterns throughout the study area are generally concentrated on Belle Lake Road, Forest Highway 2, County Road 50, Magpie Creek Road, Blacktail Road, East River Road (north segment), East River Road (south segment), and Franks Creek Road. In 2014, there were between approximately 52 and 214 vehicles per day on these roadways. Traffic on these roadways is expected to grow approximately 2.5 percent each year. This growth rate is consistent with typical NDDOT projections for rural infrastructure within oil and gas-producing areas of North Dakota.

The principal pollutant of interest for fugitive dust is PM_{10}. PM_{10} represents a relatively fine particle size range and, as such, is not overly susceptible to gravitational settling. Because PM_{10} is the size basis for the current NAAQS for PM, it represents the particle size range of the greatest regulatory interest (USEPA 1995). As previously stated, the federal and state standard for PM_{10} is 150 micrograms per cubic meter ($\mu g/m^3$) (USEPA 2016B, NDCC Chapter 33-15-02-04). In 2015, the TRNP–North Unit AAQM site (nearest AAQM site to the alternatives that monitors PM_{10}) reported PM_{10} at 57 $\mu g/m^3$ (NDDH 2016C).

5.8.4. Are climate change and greenhouse gas emissions a concern in the study area?

Greenhouse gases (GHGs) (i.e., carbon dioxide [CO_2], methane [CH_4], nitrous oxide [N_2O], and fluorinated gases) are primarily produced by the burning of fossil fuels and through industrial and biological processes. In 2014, the Intergovernmental Panel on Climate Change (IPCC) produced the Climate Change 2014: Synthesis Report. The Report states that anthropogenic GHG emissions have increased since the preindustrial era, driven largely by economic and population growth, and are now higher than they have ever been. This has led to atmospheric concentrations of CO_2, CH_4, and N_2O that are unprecedented in at least the last 800,000 years. These anthropogenic GHG emissions are "extremely likely" to have been the dominant cause of the observed warming since the mid-20th century (IPCC 2014).

According to the Report, many regions are experiencing climate change impacts that threaten ecosystems, human health, and infrastructure. Increasing temperatures and changing precipitation (including melting snow and ice) are altering hydrological systems and affecting water resources (quantity and quality). Terrestrial, freshwater, and marine species have shifted their geographic ranges, seasonal activities, migration patterns, abundance, and species interactions. Negative impacts on crop yields and forests are more common. In addition, ocean acidification is negatively affecting marine organisms, and sea level rise is threatening ecosystems, human health, and infrastructure. Some of the main anthropogenic activities listed in the Report that are affecting emission drivers include fossil fuel combustion, cement production, and flaring (i.e., burning sour and waste natural gas containing H_2S and CO_2). Globally, economic and population growth continue to be the most important drivers of increases in CO_2 emissions from fossil fuel combustion (IPCC 2014).

According to the National Climate Assessment, average temperatures in North Dakota have increased faster than any other state in the contiguous United States, and the number of days with temperatures over 100 degrees Fahrenheit is projected to double in the Northern Plains by 2050. Higher temperatures lead to greater evaporation and surface water loss, more heat stress, and increased energy demand for cooling. Climate change projections indicate that future precipitation patterns will vary across the Great Plains region and at local scales. In the northern states, the amount of winter and spring precipitation and the number of days with heavy downpours and snowfall are projected to increase (MELILLO ET AL. 2014).

The Great Plains is home to a diverse cultural, geographical, and economic population that will experience impacts of climate change in different ways. Remotely located populations, including indigenous Tribes and elderly residents, face greater challenges in responding to climate change because of the lack of development, public health resources, and access to other public services and communications systems. The early onset of spring is changing the timing of Tribal community rituals, and regions have faced a decline in, and disappearance of, culturally important plants and animals. As patterns of temperature and precipitation change, the Great Plains region is expected to face increased competition for water supplies for use by homes, businesses, agriculture, and energy production. Precipitation in the winter and spring is projected to increasingly fall in the form of very heavy precipitation events, which can increase flooding and runoff that reduce water quality and cause soil erosion. Agriculture in the Great Plains region utilizes more than 80 percent of the land area. In the long-term, climate impacts will have increasingly detrimental effects that increase variability in crop and agricultural production. Climate change may also cause a northward shift in lands used for agricultural production as temperature and water stresses rise. Climate and land use are changing simultaneously in the Great Plains and altering many ecosystems. Climate change is increasing pest outbreaks; spreading invasive species; accelerating wildfire activity; changing plant flowering times; and affecting critical game species, including a number of birds, mammals, and fish (MELILLO ET AL. 2014).

The US Energy Information Administration publishes annual estimates and projections for energy consumption for major energy end-use sectors (i.e., residential, commercial, industrial, and transportation) and the electric power sector by major fuel type/energy source. According to the US Energy Information Administration, since the late 1990s, the transportation sector has produced the most CO_2 emissions of all the end-use sectors, and only the transportation sector had increased emissions in 2015 (approximate 2.1 percent increase).[8] The increase was linked to a 28 percent decrease in gasoline prices from 2014 to 2015, along with the continued economic recovery, which led to higher fuel consumption (EIA 2017A).

The following summarizes the 2014[9] CO_2 emissions in the United States, North Dakota, and transportation sector (EIA 2016A, EIA 2016B):

United States

- Total CO_2 emissions: 5,405 million metric tons
- Transportation sector emissions: 1,836 million metric tons

8 Estimates and projections for energy consumption for major energy end-use sectors and the electric power sector in 2016 and 2017 are not yet available; therefore, the estimates and projections for energy consumption in 2015 are used.

9 State CO_2 emissions data for 2015–2017 are not yet available. The next release date for EIA state CO_2 emissions data is October 2017. Therefore, state CO_2 emissions data for 2014 are used.

- » Contributed 34 percent to total United States emissions
- » Major sources included light trucks (34 percent), cars and motorcycles (24 percent), and other trucks (23 percent)

North Dakota

- Total CO_2 emissions: 59 million metric tons
  - » Contributed 1.1 percent to total United States emissions
- Transportation sector emissions: 10 million metric tons
  - » Contributed 17 percent to total North Dakota emissions
  - » Contributed 0.5 percent to United States transportation sector emissions

Mobile combustion also includes emissions of CH_4 and N_2O from all transportation sources, except pipelines and electric locomotives (USEPA 2016c).

Besides contributing to changes in the climate through emissions, transportation systems can also be affected by climate change. The national transportation system is composed of the following four main components that are increasingly vulnerable to climate change impacts:

- Fixed node infrastructure (e.g., airports, ports, rail terminals)
- Fixed route infrastructure (e.g., roads, bridges, pedestrian/bicycle trails/lanes, locks, canals/channels, subways, pipelines)
- Vehicles (e.g., cars, buses, trucks), transit and railcars and locomotives, ships and barges, and aircraft
- People, institutions, laws, policies, and information systems that convert infrastructure and vehicles into working transportation networks.

Climate trends affect the design of transportation infrastructure. As climatic conditions shift, portions of this infrastructure will increasingly be subject to climatic stresses that will reduce the reliability and capacity of transportation systems. Transportation systems will be affected directly, through infrastructure damage, and indirectly, through changes in trade flows, agriculture, energy use, and settlement patterns (Melillo et al. 2014).

Adaptation strategies can be employed to reduce the impact of climate change-related events and the resulting consequences. Consideration of adaption strategies in the transportation sector is important in the following five areas (Melillo et al. 2014):

1. Transportation and Land Use Planning– Deciding what infrastructure to build and where to build it, as well as planning for vulnerable areas of the community and impacts on specific population groups. Land use planning can reduce risk by avoiding new development in flood-prone areas, conserving open space to enhance drainage, and relocating or abandoning structures or roads that have experienced repeated flooding.
2. Vulnerability and Risk Assessment– Identifying existing vulnerable facilities and systems, together with the expected consequences.
3. New Infrastructure Design– Adapting new infrastructure designs that anticipate changing environmental and operational conditions. For example, incorporating shoreline protection, relocations, permafrost protection for roadways, and sea level rise into new project designs.
4. Asset Management– Systematically monitoring the conditions of roads and transit facilities and adapting existing infrastructure and operations that respond to current and anticipated conditions, including changed maintenance practices and retrofits.
5. Emergency Response– Anticipating expected disruptions from extreme weather events and developing emergency response capability. For example, effective evacuation planning, including early warning systems, coordination across jurisdictional boundaries, and creating multiple evacuation routes; and identifying areas with high concentrations of vulnerable and special-needs populations.

The FHWA has responded to climate risks by issuing an order committing the agency to integrate climate risk considerations into the delivery and stewardship of FHWA programs; provide funding for climate adaptation activities, including vulnerability assessments and design and construction of projects or features to protect assets from damage associated with climate change; update the FHWA emergency relief program guidance to reflect climate resilience; and develop tools and guidance for systematic consideration of climate risks at transportation system and project levels. According to MAP-21, was passed in 2012, states are required to develop risk-based asset management plans and consider alternatives for facilities repeatedly needing repair or replacement with federal funding. In response, the NDDOT developed a Transportation Asset Management Plan in May 2015, which describes the transportation system managed by the NDDOT, the method of managing transportation assets throughout their life cycles, the financial constraints in managing the system, the current level of service targets for each asset, and an improvement plan for the process of managing these assets (NDDOT 2015a).

The United States has pledged to reduce GHG emissions 26 to 28 percent by 2025 and 80 percent or more by 2050. Since the transportation sector is a significant source (i.e., 31 percent) of United States GHG emissions, it will need to reduce energy use and transition to alternative energy sources in order to support national climate commitments. The FHWA is working with states and metropolitan areas to integrate GHG reduction analysis into transportation planning, deploy infrastructure needed for low carbon fuels, reduce GHG emissions in construction and maintenance practices, and improve system and travel efficiencies (FHWA 2016).

5.8.5. What happens if the Little Missouri River crossing is not constructed?

Under Alternative L (no-build), no impacts on regional air quality would be expected. According to the Little Missouri River Crossing Traffic Operations Memorandum, an annual baseline traffic growth rate of 2.5 percent is expected under Alternative L (no-build condition), which is consistent with typical NDDOT projections for rural infrastructure within oil and gas producing areas of North Dakota.

Fugitive dust emissions from local traffic using the existing roadways within the study area and traveling approximately 70 miles to the nearest bridge would continue. However, these fugitive dust emissions are not anticipated to result in visual impairment of any Class I areas, cause or contribute to a violation of any NAAQS or SAAQS, or expose sensitive receptors to substantially increased particulate matter concentrations. Local traffic would also continue to contribute toward United States and North Dakota GHG inventories. However, emissions from the annual traffic increase would represent a minor contribution toward United States and North Dakota GHG inventories.

5.8.6. What happens if the Little Missouri River crossing is constructed?

5.8.6.1. Alternative A

How would regional air quality compare?

Alternative A is not expected to generate new traffic. An additional 1 percent would be added to the 2.5-percent annual baseline traffic growth rate to account for the redistribution of local trips that may be attracted to the new bridge. Therefore, under Alternative A, a total annual traffic growth rate of 3.5 percent would be expected for roads associated with the alternative and adjacent roadways. Because the traffic increase would be negligible, impacts from fugitive dust emissions associated with vehicles traveling on the roadway would be minor. In addition, these fugitive dust emissions are not anticipated to result in visual impairment of any Class I areas, cause or contribute to a violation of any NAAQS or SAAQS, or expose sensitive receptors to substantially increased particulate matter concentrations.

Alternative A is the longest of all the build alternatives (i.e., 11 miles long with an 850-foot-long bridge), has the most rugged terrain, and would involve the most earthwork. Construction activities would result in short-term emissions of criteria pollutants from construction equipment and the combustion of fuels from on-road haul trucks transporting materials and construction commuter vehicles. In addition, construction activities would generate particulate matter emissions as fugitive dust from ground-disturbing activities.

Fugitive dust emissions from construction activities would be greatest during initial site-preparation activities and would vary from day to day, depending on the construction phase, level of activity, and prevailing weather conditions. These fugitive dust emissions would not result in visual impairment of any Class I areas. All emissions from construction activities would be temporary in nature. Construction activities are not anticipated to cause or contribute to a violation of any NAAQS or SAAQS or expose sensitive receptors to substantially increased pollutant concentrations. Because the State of North Dakota has been classified by the USEPA as in attainment for NAAQS and SAAQS, a General Conformity analysis would not be required.

How would GHG emissions compare?

An additional 1 percent would be added to the 2.5-percent annual baseline traffic growth rate to account for the redistribution of local trips that may be attracted to the new bridge. Therefore, under Alternative A, a total annual traffic growth rate of 3.5 percent would be expected for roads associated with the alternative and adjacent roadways. Emissions from local vehicles using the roadway and bridge would represent a minor contribution toward United States and North Dakota GHG inventories. However, overall it is anticipated that there would be less vehicle miles traveled and less associated emissions, as users of the roadway could cross the river locally on the new bridge and would not need to travel the approximate 70 miles between the two existing Little Missouri River crossings. Therefore, emissions from vehicles using the new roadway and bridge are not anticipated to impede the United States' goal to reduce GHG emissions by 26 to 28 percent by 2025.

Alternative A would contribute to emissions of GHGs during construction activities. Emissions associated with fossil fuel combustion from the operation of construction equipment, on-road haul trucks transporting materials, and construction commuter vehicles traveling to and from the work sites would represent a minor contribution toward

United States and North Dakota GHG inventories. Emissions from construction activities would not impede the United States' goal to reduce GHG emissions by 26 to 28 percent by 2025, as these emissions would be localized and temporary in nature.

5.8.6.2. Alternative K (All Options)

How would regional air quality compare?

Impacts on regional air quality from fugitive dust emissions associated with vehicles traveling on the roadway upon completion of Alternative K (all options) would be the same as those described for Alternative A. Because the traffic increase upon completion of construction would be negligible, potential impacts from fugitive dust emissions would be minor. In addition, these fugitive dust emissions would not result in visual impairment of any Class I areas, cause or contribute to a violation of any NAAQS or SAAQS, or expose sensitive receptors to substantially increased particulate matter concentrations.

Impacts on regional air quality from construction activities under Alternative K (all options) would be similar to, but less than, those described for Alternative A. The length of the alignment for all options under Alternative K would be less than 11 miles, and the length of the bridge would be less than 850 feet. Therefore, Alternative K (all options) would require less earthwork during construction and would result in slightly less emissions of criteria pollutants and fugitive dust than Alternative A.

Of the three options, Alternative K, Option 1 (Preferred Alternative) would have the shortest alignment (i.e., 8.3 miles). Alternative K, Option 2 and Alternative K, Option 3 would have slightly longer alignments at 8.4 miles and 9.9 miles, respectively. Alternative K, Option 1 (Preferred Alternative) and Alternative K, Option 3 would have shorter bridges with less spans (i.e., 600 feet long with three spans) than Alternative K, Option 2 (i.e., 800 feet long with five spans). Therefore, Alternative K, Option 1 (Preferred Alternative) is anticipated to have the least amount of impacts on regional air quality.

Similar to Alternative A, all emissions from construction activities under Alternative K (all options) would be temporary in nature, construction activities are not anticipated to cause or contribute to a violation of any NAAQS or SAAQS or expose sensitive receptors to substantially increased pollutant concentrations, and a General Conformity analysis would not be required.

How would GHG emissions compare?

Similar to Alternative A, construction activities associated with Alternative K (all options) and vehicles using the new roadway and bridge upon completion of construction would contribute to emissions of GHGs and represent minor contributions toward United States and North Dakota GHG inventories. However, emissions from construction activities would be localized and temporary in nature, and overall, there would be less vehicle miles traveled and less emissions, as users of the roadway could cross the river locally on the new bridge and would not need to travel the approximate 70 miles between the two existing Little Missouri River crossings. Therefore, emissions from construction activities and vehicles using the new roadway and bridge under Alternative K (all options) are not anticipated to impede the United States' goal to reduce GHG emissions by 26 to 28 percent by 2025.

5.8.7. What mitigation measures and BMPs would be implemented?

Prior to construction activities, the contractor would be required to develop a SWPPP, which would include dust-control measures during construction. Upon completion of construction activities, Billings County would implement dust control, such as applying water, calcium chloride, and/or magnesium chloride to the roadway, as necessary and when feasible to prevent traffic hazards, damages, and nuisances to adjacent property owners. In addition, the county uses clay in their surface aggregate to help control dust.

5.9. Noise

5.9.1. What are the existing noise levels?

Sound is measured on a logarithmic scale (i.e., nonlinear scale used when there is a large range of quantities). Environmental noise is characterized by A-weighted decibels (dBA), which best replicate how sound is received by the human ear. The human ear can barely perceive a noise level change of 3 dBA, but can readily perceive a noise level change of 5 dBA. The human ear perceives a noise level change of 10 dBA as a doubling in noise. Please refer to **'Table 11, Common Indoor and Outdoor Sound Sources'** for a summary of the estimated sound levels for common indoor and outdoor sounds.

Sound is vibrational disturbance capable of being detected by the ear. Sound can be intermittent or continuous, steady or impulsive, and can involve any number of sources and frequencies. Noise is unwanted sound. Noise is a subjective term, because sound levels can be perceived differently by different people. Human response to sound varies according to the source type, characteristics of the sound source, distance between source and receptor, receptor sensitivity, and time of day.

Table 11, Common Indoor and Outdoor Sound Sources

Sound Sources	SOUND LEVEL (dBA)
Indoor Sources	
Rock Band at 16 feet	110
Inside New York Subway Train	100
Food Blender at 3 feet	90
Garbage Disposal at 3 feet	80
Shouting at 3 feet	75
Vacuum Cleaner at 10 feet	70
Normal Speech at 3 feet	65
Quiet Conversation at 3 feet	55
Dishwasher in Next Room	50
Empty Theater or Library	40
Quiet Bedroom (Nighttime)	30
Empty Concert Hall	25
Broadcast and Recording Studios	15
Threshold of Human Hearing	3
Outdoor Sources	
Jet Over-flight at 1,000 feet	105
Gas Lawn Mower at 3 feet	95
Diesel Truck at 50 feet	85
Noisy Urban Area (Daytime)	80
Gas Lawn Mower at 100 feet	70
Suburban Commercial Area	65
Quiet Urban Area (Daytime)	55
Quiet Urban Area (Nighttime)	45
Quiet Suburb (Nighttime)	35
Quiet Rural Area (Nighttime)	25
Rustling Leaves	20
Reference Pressure Level	0

Source: FHWA 1980

A noise analysis was conducted as part of the EIS process in accordance with the Procedure for Abatement of Highway Traffic Noise and Construction Noise (23 CFR § 772), FHWA Highway Traffic Noise Analysis and Abatement Policy Guidance (2011), and NDDOT Noise Policy and Guidance (2011). The purpose of the noise analysis was to determine the existing and projected future traffic noise levels for the alternatives. In addition, a supplemental System for the Prediction of Acoustic Detectability (SPreAD) analysis was conducted to determine how noise would spatially propagate through the TRNP–Elkhorn Ranch Unit, Elkhorn Ranchlands, and Theodore Roosevelt Elkhorn Ranch and Greater Elkhorn Ranchlands National Historic District. The Noise Report– Little Missouri River Crossing (2016) (**appended by reference**) was developed by KLJ for the analyses and is summarized in the following subsections.

For the traffic noise analysis, the noise sensitive locations that could be affected by the project were identified. Activity Categories, the land use classification method used by the FHWA for traffic noise analysis, were applied to identify noise sensitive areas (NSAs) and noise receptors within NSAs. A noise receptor is an exterior location of frequent human use (e.g., porches, benches, backyards, parks, playgrounds) where traffic noise is measured or modeled.

'Table 12, Activity Categories within the Noise Study Areas' provides a summary of the Activity Categories identified for the alternatives.

As shown in **Table 12**, the existing roadway that would be improved under Alternative A (i.e., Magpie Creek Road) crosses DPG MAs 3.51A and 3.51B. NDDOT Noise Policy and Guidance states that consideration shall be given to exterior areas where frequent human use occurs for Activity Category C (NDDOT 2011). These areas are not considered to have frequent human use and do not have noise receptors; therefore, they were not considered in the traffic noise analysis. In addition, the agricultural lands, utilities, and undeveloped lands (Activity Categories F and G) do not contain noise-sensitive land uses; therefore, they were not considered in the traffic noise analysis.

FHWA and NDDOT noise policies state that a traffic noise impact occurs when predicted build condition noise levels at receptors approach, meet, or exceed the FHWA noise abatement criteria (NAC) assigned to Activity Categories. According to NDDOT policy, a receptor would be impacted if (1) traffic-generated noise levels were within 1 dBA of the NAC or (2) an increase of 15 dBA is projected to occur (regardless of the absolute noise level) either upon project completion or projected 20-year hence.

Table 12, Activity Categories within the Noise Study Areas

Activity Category	NAC (dBA)	Description	Noise Sensitive Area
B	67	Residential Areas	» One seasonal residence is within the area of the new roadway under Alternative A.
C	67	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) properties, schools, television studios, trails, and trail crossings.	» Magpie Creek Road would be improved under Alternative A and Forest Service Road 722 would be improved under Alternative K (all options). Portions of the Maah Daah Hey Trail (Section 4[f] property) run parallel to and cross Magpie Creek Road, and Forest Service Road 722 crosses the Maah Daah Hey Trail. » Portions of DPG MA 4.22 (Section 4[f] property) are within the areas of Alternative A; Alternative K, Option 2; and Alternative K, Option 3. » Portions of DPG MA 3.51A and DPG MA 3.51B – (Section 4[f] properties) are within the area of Alternative A.
F	—*	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (e.g., water resources, water treatment, electrical), and warehousing.	» There are several agricultural lands and utilities within the noise study area of the all the alternatives.
G	—*	Undeveloped lands that are not permitted for development. If the undeveloped lands are permitted, their noise abatement criteria is associated with the Activity Category that applies to the permitted land use.	» There are several undeveloped lands within the area of the all the alternatives.

** FHWA does not establish NAC for Activity Categories F or G, as these land uses are not noise sensitive.*

Key: NAC = noise abatement criteria; dBA = A-weighted decibel

Noise receiver used to collect traffic noise measurements.

5.9.2. How was traffic noise modeled for the project?

Field traffic noise monitoring was conducted to identify any traffic noise sources for purposes of validating the existing condition traffic noise model (FHWA Traffic Noise Model [TNM] 2.5). Traffic noise measurements were collected at noise receivers in 60-minute sessions in August 2014. Please refer to **'Figure 41, Traffic Noise Monitoring Sites' on page 61**. Noise measurements obtained ranged from approximately 49 to 71 dBA. Typically, these measurements would be used to validate the existing conditions traffic noise model using TNM 2.5; however, during the noise monitoring sessions, there were only 1 to 10 vehicles sporadically present (during some of the sessions, there were no vehicles present). Since zero to very little traffic was present, the noise levels collected represented ambient noise levels, not traffic noise levels.

Traffic Noise Model 2.5 was used to develop one existing conditions noise model (year 2015), two future-year no-build noise models (years 2025 and 2040), and two future-year build condition noise models (years 2025 and 2040). The noise modeling was based on 2015 average daily traffic (ADT) volumes and projected future 2025 and 2040 ADT volumes derived from the Little Missouri River Crossing Traffic Operations Memorandum (2015).

For Alternative L (no-build), traffic noise modeling was conducted for receptors along portions of the Maah Daah Hey Trail, Magpie Creek Road, and Forest Service Road 722 as a comparison to the build condition. Traffic noise modeling for Alternative L (no-build) was not conducted for DPG MA 4.22 or the seasonal residence, as there is no existing road adjacent to these locations.

Traffic noise impacts rarely occur beyond 500 feet from the edge of a roadway. However, in quiet, rural settings, people notice traffic noise over a greater distance.

For Alternative A, traffic noise modeling for the build scenario was conducted for receptors along portions of the Maah Daah Hey Trail, Magpie Creek Road, and DPG MA 4.22 and at the seasonal residence. Please refer to **'Figure 42, Maah Daah Hey Trail Receptors for Alternative A' on page 61** and **'Figure 43, DPG MA 4.22 and Seasonal Residence Receptors for Alternative A' on page 61**.

For Alternative K (all options), traffic noise modeling for the build scenario was conducted for receptors along portions of the Maah Daah Hey Trail and Forest Service Road 722. Please refer to **'Figure 44, Maah Daah Hey Trail Receptors for Alternative K (All Options)' on page 62**. For Alternative K, Option 2 and Alternative K, Option 3, traffic noise modeling for the build scenario was conducted for DPG MA 4.22 receptors. Please refer to **'Figure 45, DPG MA 4.22 Receptors for Alternative K, Option 2' on page 62** and **'Figure 46, DPG MA 4.22 Receptors for Alternative K, Option 3' on page 62**. Results of the future-year modeling for Alternative L (no-build), Alternative A, and Alternative K (all options) are summarized in **'Table 13, TNM Results' on page 62**.

5.9.3. What is the SPreAD Analysis?

The SPreAD analysis was conducted for Alternative A and Alternative K, Option 1 (Preferred Alternative),[10] as these alternatives are nearest to the TRNP–Elkhorn Ranch Unit, Elkhorn Ranchlands, Theodore Roosevelt Elkhorn Ranch and Greater Elkhorn Ranchlands National Historic District. The purpose of the SPreAD analysis was to identify the traffic noise propagation through the surrounding environment.

Traffic Noise Model 2.5 and SPreAD analyses differ in that TNM 2.5 analyzes noise as it travels past any given receptor and SPreAD analyzes noise propagation patterns from a given noise source point, at a given sound level, and determines the extent of influence from the initial sound level, to the point at which the sound level falls below ambient sound levels.

In the modeling of Alternative A and Alternative K, Option 1 (Preferred Alternative), the introduction of traffic noise sources every 250 feet, where each source point is located, is equal to 76 decibels (dB) (i.e., hourly A-weighted equivalent continuous sound level [LA_{eq}]) on alignments Alternative A and Alternative K, Option 1 (Preferred Alternative). The noise level of 76 db is similar to a noisy urban area during the daytime. The determined ambient sound level thresholds for Alternative A and Alternative K, Option 1 (Preferred Alternative) are 35 dB and below.

10 The SPreAD analysis was conducted for the alignment proposed under Alternative K, Option 1. Since that time, an expanded area was added to Alternative K, Option 1. The SPreAD analysis conducted for the alignment serves as a representation of potential sound source impacts, regardless of where the alignment and bridge crossing are ultimately constructed within the expanded area.

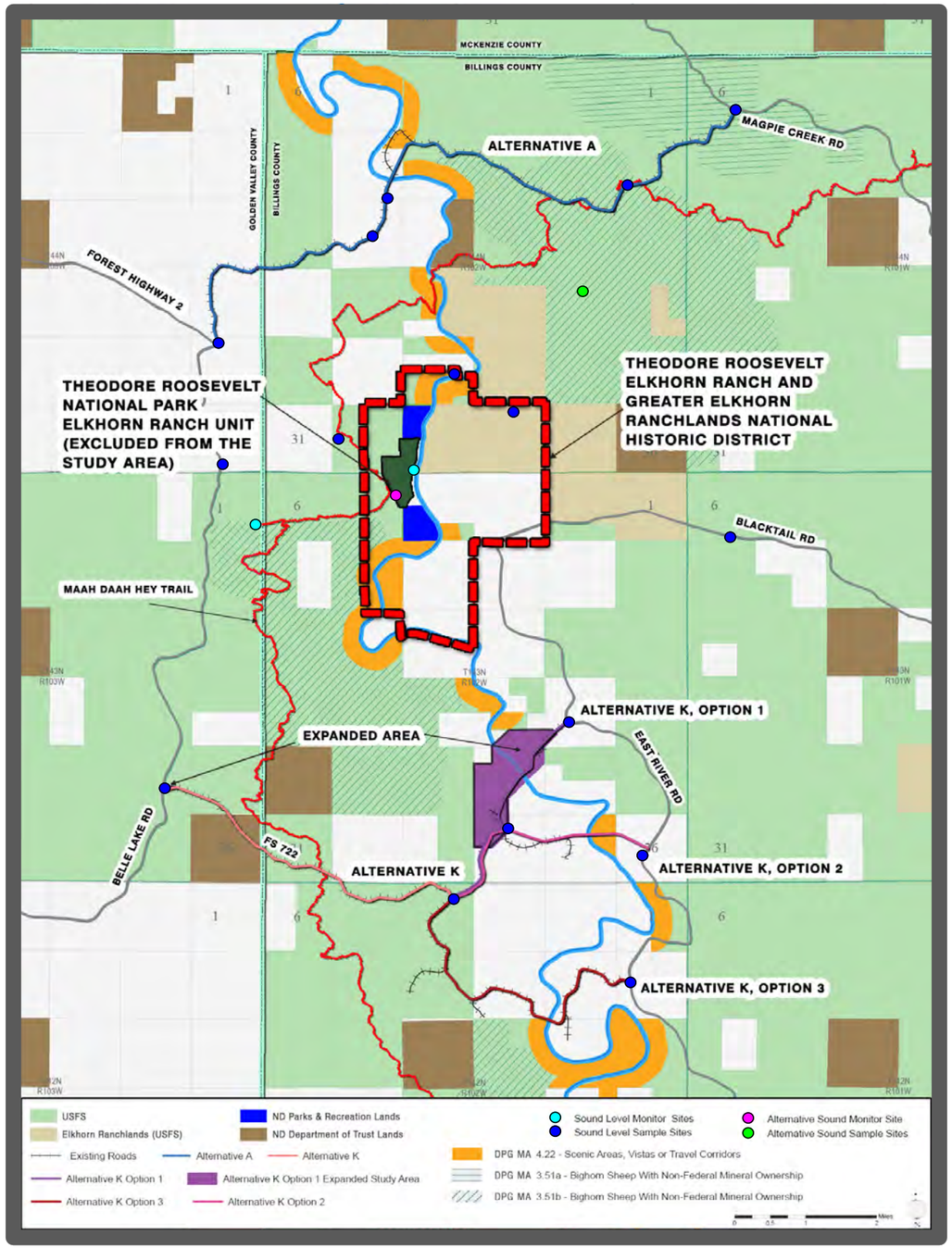


Figure 41, Traffic Noise Monitoring Sites

Figure 42, Maah Daah Hey Trail Receptors for Alternative A

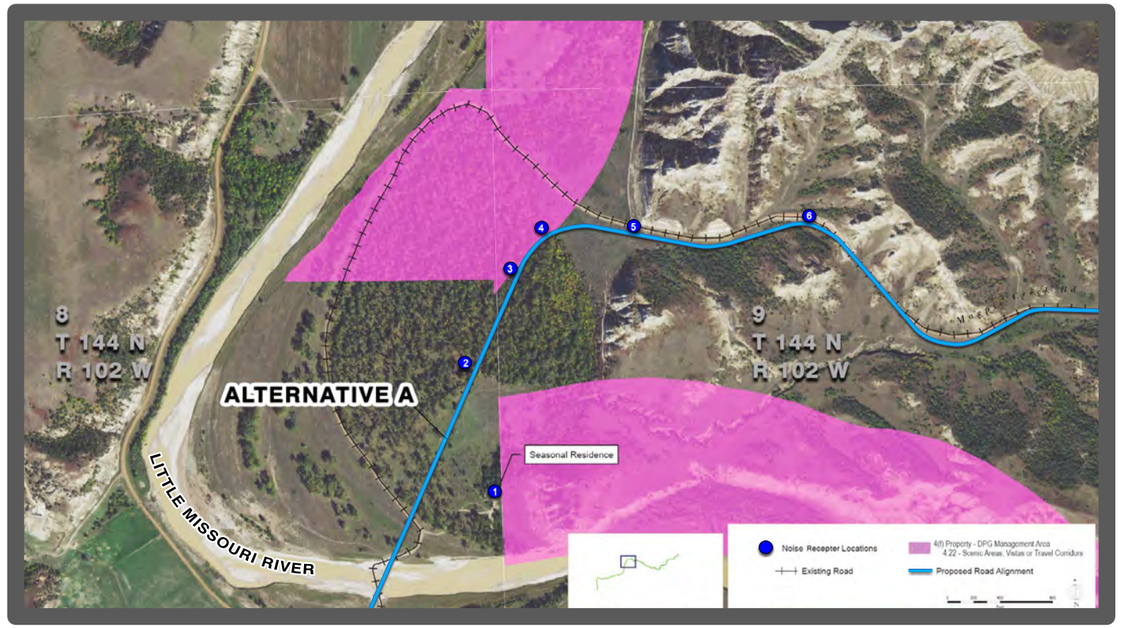


Figure 43, DPG MA 4.22 and Seasonal Residence Receptors for Alternative A

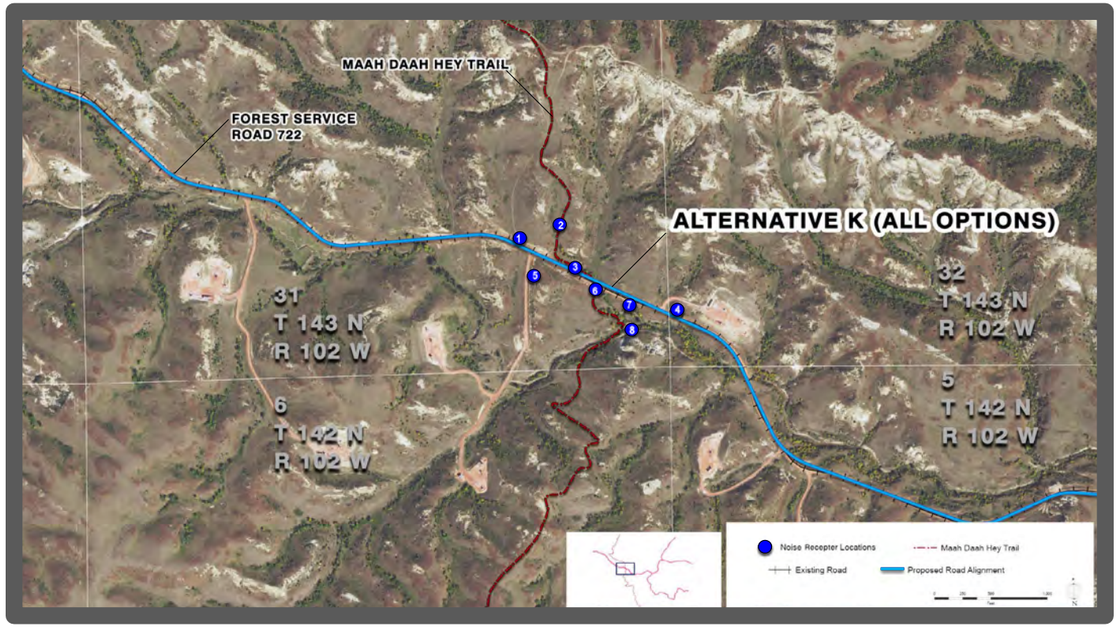


Figure 44, Maah Daah Hey Trail Receptors for Alternative K (All Options)

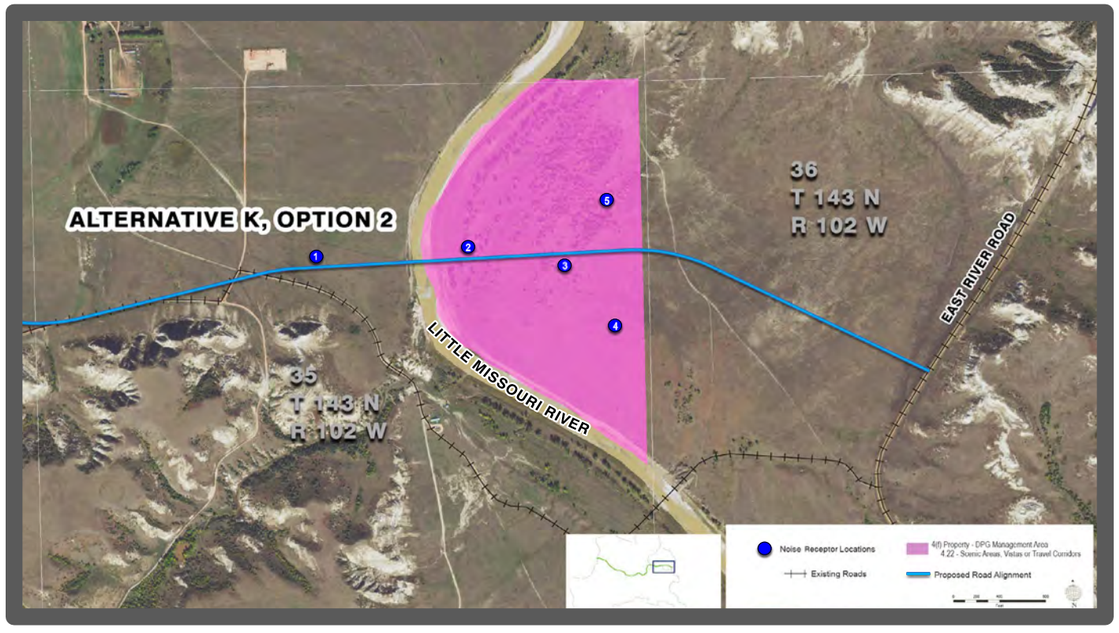


Figure 45, DPG MA 4.22 Receptors for Alternative K, Option 2

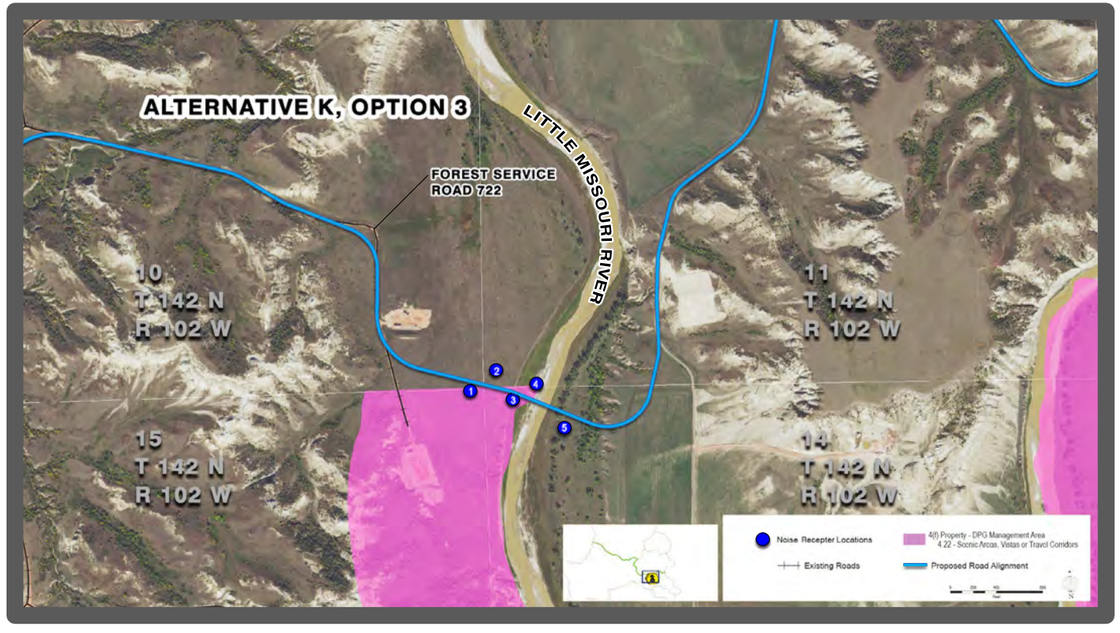


Figure 46, DPG MA 4.22 Receptors for Alternative K, Option 3

Table 13, TNM Results

Alternative	Receptors	Activity Category	NAC (dBA)	Future Year (2025–2040) Sound Levels [a]
Alternative L (No-Build)	Maah Daah Hey Trail (Magpie Creek Road)	C	67	55–63 dBA
	Maah Daah Hey Trail (Forest Service Road 722)	C	67	47–62 dBA
Alternative A	Maah Daah Hey Trail (Magpie Creek Road)	C	67	55–64 dBA
	DPG MA 4.22 and Seasonal Residence [b]	C and B	67	42–62 dBA
Alternative K (All Options)	Maah Daah Hey Trail (Forest Service Road 722)	C	67	47–64 dBA
Alternative K, Option 2	DPG MA 4.22	C	67	40–56 dBA
Alternative K, Option 3	DPG MA 4.22	C	67	51–59 dBA

Notes:

a. Ranges are approximated.

b. Due to their close proximity to one another, the DPG MA 4.22 receptors and seasonal residence receptor were modeled together.

Results of the SPreAD analysis show findings similar to those of the TNM, with predicted noise levels of 55 dB or higher, constrained to the immediate roadway areas. Areas beyond the immediate roadways and within most of the noise study areas were found to have noise levels ranging from 35 to 54 dB. Outside of 600 feet beyond the roadway, noise levels are predicted to be similar or lower than current ambient noise levels (i.e., 35 dB). Please refer to **'Figure 47, SPreAD Analysis for Alternative A' on page 64** and **'Figure 48, SPreAD Analysis for Alternative K, Option 1 (Preferred Alternative)' on page 65**.

5.9.4. What happens if the Little Missouri River crossing is not constructed?

Would the ambient noise environment be affected?

Under Alternative L (no-build), there would be no change from the current noise environment, and no additional impacts, beyond what is currently being experienced on the ambient noise environment.

How would traffic noise compare?

Based on the results from the TNM no-build scenario, no Maah Daah Hey Trail receptors associated with Alternative L (no-build) are predicted to have traffic noise impacts, as none of the calculated noise levels at the receptors approach, meet, or exceed the NAC for Activity Category C (i.e., 67 dBA), and no receptors are predicted to have a noise increase of at least 15 dBA over existing conditions.

5.9.5. What happens if the Little Missouri River crossing is constructed?

5.9.5.1. Alternative A

Would the ambient noise environment be affected?

The ambient noise environment would be temporarily impacted from increased noise generated during construction activities. However, this noise would only last for the duration of the construction activities and would vary depending on the type of equipment used, the area that the construction activity would occur in, and the distance from the noise source. Noise emanating from construction equipment would be localized, short-term, and intermittent during machinery operations.

How would traffic noise compare?

Based on results from the TNM build scenario, no Maah Daah Hey Trail receptors associated with Alternative A are predicted to have traffic noise impacts, as none of the calculated noise levels at the receptors approach, meet, or exceed the NAC for Activity Category C (i.e., 67 dBA), and no receptors are predicted to have a noise increase of at least 15 dBA over existing conditions. However, DPG MA 4.22 receptors and the seasonal residence receptor associated with Alternative A are predicted to have traffic noise impacts. While none of the calculated noise levels at receptors located in the vicinity of the new roadway associated with Alternative A approach, meet, or exceed the NAC for Activity Category C or B (i.e., 67 dBA), it is assumed (since there is no existing road or traffic noise observed in the area) that Alternative A would result in at least a 15-dBA increase in noise from the existing condition at the DPG MA 4.22 and seasonal residence receptors. This 15-dBA increase assumption is based on Alternative A proposing a new roadway within DPG MA 4.22 and adjacent to the seasonal residence (areas that do not currently experience noise from traffic).

How would traffic noise propagation compare?

Findings of the SPreAD analysis suggests that the alignment under Alternative A would not affect noise levels outside of 500 feet from the edge of the roadway. Further, traffic noise on the alignment would not likely travel to the TRNP–Elkhorn Ranch Unit, Elkhorn Ranchlands, or Theodore Roosevelt Elkhorn Ranch and Greater Elkhorn Ranchlands National Historic District. Traffic noise could be very slightly heard from the far north reaches of the Elkhorn Ranchlands; however, the predicted noise levels at that location are consistent with ambient noise in rural areas.

5.9.5.2. Alternative K (All Options)

Would the ambient noise environment be affected?

Impacts on the ambient noise environment from Alternative K (all options) would be the same as those described for Alternative A.

How would traffic noise compare?

Based on results from the TNM build scenario, no Maah Daah Hey Trail receptors associated with Alternative K (all options) are predicted to have traffic noise impacts, as none of the calculated noise levels at the receptors approach, meet, or exceed the NAC for Activity Category C (i.e., 67 dBA), and no receptors are predicted to have a noise increase of at least 15 dBA over existing conditions.

DPG MA 4.22 receptors associated with Alternative K, Option 2 and Alternative K, Option 3 are predicted to have traffic noise impacts. While none of the calculated noise levels at receptors located in the vicinity of the new roadway associated with Alternative K, Option 2 and Alternative K, Option 3 approach, meet, or exceed the NAC for Activity Category C (i.e., 67 dBA), it is assumed (since there is no existing road or traffic noise observed in the area) that Alternative K, Option 2 and Alternative K, Option 3 would result in at least a 15-dBA increase in noise from the existing condition at the DPG MA 4.22 receptors. This 15-dBA increase assumption is based on Alternative K, Option 2 and Alternative K, Option 3 proposing a new roadway in DPG MA 4.22 (an area that does not currently experience noise from traffic).

How would traffic noise propagation compare?

Findings of the SPreAD analysis suggests that the alignment under Alternative K, Option 1 (Preferred Alternative) would not affect noise levels outside 500 feet from the edge of the roadway. Further, traffic noise on the alignment under Alternative K, Option 1 (Preferred Alternative) would not likely travel to the TRNP–Elkhorn Ranch Unit, Elkhorn Ranchlands, or Theodore Roosevelt Elkhorn Ranch and Greater Elkhorn Ranchlands National Historic District.

5.9.6. What mitigation measures and BMPs would be implemented?

For the impacted seasonal residence receptor associated with Alternative A and impacted DPG MA 4.22 receptors associated with Alternative A; Alternative K, Option 2; and Alternative K, Option 3, traffic noise abatement was not considered, as there is only one seasonal residence and DPG MA 4.22 areas are managed to protect or preserve the scenic values and recreational uses of the Little Missouri River Corridor (i.e., areas that have natural-appearing landscapes).

Construction of a noise barrier would not be in compliance with the standards and guidelines identified for DPG MA 4.22 in the Land and Resource Management Plan for the DPG Northern Region. These standards and guidelines state that small-scale developments that complement natural features in the foreground are acceptable, and developments in the middle- and background must be subordinate to the landscape and not obvious to the casual observer. The areas must be managed to meet a Scenic Integrity Objective of 'high' (USFS 2001b). Scenic Integrity Objectives establish limits of acceptable human alterations as the landscape moves toward a landscape character goal. A landscape with very minimal visual disruption is considered to have a Scenic Integrity rating of 'high' (USFS 1995). Therefore, noise abatement is not recommended.

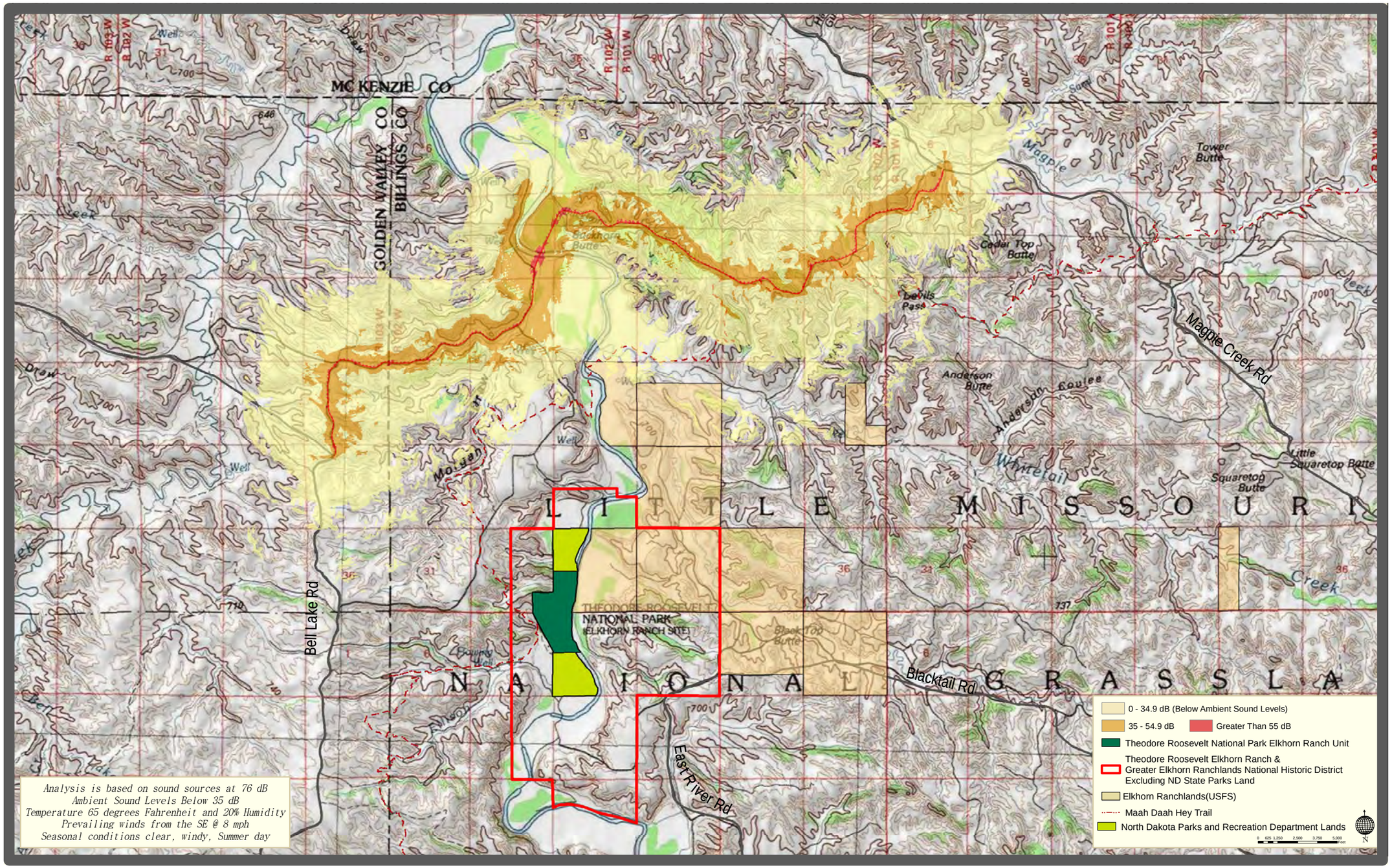


Figure 47, SPreAD Analysis for Alternative A

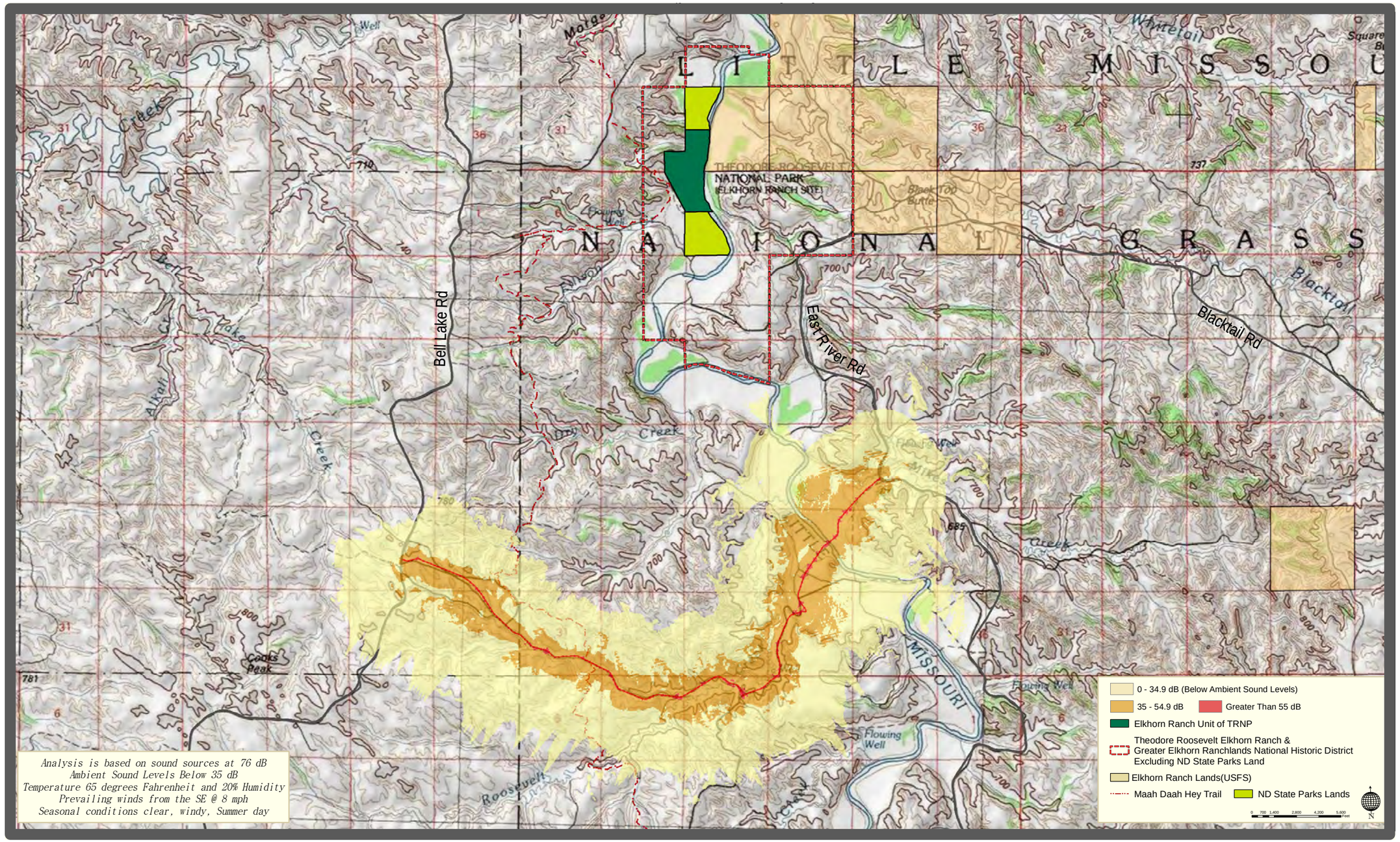


Figure 48, SPreAD Analysis for Alternative K, Option 1 (Preferred Alternative)

5.10. Water Resources

5.10.1. What are the groundwater resources in the study area?

Groundwater quality and quantity are regulated under several different programs. The Federal Water Pollution Control Act of 1972, as amended by the Clean Water Act (CWA), provides the authority to the USEPA and USACE to establish water quality standards, control discharges into surface water and groundwater, develop waste treatment management plans and practices, and issue permits for discharges (Section 402) and dredged or fill material (Section 404). The Safe Drinking Water Act (SDWA) of 1974, as amended, requires many actions to protect drinking water and its sources (i.e., rivers, lakes, reservoirs, springs, and groundwater wells).[11]

Billings and Golden Valley counties are located within the Williston Basin, which spans all of western and most of northern, central, and southern North Dakota. The major aquifers in the area include the Fox Hills-lower Hell Creek aquifer system, the upper Hell Creek-lower Ludlow aquifer system, aquifers in the upper Ludlow-Tongue River Members, and aquifers in the Sentinel Butte Member. Groundwater obtained from these aquifers is suitable primarily for public (i.e., city), domestic, and livestock use (Anna 1981).

Groundwater recharge is primarily from infiltration of precipitation (i.e., rainfall and snowmelt) and streams that cross aquifers or aquifer boundaries. Groundwater flow in the Williston Basin is generally from the west and southwest toward the east, where discharge to streams occurs. Locally, in the uppermost hydrogeological units, groundwater is generally unconfined and flows from topographically high to low areas, where discharge to streams occurs (USGS 2015). Depending on the transmissivity of the aquifer, well-type, and capacity of the well pump, aquifers in Billings and Golden Valley counties could yield anywhere from 10 to 300 gallons per minute (Anna 1981, Croft 1985).

There are no sole-source aquifers designated in North Dakota, and there are no water wells (domestic or industrial) within the project areas for Alternative A; Alternative K, Option 2; or Alternative K, Option 3. There is one domestic water well located within the expanded area for Alternative K, Option 1 (Preferred Alternative).

Groundwater is water that exists in the saturated zones beneath the Earth's surface, and includes underground streams and aquifers.

Surface water resources generally consist of lakes, rivers, streams, and wetlands.

Sole-source aquifers are defined by the USEPA as aquifers that supplies at least half of the drinking water for an area where there are no other drinking water resources available.

5.10.2. What are the surface water resources in the study area?

The Little Missouri State Scenic River Act (NDCC Chapter 61-29) provides for the preservation of the Little Missouri River, as nearly as possible, in its present state, which means that the river will be maintained in a free-flowing natural condition without impoundment, diversion, straightening, or other modification of the waterway. Channelization, reservoir construction, or diversion, other than for agricultural or recreational purposes, and the dredging of waters within the confines of the Little Missouri River and all tributary streams of the Little Missouri River are expressly prohibited by the Act.

Within the project area, the largest surface water feature is the Little Missouri River. In addition to the Little Missouri River, other surface waters include small creeks, drainageways, and wetlands. The Little Missouri River flows across western North Dakota in a northeasterly direction to join the Missouri River. The Little Missouri River is approximately 274 miles long and is the only designated State Scenic River in North Dakota. The river winds through the TRNP—South Unit, LMNG, Theodore Roosevelt Elkhorn Ranch and Greater Elkhorn Ranchlands National Historic District, Elkhorn Ranchlands, and TRNP—North Unit. Major tributaries of the Little Missouri River include Cherry Creek, Beaver Creek, Little Beaver Creek, and Boxelder Creek (Clausen 2011, NDPRD Undated b). Wetlands are addressed in **section '5.12. Wetlands and Other Waters' on page 69**.

According to the US Geological Survey (USGS) National Water Information System, the recorded monthly mean discharge rate of the Little Missouri River at the Medora Station (immediately south of the study area in Billings County) varied in 2014 due to seasonal fluctuations.[12] The discharge rate refers to the volume of water moving down a stream or river per unit of time (commonly expressed in cubic-feet per second). The highest discharge rates of the Little Missouri River at the Medora Station were recorded in the spring in March and April at 2,966 and 1,413 cubic-feet per second, respectively. The lowest discharge rates were recorded in the late fall-early winter in November and December at 67.3 and 48.4 cubic-feet per second, respectively. The USGS uses the term 'gage height' (measured in feet) when referring to the height of water in streams or rivers. The latest monthly mean gage height of the Little Missouri River at the Medora Station was recorded in April through September in 2015. The highest gage height was recorded in June at approximately 3.8 feet, and the lowest gage height was recorded in September at approximately 2.1 feet (USGS 2016).

5.10.3. Are there floodplains in the study area?

Consultation with the NDSWC indicated that there are no floodplains identified or mapped within the project areas. A review of the Federal Emergency Management Agency Flood Insurance Rate Map for the project areas verified that there are no mapped floodplains within the project areas (FEMA Undated). However, floodplains, as defined in terms of river morphology, are present in the project areas in association with numerous named and unnamed streams and creeks, and the Little Missouri River. These riverine floodplains and riparian corridors are confined to the immediate area and are generally less than 100 feet wide.

5.10.4. What happens if the Little Missouri River crossing is not constructed?

Would water resources be affected?

Under Alternative L (no-build), project construction would not occur, and therefore, groundwater sources/systems, surface water bodies, riverine floodplains, and riparian corridors would not be impacted (indirectly or directly). Local traffic would continue to cross the Little Missouri River at unimproved fords (when possible in favorable weather conditions), which could have minor impacts on the channel.

5.10.5. What happens if the Little Missouri River crossing is constructed?

5.10.5.1. Alternative A

Would water resources be affected?

No groundwater wells or recharge areas are known to be located within the project area; therefore, no groundwater wells would be disturbed by construction, and no impacts on groundwater would be expected.

The clear roadway width through the bridge across the Little Missouri River would be a maximum of 36 feet. The total width of the bridge would be a maximum of 38 to 40 feet, depending on the traffic barriers, which would be determined during final design. The bridge would be approximately 850 feet long, with five to seven spans. It would include placing two to four piers directly into the river. Due to the relatively small proportion of the river channel that would be occupied

11 The SDWA does not regulate private wells that serve fewer than 25 individuals.

12 Data for the Little Missouri River at the Medora Station (USGS site number 0633600/NDDH site number 380022) is not complete for 2015 and unavailable for 2016; therefore, data recorded in 2014 is used.

by the bridge, impacts on stream velocities, flow patterns, and river morphology are anticipated to be temporary as the river adjusts to these changes.

The bridge over the Little Missouri River would be designed and constructed so that it would not impede the 'free flowing' nature of the river, in accordance with the Little Missouri State Scenic River Act

In addition, wetlands, intermittent streams, and drainages, including Buckhorn Creek, occur along the alignment. One crossing would need to be installed within Buckhorn Creek to allow its waters to flow under the roadway. Any flowing stream that requires the installation of a pipe or box culvert would likely require a bypass channel to carry the water around the work area. Construction would cause temporary increases in sedimentation and erosion within surface waters.

Alternative A would eliminate portions of the riverine floodplains and riparian corridors due to constructing the crossing within Buckhorn Creek. A hydraulic analysis would be completed for the crossing to confirm the proper structure sizing. The hydraulic analysis would ensure that constructing the crossing would not have associated upstream or downstream impacts and that project-related impacts on riverine floodplains and riparian corridors would be limited to the immediate project footprint.

Constructing a bridge over the Little Missouri River would improve local access across the river and lessen the quantity of vehicles using unimproved fords and disturbing the channel. Upon completion of construction, the river is expected to experience less sedimentation and disturbance than under existing conditions due to a reduction in vehicles driving directly through the river. Therefore, Alternative A is anticipated to have an overall neutral impact on the Little Missouri River.

As previously mentioned, the new bridge structure would have a total of two to four piers located within the banks of the Little Missouri River. The final number of piers would be determined during the final design phase and would be dependent on detailed hydraulic and geotechnical studies. Portions of the riverine floodplains and riparian corridors associated with the Little Missouri River would be eliminated due to the piers. The presence of additional piers within the riparian corridor could temporarily impair the ecological function of the corridors by deterring wildlife presence; however, it is anticipated that wildlife would become accustomed to the new structure and long-term avoidance would not occur.

In accordance with NDAC 89-14-01, the new crossing over Buckhorn Creek and new bridge over the Little Missouri River would be constructed to pass a 100-year flood event without the resulting increase in headwater impacting any existing buildings or structures.

To facilitate access for construction equipment, materials, and labor forces, temporary fill would be placed in the Little Missouri River channel to construct a causeway or bypass. River flow would be maintained by the installation of temporary culverts or by leaving part of the channel open. Depending on the water depths at the time of construction, a temporary work bridge could be constructed in lieu of a causeway. Bridge construction would require placing cofferdams within the river channel to construct each pier. The cofferdam would divert more water than the actual pier, which may temporarily affect river flow volumes. Upon completion of construction, all temporary fills and structures would be removed and the stream bed and banks would be restored to pre-construction condition.

During construction, tree and vegetation removal, as well as the presence of construction personnel, equipment, and vehicles, would likely impair the ecological function of the riparian corridors by deterring wildlife presence and removing ground-stabilizing vegetation. The majority of these impacts would be temporary in nature and minimized through the use of BMPs.

5.10.5.2. Alternative K (All Options)

Would water resources be affected?

Impacts on water resources from Alternative K (all options) would be similar to, but less than, those described for Alternative A. The width and length of the bridges and number of spans, piers, and drainage (creek) crossings would differ. In addition, Alternative K (all options) would involve replacing an existing crossing over Roosevelt Creek, and Alternative K, Option 3 would involve replacing an existing crossing over Crooked Creek.

- Alternative K, Option 1 (Preferred Alternative)
  - Clear roadway width through the bridge would be a maximum of 36 feet.
  - Total width of the bridge would be a maximum of 38 to 40 feet, depending on the traffic barriers, which would be determined during final design.
  - Bridge would be 600 feet long, with three to five spans.
  - One to three piers and temporary fills and structures would be placed directly in the Little Missouri River.
  - One crossing over Roosevelt Creek would be replaced.
- Alternative K, Option 2
  - Clear roadway width through the bridge would be a maximum of 36 feet.
  - Total width of the bridge would be a maximum of 38 to 40 feet, depending on the traffic barriers, which would be determined during final design.
  - Bridge would be 800 feet long, with five to seven spans.
  - Two to four piers and temporary fills and structures would be placed directly in the Little Missouri River.
  - One crossing over Roosevelt Creek would be replaced.
- Alternative K, Option 3
  - Clear roadway width through the bridge would be a maximum of 36 feet.
  - Total width of the bridge would be a maximum of 38 to 40 feet, depending on the traffic barriers, which would be determined during final design.
  - Bridge would be 600 feet long, with three to five spans.
  - One to three piers and temporary fills and structures would be placed directly in the Little Missouri River.
  - One crossing over Roosevelt Creek would be replaced.
  - One crossing over Crooked Creek would be replaced.

The replacement structures for creek crossings would be crossings of equivalent water capacity. Of all of the Alternative K options, Alternative K, Option 1 (Preferred Alternative) would result in the least amount of impacts on surface waters due to the bridge's shorter length. Though Alternative K, Option 1 (Preferred Alternative) and Alternative K, Option 3 have the same bridge length with the same number of spans and piers, Alternative K, Option 3 would have one additional creek crossing. Therefore, Alternative K, Option 1 (Preferred Alternative) would result in the least amount of impacts on water resources.

5.10.6. What mitigation measures and BMPs would be implemented?

Prior to construction activities, the contractor would be required to obtain an NDPDES permit and develop a SWPPP. The SWPPP would outline phasing for erosion- and sediment-controls, stabilization measures, pollution-prevention measures, and prohibited discharges. The SWPPP would also include BMPs to minimize erosion, sedimentation, and stormwater runoff (e.g., fiber rolls, straw waddles, erosion mats, silt fencing, turbidity barriers, mulching, filter fabric fencing, sediment traps and ponds, surface water interceptor swales, ditches). The SWPPP would require that secure and contained refueling areas are located away from surface waters, maintenance and monitoring measures are implemented to reduce the potential for spills and leaks, and the amount of stockpiled material is minimized and stored away from surface waters. In addition, waste material would be disposed of in accordance with state and federal laws and in a manner that avoids impacts on the Little Missouri River channel.

Any temporary impacts on wetlands, streams, and rivers would be restored to pre-construction conditions upon completion of the project.

5.11. Water Quality

5.11.1. What are water quality conditions like in the study area?

In North Dakota, water quality monitoring is primarily the responsibility of the NDDH. The NDSWC and other natural resources agencies work cooperatively with the NDDH to maintain, monitor, and plan for adequate supplies of high-quality water (NDSWC 2015).

Sections 305(b) and 303(d) of the CWA require a state water quality assessment report every two years and a list of the state's water quality-limited waters needing total maximum daily loads (TMDLs), respectively. For purposes of Section 305(b) reporting and Section 303(d) listing, the USEPA encourages states to submit an integrated report. Key to integrated reporting is an assessment of all of the state's waters and placement of those waters into one of five categories. The categories represent varying levels of water quality standards attainment, ranging from Category 1, where all of a waterbody's designated uses are met, to Category 5, where a pollutant impairs a waterbody and a TMDL is required (NDDH 2017).

A waterbody is considered water quality-limited when its water quality does not meet applicable standards or is not expected to meet applicable standards. Waterbodies can be water quality-limited due to point-source pollution, non-point-source pollution, or both.

TMDL is a pollution budget, which includes a calculation of the maximum amount of a pollutant that can occur in a waterbody and allocates the necessary reductions to one or more pollutant sources.

Beginning with the 2010 Integrated Report and Section 303(d) list of impaired waterbodies needing TMDLs, the NDDH has identified a subcategory to Category 5 waterbodies: Subcategory 5A, which includes rivers, streams, lakes, or reservoirs that were assessed and listed in earlier Section 303(d) lists, but where the original basis for the assessment decision and associated cause of impairment is questionable. These waterbodies remain on the 2016 Section 303(d) list, but will be targeted for additional monitoring and assessment during the next two to four years (NDDH 2017).

A total of four assessment units of the Little Missouri River were listed on the 2016 list of Section 303(d) TMDL waters for the Missouri River Basin in North Dakota (NDDH 2017).[13]

- Little Missouri River from its confluence with Little Beaver Creek, downstream to its confluence with Deep Creek (Slope County)—listed as low priority for *Escherichia coli* (commonly referred to as E-coli).
- Little Missouri River from its confluence with Deep Creek, downstream to its confluence with Andrew's Creek (Billings and Slope counties)—listed as Subcategory 5A and high priority for E-coli.
- Little Missouri River from its confluence with Beaver Creek, downstream to its confluence with US Highway 85 (McKenzie County)—listed as high priority for E-coli.
- Little Missouri River from its confluence with US Highway 85, downstream to its confluence with Cherry Creek (McKenzie and Dunn counties)—listed as high priority for E-coli.

Of the listed assessment units, only the Little Missouri River assessment unit from its confluence with Beaver Creek, downstream to its confluence with US Highway 85 is located within the study area.

The protected beneficial uses of North Dakota's surface waters are defined in the Standards of Quality for Waters for the State (North Dakota Administrative Code [NDAC] Chapter 33-16-02.1). The state's water quality standards provide for four stream classes (i.e., Classes I, IA, II, and III). The Little Missouri River is classified as a Class II stream. The following is the definition of Class II streams (NPS 2013A).

- Class II Streams – The quality of waters in this class shall be the same as the quality of Class I streams, except that, additional treatment may be required to meet the drinking water requirements of the NDDH. Streams in this classification may be intermittent in nature, which would make these waters of limited value for beneficial uses, such as municipal water, fish life, irrigation, bathing, or swimming.

According to NDCC 33-16-02.1-09, the quality of Class I waters "shall be suitable for the propagation or protection, or both, of resident fish species and other aquatic biota and for swimming, boating, and other water recreation. The quality of waters shall be suitable for irrigation, stock watering, and wildlife without injurious effects. After treatment consisting of coagulation, settling, filtration, and chlorination, or equivalent treatment processes, the water quality shall meet the bacteriological, physical, and chemical requirements of the department (NDDH) for municipal or domestic use."

The designated use identified for the Little Missouri River, based on the state's water quality standards, is recreation. Therefore, water quality must be maintained for safe human contact (e.g., swimming). Pathogens (as reflected by E-coli and fecal coliform bacteria) are the primary cause of recreation use impairment in North Dakota. The primary sources of E-coli and fecal coliform bacteria combination are animal feeding operations, riparian area grazing, and failing or poorly designed septic systems (NDDH 2017).

5.11.2. What happens if the Little Missouri River crossing is not constructed?

How would water quality conditions compare?

Under Alternative L (no-build), a bridge over the Little Missouri River would not be provided, and vehicles would continue to use fords (when possible in favorable weather conditions) to cross the river. The USFS's *Low-Water Crossings: Geomorphic, Biological, and Engineering Design Considerations* publication defines the type of natural crossings that currently exist through the Little Missouri River as unimproved, unvented fords. Unimproved fords have a driving surface composed of the natural river substrate, and unvented fords have no culverts (i.e., vents) for water to flow beneath the driving surface. The USFS states that in general, unvented fords, whether unimproved or improved, can have greater effects on water quality than bridges that elevate traffic out of the water (USFS 2006).

By driving directly through the river at unimproved fords, sedimentation and turbidity can be produced via vehicles disturbing sediment and soil, subsequent storm water runoff of disturbed soil, and waves from vehicles eroding banks. In addition, unimproved fords can create a greater risk of direct contamination from chemical pollutant debris that wash off vehicles, vehicle spills or leaks, and introduction and spread of noxious weeds and invasive species than a bridge crossing. According to the USFS publication, existing research does not show that significant water quality problems can arise from chemical pollutant debris that is washed off vehicles while they drive through the water; however, potential pollutants could include oil, grease, lead, zinc, cadmium, and polychlorinated biphenyls from tire wear (USFS 2006). While this has the potential to have an adverse impact on the river, it is not anticipated to significantly affect the long-term water quality of the river.

5.11.3. What happens if the Little Missouri River crossing is constructed?

5.11.3.1. Alternative A

How would water quality conditions compare?

Upon completion of construction, the river would experience less sedimentation and disturbance, as vehicles could cross the river using the bridge and less vehicles would cross the river using fords.

Any snow or ice treatments applied to the bridge in the winter for public safety would comply with NDDOT requirements. Though salt is generally expected to influence water chemistry, with limited amount of salt application, the salt is not anticipated to reach levels that would greatly affect aquatic species. Water quality issues resulting from salt are unlikely due to limited applications and dilution over time; therefore, the application of salt is anticipated to have a neutral effect.

Construction of a new bridge would result in temporary disturbance to the Little Missouri River. However, construction activities are not anticipated to contribute to the pollutants that caused the Little Missouri River to be added to the Section 303(d) list. Temporary impacts on water quality can occur as a result of sedimentation and soil erosion/deposition during construction activities such as roadway widening, culvert installation, bridge construction, and riprap installation. An increase in turbidity due to bridge construction could adversely affect aquatic life since it could block light transmission and slow biochemical and natural purification processes. Any increases in turbidity would be limited to bridge construction, and would be minor when compared to vehicles utilizing unimproved fords to cross the river.

During construction of the bridge, there may be a potential for a spill or leak from construction vehicles. Due to the short-term nature of construction activities, no indirect impacts are anticipated. The temporary closing on the existing public unimproved ford at Alternative A may cause more vehicles to use other unimproved fords, temporarily increasing traffic-related water quality impacts at those locations during construction. Additional contributions to pollutant levels that would cause the Little Missouri River to be further listed on the Section 303(d) list is not anticipated.

13 As previously noted, states are required to develop a list of waters needing TMDLs every two years. The 2018 list of Section 303(d) TMDL waters for the Missouri River Basin in North Dakota is not yet available; therefore, the 2016 list is used.

5.11.3.2. Alternative K (All Options)

How would water quality conditions compare?

Impacts on water quality under Alternative K (all options) would be similar to, but less than, those described for Alternative A. The length of the alignment for all options under Alternative K would be less than 11 miles, and the length of the bridge would be less than 850 feet. Therefore, Alternative K (all options) is anticipated to result in less sedimentation and soil erosion/deposition during construction activities than Alternative A.

Of the three options, Alternative K, Option 1 (Preferred Alternative) would have the shortest alignment, approximately 8.3 miles. Alternative K, Option 2 and Alternative K, Option 3 would have slightly longer alignments at 8.4 miles and 9.9 miles, respectively. Therefore, Alternative K, Option 1 (Preferred Alternative) is anticipated to have the least amount of impacts on water quality.

5.11.4. What mitigation measures and BMPs would be implemented?

Prior to construction activities, the contractor would be required to obtain a NDPDES permit and develop an NDPDES permit and develop a SWPPP. The SWPPP would outline phasing for erosion- and sediment-controls, stabilization measures, pollution-prevention measures, and prohibited discharges. The SWPPP would also include BMPs to minimize erosion, sedimentation, and stormwater runoff (e.g., fiber rolls, straw waddles, erosion mats, silt fencing, turbidity barriers, mulching, filter fabric fencing, sediment traps and ponds, surface water interceptor swales, ditches). The SWPPP would require that secure and contained refueling areas are located away from surface waters, maintenance and monitoring measures are implemented to reduce the potential for spills and leaks, and the amount of stockpiled material is minimized and stored away from surface waters. In addition, waste material would be disposed of in accordance with state and federal laws and in a manner that avoids impacts on the Little Missouri River channel.

5.12. Wetlands and Other Waters

Waters of the United States are defined within the CWA, as amended (40 CFR § 230.3), and jurisdiction is addressed by the USEPA and USACE. These agencies have jurisdiction over:

1. traditional navigable waters
2. wetlands adjacent to navigable waters

3. non-navigable tributaries of traditional navigable waters that are relatively permanent where the tributaries typically flow year-round or have continuous flow at least seasonally (e.g., typically three months)
4. wetlands that directly abut such tributaries

These agencies also decide jurisdiction over the following waters based on a fact-specific analysis to determine whether they have a significant nexus with a traditional navigable water (USEPA 2008):

1. non-navigable tributaries that are not relatively permanent
2. wetlands adjacent to non-navigable tributaries that are not relatively permanent
3. wetlands adjacent to, but that do not directly abut, a relatively permanent non-navigable tributary

Section 404 of the CWA authorizes the Secretary of the Army, acting through the Chief of Engineers, to issue permits for the discharge of dredge or fill into waters of the United States including wetlands. As part of the Section 404 permitting process, a Section 401 certification is also coordinated with the NDDH. FHWA must also consider EO 11990, Protection of Wetlands (May 24, 1977). EO 11990 directs agencies to consider avoidance of adverse and incompatible development in wetlands.

Wetlands are defined in EO 11990 and Section 404 of the CWA, as areas that are inundated by surface or groundwater with a frequency to support, and under normal circumstances do or would support, a prevalence of vegetation or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands generally include swamps, marshes, bogs, and other similar areas and are an important natural resource serving many functions, such as providing habitat for wildlife, storing floodwaters, recharging groundwater, and improving water quality through purification.

5.12.1. Are there wetlands delineated in the project areas?

Field wetland investigations were conducted within project areas for Alternative A and Alternative K (all options) during the growing seasons of 2012, 2013, 2015, and 2016. The wetland delineations were conducted in accordance with the USACE Wetland Delineation Manual (USACE 1987) and Regional Supplement to the USACE Wetland Delineation Manual: Great Plains Region (USACE 2010). A Field Wetland Delineation Report– Little Missouri River Crossing (2016) and Field Wetland Delineation Report– Little Missouri River Crossing Expanded Study Area (2016) were completed by KLJ and submitted to the USACE for jurisdictional determination. The reports are **appended by reference**. Wetland boundaries were determined by completing USACE Wetland Determination Data Forms for paired test hole points and observing vegetation and hydrology in the area. Sample point locations were determined using the USFWS National Wetlands Inventory (NWI) and USGS Topo Quadrangle maps, as well as visual observation of sites that exhibited a hydrophytic (i.e., water-loving) plant community and characteristics of wetland hydrology.

The field wetland investigations identified the following:

- A total of 9 wetland segments (approximately 2.97 acres) within the project area of Alternative A.
- A total of 43 wetland segments (approximately 11.36 acres) within the project area of Alternative K, Option 1 (Preferred Alternative).
- A total of 31 wetland segments (approximately 3.02 acres) within the project area of Alternative K, Option 2.
- A total of 37 wetland segments (approximately 2.71 acres) within the project area of Alternative K, Option 3.

Please refer to **'Figure 49, Alternative A Wetlands and Other Waters' on page 70**; **'Figure 50, Alternative K, Option 1 (Preferred Alternative) Wetlands and Other Waters' on page 71**; **'Figure 51, Alternative K, Option 2 Wetlands and Other Waters' on page 72**; and **'Figure 52, Alternative K, Option 3 Wetlands and Other Waters' on page 73** for overviews of the wetlands identified.

The wetlands identified are classified as palustrine, emergent wetlands. Palustrine wetlands refer to all non-tidal wetlands dominated by trees, shrubs, emergent vegetation, mosses, or lichens. Emergent wetlands are characterized by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. Vegetation in these wetlands areas are present for most of the growing season in most years and are dominated by perennial plants (USFWS 2016A).

During the field investigations, Other Waters were delineated where ordinary high-water marks were observed, as defined in USACE Regulatory Guidance Letter No. 05-05: Ordinary High-Water Mark Identification (USACE 2005). The Other Waters identified include the following:

- A total of 10 segments of Other Waters (16,945 feet in length [approximately 5.11 acres]) within the project area of Alternative A.
- A total of 27 segments of Other Waters (26,895 feet in length [approximately 16.32 acres]) within the project area of Alternative K, Option 1 (Preferred Alternative).
- A total of 21 segments of Other Waters (16,673 feet in length [approximately 3.69 acres]) within the project area of Alternative K, Option 2.
- A total of 22 segments of Other Waters (18,296 feet in length [approximately 5.83 acres]) within the project area of Alternative K, Option 3.

Please refer to **'Figure 49, Alternative A Wetlands and Other Waters' on page 70**; **'Figure 50, Alternative K, Option 1 (Preferred Alternative) Wetlands and Other Waters' on page 71**; **'Figure 51, Alternative K, Option 2 Wetlands and Other Waters' on page 72**; and **'Figure 52, Alternative K, Option 3 Wetlands and Other Waters' on page 73** for overviews of the Other Waters identified. All of the identified Other Waters are classified as naturally occurring creeks, intermittent streams, or the Little Missouri River.

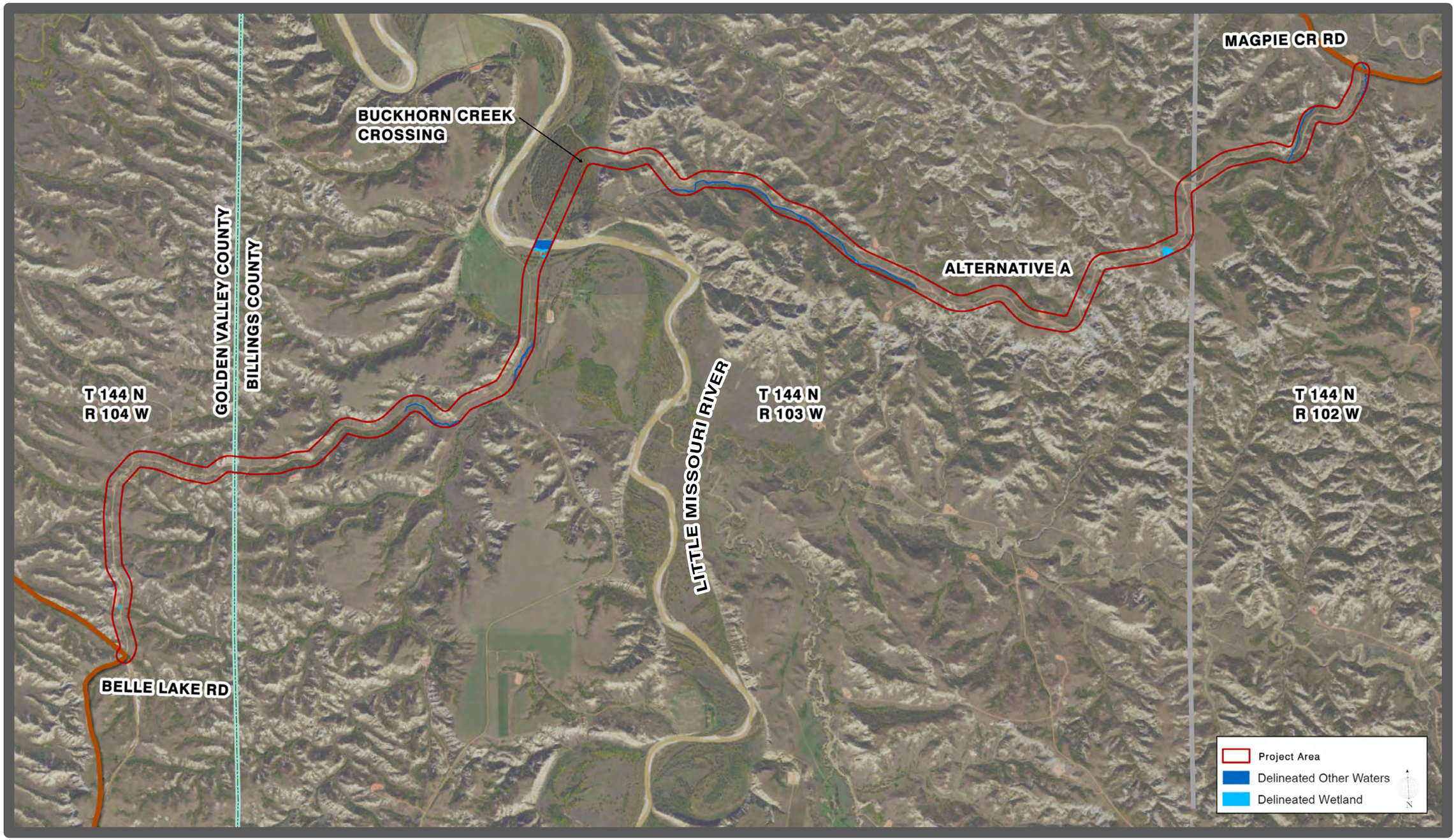


Figure 49, Alternative A Wetlands and Other Waters

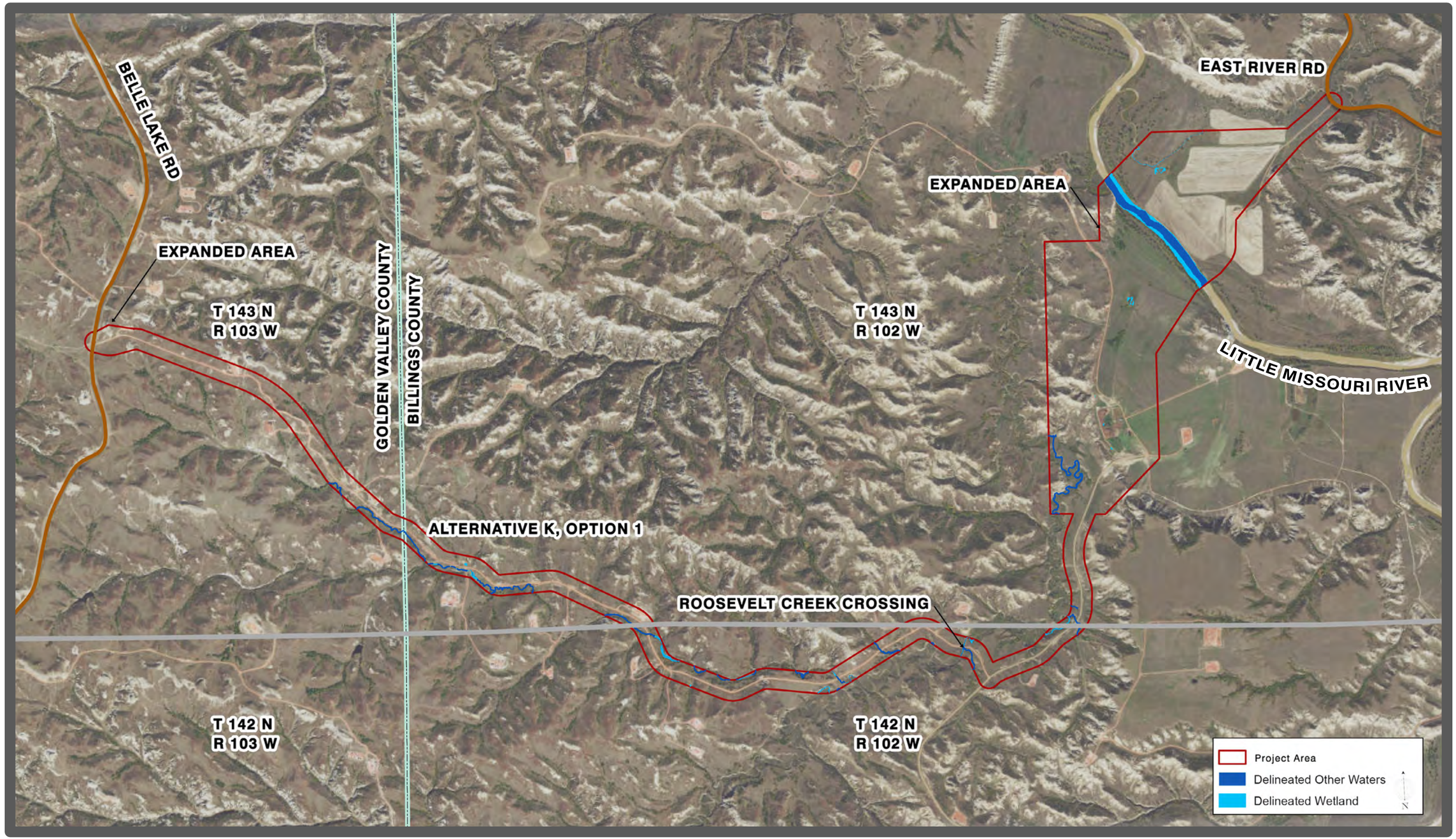


Figure 50, Alternative K, Option 1 (Preferred Alternative) Wetlands and Other Waters

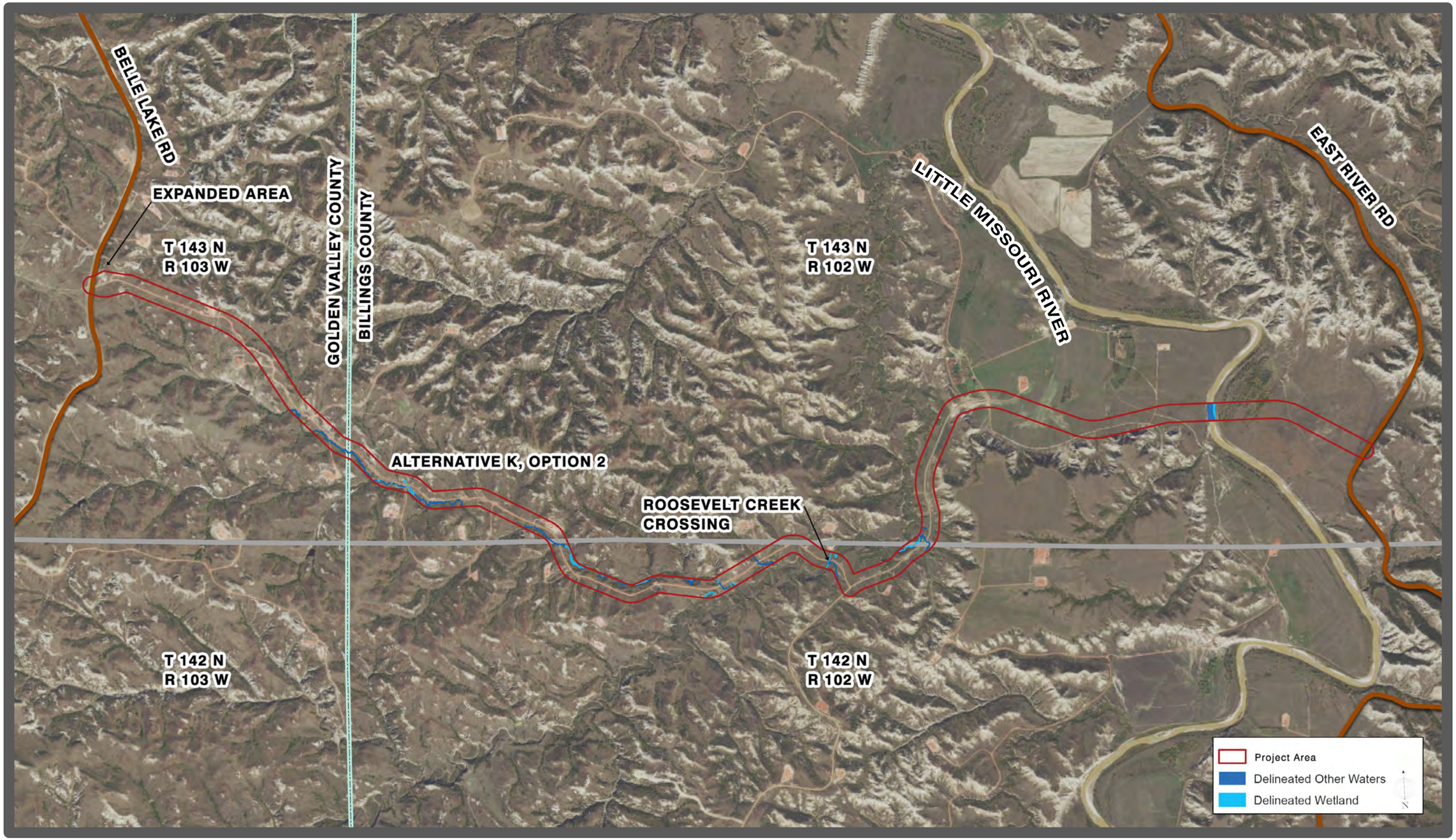


Figure 51, Alternative K, Option 2 Wetlands and Other Waters

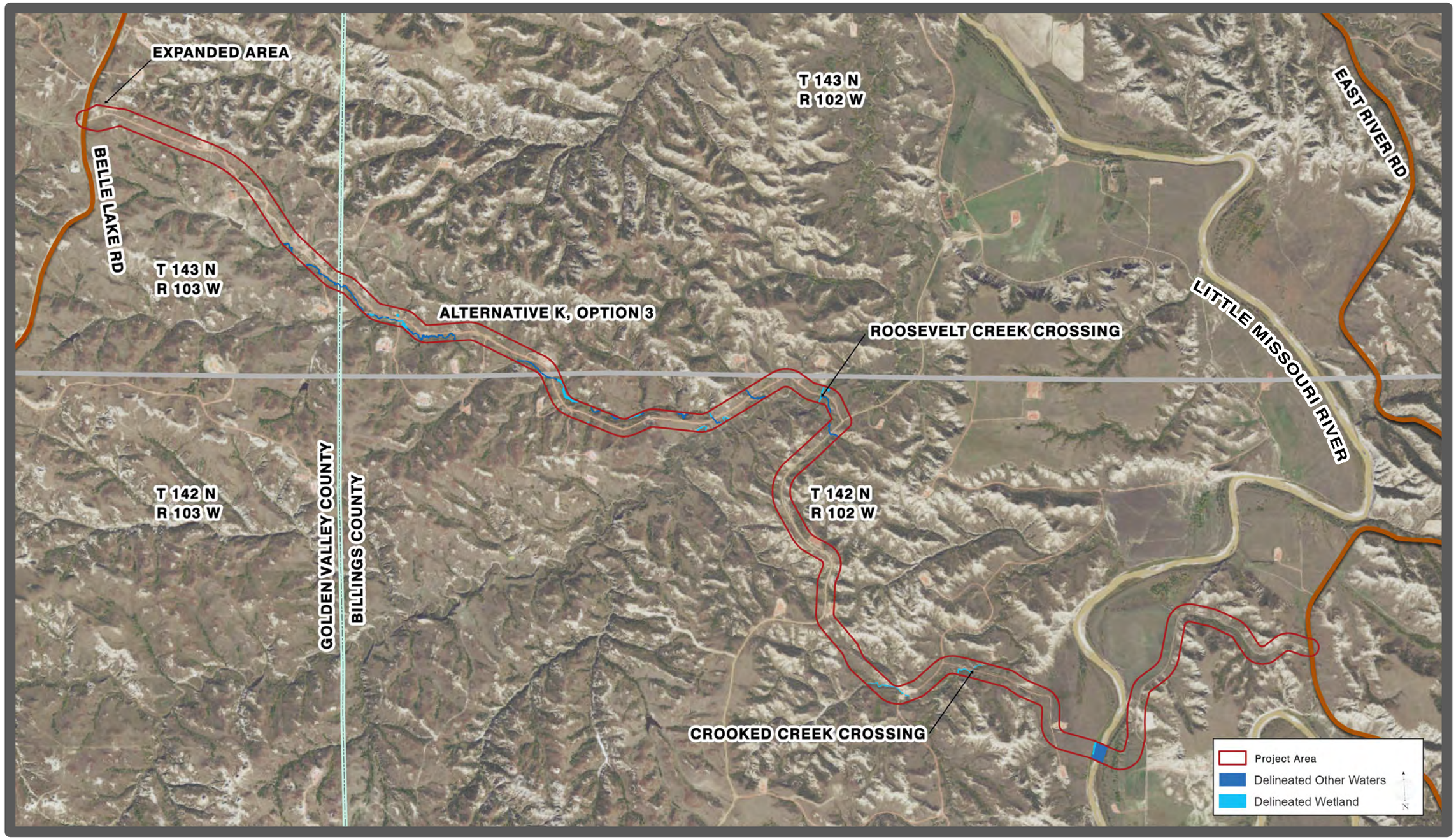


Figure 52, Alternative K, Option 3 Wetlands and Other Waters

On November 2, 2016, the USACE provided jurisdictional determination for the Field Wetland Delineation Reports, stating that the following waters are not jurisdictional waters of the United States: Wetland Numbers 2 and 3 (Alternative A project area); Wetland Number 17 (Alternative K [shared portion] project area); and Wetland Numbers 101, 102, 103, 104, and 106 (Alternative K, Option 1 expanded area). Therefore, a Section 404 permit would not be required for these wetland areas. The USACE also prepared a preliminary jurisdictional determination for the remaining aquatic resources identified within the expanded area of Alternative K, Option 1, stating that the waterways in the expanded area may be jurisdictional waters of the United States. If Alternative K, Option 1 includes impacts on any of these jurisdictional wetland areas, a Section 404 permit would be required prior to commencement of construction activities. However, if construction activities associated with Alternative K, Option 1 did not result in a discharge of dredged or fill material into waters of the United States, a permit pursuant to Section 404 would not be required. Please refer to **'Appendix J. Agency Concurrence'**.

5.12.2. What happens if the Little Missouri River crossing is not constructed?

Would wetlands and Other Waters be affected?

Under Alternative L (no-build), project construction would not occur, and therefore, would not affect wetlands. Local traffic would continue to cross the Little Missouri River at unimproved fords (when possible in favorable weather conditions), which could have minor impacts on the river and associated wetlands.

5.12.3. What happens if the Little Missouri River crossing is constructed?

5.12.3.1. Alternative A

Would wetlands and Other Waters be affected?

Alternative A was evaluated through preliminary design to avoid and minimize impacts on wetlands and Other Waters to the maximum extent practicable. During final design, temporary and permanent impacts would be further avoided and minimized to the maximum extent practicable.

The majority of Alternative A occurs along existing roadways, thereby minimizing new encroachments on wetlands. **'Table 14, Summary of Wetland and Other Water Impacts for Alternative A'** provides a summary of the anticipated temporary and permanent impacts from Alternative A. Impacts on Other Water crossings are reduced by constructing structures that would accommodate the flow, especially the crossing over the Little Missouri River.

Construction would result in temporary impacts on wetlands and Other Waters. Bypasses and stream diversions would be utilized as necessary for construction of drainage structures/creek crossings. Construction of the Little Missouri River crossing would require temporary structures, such as causeway and cofferdams. Any temporary structures or fill would be removed and pre-construction conditions would be restored. During construction, an NDPDES permit would require the implementation of BMPs to prevent sedimentation and erosion from having indirect effects on wetlands and Other Waters.

Table 14, Summary of Wetland and Other Water Impacts for Alternative A

Impact Type	Wetlands (acres)	Other Waters (acres/linear feet)
Natural, Jurisdictional		
Temporary*	0.07	1.20/1,803
Permanent	0.11	0.06/1,834
Total	**0.18**	**1.26/3,637**
Artificial, Jurisdictional		
Temporary*	—	—
Permanent	—	—
Total	—	—
Natural, Non-Jurisdictional		
Temporary*	0.27	—
Permanent	0.26	—
Total	**0.53**	—
Artificial, Non-Jurisdictional		
Temporary*	—	—
Permanent	—	—
Total	—	—

** These impacts do not include temporary facilities (e.g., causeway, cofferdams, bypass) used to construct the bridge and drainage/stream crossings, which would be finalized prior to permitting.*

5.12.3.2. Alternative K (All Options)

Would wetlands and Other Waters be affected?

Impacts on wetlands and Other Waters from Alternative K (all options) would be similar to those described for Alternative A.

Please refer to **'Table 15, Summary of Wetland and Other Water Impacts for Alternative K (All Options)'** for a summary of the anticipated temporary and permanent impacts from Alternative K (all options). Although Alternative K, Option 2 would have the least amount of impacts, all alternatives would have less than 1.65 acres of permanent wetland impacts and less than 3,000 linear feet of permanent impacts on Other Waters.

5.12.4. What mitigation measures and BMPs would be implemented?

During the initial project design phase, impacts on wetlands and Other Waters within the area were minimized to the maximum extent practicable. For all of the alternatives, the alignment would follow an existing roadway as closely as possible to minimize new roadway construction and potential permanent impacts on wetlands and Other Waters.

Table 15, Summary of Wetland and Other Water Impacts for Alternative K (All Options)

Impact Type	Wetlands (acres)			Other Waters (acres/linear feet)		
	Alt K, Option 1[a]	Alt K, Option 2	Alt K, Option 3	Alt K, Option 1[a]	Alt K, Option 2	Alt K, Option 3
Natural, Jurisdictional						
Temporary[b]	0.14	0.14	0.22	1.95/1,955	0.76/1,604	2.05/1,860
Permanent	1.25	0.26	0.49	0.14/1,873	0.10/756	0.39/2,899
Total	**1.39**	**0.40**	**0.71**	**2.09/3,828**	**0.86/2,360**	**2.44/4,759**
Artificial, Jurisdictional						
Temporary[b]	—	—	—	—	—	—
Permanent	—	—	—	—	—	—
Total	—	—	—	—	—	—
Natural, Non-Jurisdictional						
Temporary[b]	—	—	—	—	—	—
Permanent	0.01	—	—	—	—	—
Total	**0.01**	—	—	—	—	—
Artificial, Non-Jurisdictional						
Temporary[b]	—	—	—	—	—	—
Permanent	0.39	—	—	—	—	—
Total	**0.39**	—	—	—	—	—

Notes:

a. The alignment ultimately constructed within the expanded area would likely result in less impacts than identified in this EIS. In addition, once construction limits are determined for the alignment inside the expanded area, temporary impacts can be defined and permanent impacts can be further clarified in the Section 404 permit application.

b. These impacts do not include temporary facilities (e.g., causeway, cofferdams, bypass) used to construct the bridge and drainage/stream crossings, which would be finalized prior to permitting.

Unavoidable impacts on wetlands would be mitigated onsite, adjacent to the project, or at an NDDOT-approved mitigation site or bank, as necessary. During final design, a Section 404 permit application (and mitigation plan, if necessary) would be provided to the USACE for their consideration of impacts on wetlands and Other Waters under USACE jurisdiction. For naturally occurring wetlands outside of USACE jurisdiction requiring mitigation under EO 11990, impacts would be mitigated onsite, offsite, or an approved wetland site or bank. Mitigation would be accomplished in a manner consistent with FHWA's program-wide goal of 'net gain' of wetlands through enhancement, creation, and preservation.

Prior to construction activities, the contractor would be required to obtain an NDPDES permit and develop a SWPPP. The SWPPP would outline phasing for erosion- and sediment-controls, stabilization measures, pollution-prevention measures, and prohibited discharges. The SWPPP would also include BMPs to minimize erosion, sedimentation, and stormwater runoff (e.g., fiber rolls, straw waddles, erosion mats, silt fencing, turbidity barriers, mulching, filter fabric fencing, sediment traps and ponds, surface water interceptor swales, ditches). The SWPPP would require that secure and contained refueling areas are located away from surface waters, maintenance and monitoring measures are implemented to reduce the potential for spills and leaks, and the amount of stockpiled material is minimized and stored away from surface waters. In addition, waste material would be disposed of in accordance with state and federal laws and in a manner that avoids impacts on the Little Missouri River channel.

5.13. Vegetation

Botanical surveys for Alternative A and Alternative K (all options) were conducted August to September 2012, September 2013, May 2016, and July 2016. The field surveys were conducted within the project areas for Alternative A and Alternative K (all options). Landscapes of the project areas are typical of those found throughout the LMNG.

A Biological Assessment of Threatened & Endangered Species & Biological Evaluation of Sensitive Species– Little Missouri River Crossing, Alternative A (2017); Biological Assessment of Threatened & Endangered Species & Biological Evaluation of Sensitive Species– Little Missouri River Crossing, Alternative K (All Options) (2017); and Addendum to: Biological Assessment of Threatened & Endangered Species & Biological Evaluation of Sensitive Species– Little Missouri River Crossing, Alternative K (All Options) (2017) have been drafted by KLJ to document the findings of the botany surveys; discuss habitat suitability; and analyze the potential effects of the project on Endangered Species Act (ESA)-listed plant species, USFS-designated sensitive plant species, USFS-designated watch plant species, and plant species of concern. All three of these reports are **appended by reference**. KLJ submitted these documents to the USFS for review and concurrence, and on July 7, 2017, KLJ received concurrence from the USFS regarding the effect determinations made in these documents. Please refer to **'J.5. US Forest Service Concurrence— July 7, 2017' on page J-24** in **Appendix J**.

In addition, a Biological Assessment– Little Missouri River Crossing (Preferred Alternative) (2016) (**appended by reference**) and a Draft Biological Assessment– Little Missouri River Crossing, Alternative A and Alternative K (all options) (2016) have been drafted by KLJ to discuss habitat suitability and analyze the potential effects of the project on ESA-listed plant species. KLJ submitted the Biological Assessments to the USFWS for review and concurrence, and on November 3, 2016, KLJ received concurrence from the USFWS for effect determinations made in the Biological Assessment– Little Missouri River Crossing (Preferred Alternative). Please refer to **'J.2. US Fish and Wildlife Service Section 7 of the Endangered Species Act of 1973 (16 U.S.C. § 1531 et seq.) Concurrence— November 3, 2016' on page J-20**.

5.13.1. What general plant species are in the project areas?

The land uses within the project areas include mixed-grass, prairie rangelands and agricultural fields. The majority of the mixed-grass rangelands are dominated by native plant communities with non-native plants interspersed throughout. The dominant native plant communities present throughout the project areas included western wheatgrass (*Agropyron smithii*), silver sagebrush (*Artemisia cana*), and blue grama (*Bouteloua gracilis*). Dominant grass species on plateaus include western wheatgrass, blue grama, little bluestem (*Schizachyrium scoparium*), and needle-and-thread grasses (*Hesperostipa comata*). Dominant shrub species include big sagebrush (*Artemisia tridentata*), creeping juniper (*Juniperus horizontalis*), and broom snakeweed (*Gutierrezia sarothrae*), which occurred on butte slopes, while western snowberry (*Symphoricarpos occidentalis*) dominated within upland ephemeral drainages.

Tree species in the project areas include populations of Rocky Mountain juniper (*Juniperus scopulorum*) growing on many of the slopes, while plains cottonwood (*Populus deltoides*) and green ash (*Fraxinus pennsylvanica*) are common in the riparian areas. Pursuant to Chapter II – Section IV of the NDDOT Design Manual, woody vegetation counts were conducted in riparian areas (i.e., areas associated with delineated Other Waters). In addition, a woody vegetation count was done in areas where the project areas did not follow existing roadway alignments. This methodology was agreed upon in cooperation with the NDDOT, FHWA, USACE, USFS, and NDGFD during meetings held on June 29 and 30, 2015. Woody vegetation counts were obtained by sampling representative 30-foot radius areas.

*Sensitive plant species are defined by the USFS as species for which population viability is a concern, as evidenced by significant current or predicted downward trends in population numbers or density and downward trends in habitat capability that would reduce a species' existing distribution (*USFS 1991*). The NDPRD maintains the North Dakota Natural Heritage Inventory (NHI) database, which contains information regarding species of concern and significant ecological communities throughout North Dakota.*

5.13.2. What noxious or invasive vegetation is in and near the project areas

The dominant non-native graminoid species observed throughout the project areas included smooth brome (*Bromus inermis*), crested wheatgrass (*Agropyron cristatum*), and Kentucky bluegrass (*Poa pratensis*). These graminoid species were more prevalent throughout the project areas than other observed noxious and invasive weeds.

North Dakota's Noxious Weed Law (NDCC 4.1-14.01) defines weeds as species that are determined to be injurious to public health, crops, livestock, land, or other property, as determined by the State Agriculture Commissioner or county/city weed boards.

According to NDCC Chapter 4.1-47-02, everyone is responsible for controlling the spread of noxious weeds. The North Dakota Department of Agriculture recognizes 11 plants species as noxious weeds within the state. Both Billings and Golden Valley counties added six additional species to their lists. The following species on those lists were observed during the field survey: Russian knapweed (*Rhaponticum repens*), Canada thistle (*Cirsium arvense*), leafy spurge (*Euphorbia esula*), black henbane (*Hyoscyamus niger*), and field bindweed (*Convolvulus arvensis*).

The USFS also provides a list of 14 noxious and invasive plant species to be documented during field surveys. The following noxious and invasive species were observed during field surveys: crested wheatgrass, Kentucky bluegrass, smooth brome, yellow sweet clover (*Melilotus officinalis*), and white sweet clover (*Melilotus albus*). In addition to the USFS-, state-, and county-listed noxious weeds, three aquatic plant species are listed by the NDGFD as aquatic nuisance species. However, no aquatic nuisance species have been identified within the project areas for Alternative A or Alternative K (all options).

Black henbane observed during field surveys

5.13.3. What ESA-listed and USFS-designated sensitive plant species are within the project areas?

There are no botanical resources listed for ESA protection within the study area.

The USFS Region 1 has listed 14 sensitive plant species within the LMNG, of which 13 have suitable habitat within the Alternative A project area and 14 have suitable habitat within the Alternative K (all options) project areas (USFS 2011). Please refer to **'Table 16, Sensitive Plant Species Impact Determinations for Alternative A' on page 76** and **'Table 17, Sensitive Plant Species Impact Determinations for Alternative K (All Options)' on page 76** for a full list of the sensitive plant species for Alternative A and Alternative K (all options). Of the 13 sensitive plant species with suitable habitat occurring within the Alternative A project area, 2 were identified and recorded during field surveys: alkali sacaton (*Sporobolus airoides*) and Missouri pincushion cactus (*Escobaria missouriensis*). Of the 14 sensitive plant species with suitable habitat occurring within the Alternative K (all options) project areas, 3 were identified during field surveys: alkali sacaton, Missouri pincushion cactus, and Hooker's townsendia (*Townsendia hookeri*).

5.13.4. What happens if the Little Missouri River crossing is not constructed?

Under Alternative L (no-build), the vegetation communities would remain similar to current conditions. Noxious weeds and invasive species would continue to persist at their current rates, and no impacts beyond what is currently being experienced would be expected.

5.13.5. What happens if the Little Missouri River crossing is constructed?

5.13.5.1. Alternative A

Would general plant species be affected?

Construction activities would result in the removal of vegetation and disturbance of soil structure. Removal of vegetation would temporarily increase the potential for erosion and sedimentation until revegetation has occurred. Once vegetation has been reestablished, impacts from construction activities would be reduced.

Alternative A would impact trees within the construction limits. While most of these trees would be impacted during construction of the new roadway, a portion could be impacted as a result of upgrades to the existing roadway.

Table 16, Sensitive Plant Species Impact Determinations for Alternative A

Species	Suitable Habitat within Project Area	Species Known or Suspected to Occur within Project Areas?	No Impact	May Impact	Will Impact	Beneficial Impact
Dakota Buckwheat (*Eriogonum visheri*)	Yes	No		X		
Alkali Sacaton (*Sporobolus airoides*)	Yes	Yes		X		
Alyssum-leaved Phlox (*Phlox alyssifolia*)	Yes	No		X		
Blue Lips (*Collinsia parviflora*)	Yes	No		X		
Dwarf Mentzelia (*Mentzelia pumila*)	Yes	No		X		
Easter Daisy (*Townsendia exscapa*)	Yes	No		X		
Hooker's Townsendia (*Townsendia hookeri*)	Yes	No		X		
Lance-leaf Cottonwood (*Populus x acuminate*)	Yes	No		X		
Limber Pine (*Pinus flexilis*)	No	No	X			
Missouri Pincushion Cactus (*Escobaria missouriensis*)	Yes	Yes			X	
Nodding Wild Buckwheat (*Eriogonum cernuum*)	Yes	No		X		
Sand Lily (*Leucocrinum montanum*)	Yes	No		X		
Smooth Goosefoot (*Chenopodium subglabrum*)	Yes	No		X		
Torrey's Cryptantha (*Cryptantha torreyana*)	Yes	No		X		

Table 17, Sensitive Plant Species Impact Determinations for Alternative K (All Options)

Species	Suitable Habitat within Project Area	Species Known or Suspected to Occur within Project Area?	No Impact	May Impact	Will Impact	Beneficial Impact
Dakota Buckwheat (*Eriogonum visheri*)	Yes	No		X		
Alkali Sacaton (*Sporobolus airoides*)	Yes	Yes		X		
Alyssum-leaved Phlox (*Phlox alyssifolia*)	Yes	No		X		
Blue Lips (*Collinsia parviflora*)	Yes	No		X		
Dwarf Mentzelia (*Mentzelia pumila*)	Yes	No		X		
Easter Daisy (*Townsendia exscapa*)	Yes	No		X		
Hooker's Townsendia (*Townsendia hookeri*)	Yes	Yes			X	
Lance-leaf Cottonwood (*Populus x acuminate*)	Yes	No		X		
Limber Pine (*Pinus flexilis*)	Yes	No	X			
Missouri Pincushion Cactus (*Escobaria missouriensis*)	Yes	Yes		X		
Nodding Wild Buckwheat (*Eriogonum cernuum*)	Yes	No		X		
Sand Lily (*Leucocrinum montanum*)	Yes	No		X		
Smooth Goosefoot (*Chenopodium subglabrum*)	Yes	No		X		
Torrey's Cryptantha (*Cryptantha torreyana*)	Yes	No		X		

How would noxious weeds and invasive species be controlled?

Alternative A is not anticipated to contribute to a substantial increase in noxious weed occurrences within the project area. However, it is possible that construction activities could result in the spread or introduction along the ROW/easements, or transport noxious weeds or invasive plant species into areas that are relatively free of these species. Infestations within the construction area may cause an initial decrease in grasses and forbs, but with early detection and control this loss would recover over time and the grasses and forbs would return to normal levels.

Would ESA-listed or USFS-designated sensitive plant species be affected?

Alternative A would not affect ESA-listed plant species, as there are no botanical resources listed for ESA protection within the study area.

For consideration of potential impacts on the USFS-designated sensitive plant species from Alternative A, the following determinations of effect were made:

- *No impact*
- *May impact* individuals or habitat, not likely to trend toward federal listing or cause of loss of viability to the population or species
- *Will impact* individuals or habitat with a consequence that the action may contribute to a trend toward federal listing or cause a loss of viability to the population or species
- *Beneficial impact*

Please refer to **'Table 16, Sensitive Plant Species Impact Determinations for Alternative A'** for a summary of impact determinations for all 14 sensitive species. The following paragraphs further discuss impact determinations associated with roadway construction for the species that are suspected or known to occur within the project areas and/or have suitable habitat within the project area for Alternative A.

Missouri Pincushion Cactus. One population of Missouri pincushion cactus identified during the field surveys would be impacted from roadway construction activities. Known sensitive plant locations near the construction limits would be flagged in order to avoid adverse impacts. Due to the disturbance of populations and presence of suitable habitat, Alternative A *will impact* individuals or habitat, but will not likely contribute to a trend toward federal listing or cause a loss of viability to the species due to its globally secure ranking and BMPs.

Alkali Sacaton. None of the identified populations are located within the roadway construction limits of Alternative A. Known sensitive plant locations near the roadway construction limits would be flagged in order to avoid adverse impacts. Due to the presence of the species and suitable habitat, Alternative A *may impact* individuals or habitat, but will not likely contribute to a trend toward federal listing or cause a loss of viability to the species due to its globally secure ranking, BMPs, and the ability of alkali sacaton to thrive in a variety of habitats.

Other Species. Due to disturbance of suitable habitat, Alternative A *may impact* undiscovered individuals for 11 other species, but will not likely contribute to a trend toward federal listing or cause a loss of viability to these species due to their globally secure or globally apparently secure rankings, and/or lack of known occurrences within the project construction areas and BMPs.

In addition to impacts on sensitive species from roadway construction activities, utility relocations would have the potential to impact sensitive species under Alternative A. Necessary utility relocations would be determined during final design in coordination with the applicable companies. Please refer to **section '5.19. Utilities'**.

5.13.5.2. Alternative K (All Options)

Would general plant species be affected?

Impacts on vegetation from construction activities under Alternative K (all options) would be similar to, but less than, those described for Alternative A. The length of the alignment for all options under Alternative K would be less than 11 miles. Therefore, Alternative K (all options) would require less earthwork during construction and would result in slightly less removal of vegetation than Alternative A.

Of the three options, Alternative K, Option 1 (Preferred Alternative) would have the shortest alignment, approximately 8.3 miles. Alternative K, Option 2 and Alternative K, Option 3 would have slightly longer alignments at 8.4 miles and 9.9 miles, respectively. Therefore, Alternative K, Option 1 (Preferred Alternative) is anticipated to have the least amount of impacts on vegetation.

How would noxious weeds and invasive species be controlled?

Noxious weeds and invasive species would be controlled during construction of Alternative K (all options) in the same manner described for Alternative A. Similar to Alternative A, infestations within the project areas could cause an initial decrease in grasses and forbs, but with early detection and control this loss would recover over time, and the grasses and forbs would return to normal levels.

Would ESA-listed or USFS-designated sensitive plant species be affected?

Alternative K (all options) would not affect ESA-listed plant species, as there are no botanical resources listed for ESA protection within the study area.

For consideration of potential impacts on the USFS-designated sensitive plant species from Alternative K (all options), the same determinations of effect described under Alternative A were used.

Please refer to **'Table 17, Sensitive Plant Species Impact Determinations for Alternative K (All Options)' on page 76** for a summary of impact determinations for all 14 sensitive species. The following paragraphs further discuss impact determinations for the species that are suspected or known to occur within the project areas and/or have suitable habitat within the project areas for Alternative K (all options).

Hooker's Townsendia. Two of the identified populations are located within the roadway construction limits under the shared alignment of Alternative K. Other known sensitive plant locations near the construction limits would be flagged in order to avoid adverse impacts. Due to the disturbance of the species and presence of suitable habitat, Alternative K (all options) *will impact* individuals or habitat, but will not likely contribute to a trend toward federal listing or loss of viability to the species due to its globally secure ranking and BMPs.

Alkali Sacaton. The population of alkali sacaton identified during the field surveys would not be impacted by roadway construction activities. Known sensitive plant locations near the construction limits would be flagged in order to avoid adverse impacts. Due to the presence of suitable habitat, Alternative K (all options) *may impact* individuals or habitat, but will not likely contribute to a trend toward federal listing or cause a loss of viability to the species due to its globally secure ranking, BMPs, and the ability of alkali sacaton to thrive in a variety of habitats.

Missouri Pincushion Cactus. None of the populations of Missouri pincushion cactus identified during the field surveys would be impacted by roadway construction activities. Known sensitive plant locations near the construction limits would be flagged in order to avoid adverse impacts. Due to the presence of populations within the survey areas and suitable habitat, Alternative K (all options) *may impact* individuals or habitat, but will not likely contribute to a trend toward federal listing or cause a loss of viability to the species due to its globally secure ranking and BMPs.

Other Species. Due to disturbance of suitable habitat, Alternative K (all options) may impact undiscovered individuals for 10 other species, but will not likely contribute to a trend toward federal listing or cause a loss of viability to these species due to their globally secure or globally apparently secure rankings, and/or lack of known occurrences within the project construction areas and BMPs.

In addition to impacts on sensitive species from roadway construction activities, utility relocations would have the potential to impact sensitive species under Alternative K (all options). Necessary utility relocations would be determined during final design in coordination with the applicable companies. Please refer to **section '5.19. Utilities' on page 118**.

5.13.6. What mitigation measures and BMPs would be implemented?

Prior to construction activities, the contractor would be required to obtain an NDPDES permit and develop a SWPPP. The SWPPP would outline phasing for erosion- and sediment-controls, stabilization measures, pollution-prevention measures, and prohibited discharges. The SWPPP would also include BMPs to minimize erosion, sedimentation, and stormwater runoff (e.g., fiber rolls, straw waddles, erosion mats, silt fencing, turbidity barriers, mulching, filter fabric fencing, sediment traps and ponds, surface water interceptor swales, ditches). In addition, waste material would be disposed of in accordance with state and federal laws.

Areas that are reclaimed would be vegetated in accordance with USFS Seeding Rate Guidelines (i.e., 37-28A Seed Mixture). Grasses in this seed mixture include cool-season, warm-season, and alternate warm-season grasses and forbs. The number of trees impacted would be assessed during construction and any necessary mitigation would be determined in coordination with the NDDOT, NDGFD, and USFS.

During construction, the contractor would be responsible for control of noxious weeds. To reduce the potential for spreading of noxious weeds and invasive species, all construction equipment would be pressure washed and free of noxious weeds and plant propagules (i.e., seeds and vegetative parts that may sprout) prior to entrance onto the project site. This would include equipment and vehicles intended for off-road as well as on-road use, whether they are owned, leased, or borrowed by the contractor or any subcontractor. Cleaning of vehicles and equipment would occur off-site. Billings and Golden Valley counties would be responsible for the control of noxious weeds within their ROW/easements after construction.

To minimize the risk of degrading habitat by spreading aquatic nuisance species, the contractor would conduct equipment inspections and cleaning prior to placing any equipment within waters of the state (i.e., the Little Missouri River), in accordance with NDCC Chapter 20.1-17.

Known sensitive plant locations near the alignment would be avoided to the maximum extent practicable. All other known sensitive plant species populations near the alignment would be flagged in order to avoid adverse impacts. Upon availability of necessary utility relocations, additional coordination with USFS would occur to assess impacts on sensitive plant species.

5.14. Wildlife

Biological surveys for Alternative A and Alternative K (all options) were conducted August to September 2012, September 2013, and May and July 2016. The field surveys were conducted within the project areas for Alternative A and Alternative K (all options). Desktop analysis was used to gather information pertaining to habitat and documented wildlife sightings within the vicinity of the project areas. Data from USFS, NDPRD NHI database, and NDGFD was included in the desktop analysis.

A Biological Assessment of Threatened & Endangered Species & Biological Evaluation of Sensitive Species– Little Missouri River Crossing, Alternative A (2017); Biological Assessment of Threatened & Endangered Species & Biological Evaluation of Sensitive Species– Little Missouri River Crossing, Alternative K (All Options) (2017); and Addendum to: Biological Assessment of Threatened & Endangered Species & Biological Evaluation of Sensitive Species– Little Missouri River Crossing, Alternative K (All Options) (2017) have been drafted by KLJ to document the findings of the biological surveys; discuss habitat suitability; and analyze the potential effects of the project on raptors, ESA-listed wildlife species, and critical habitat, USFS-designated sensitive wildlife species, USFS-designated Management Indicator Species, and wildlife species of concern. All three of these reports are **appended by reference**. KLJ submitted these documents to the USFS for review and concurrence, and on July 7, 2017, KLJ received concurrence from the USFS regarding the effect determinations made in these documents. Please refer to **'J.5. US Forest Service Concurrence— July 7, 2017' on page J-24** in **Appendix J**.

In addition, a Biological Assessment– Little Missouri River Crossing (Preferred Alternative) (2016) (**appended by reference**) and a Draft Biological Assessment– Little Missouri River Crossing, Alternative A and Alternative K (all options) (2016) have been drafted by KLJ to discuss habitat suitability and analyze the potential effects of the project on ESA-listed wildlife species and critical habitat. KLJ submitted the Biological Assessments to the USFWS for review and concurrence and on November 3, 2016, KLJ received concurrence from the USFWS for effect determinations made in the Biological Assessment– Little Missouri River Crossing (Preferred Alternative). Please refer to **'Appendix J. Agency Concurrence'**.

Wildlife observations from field surveys included a horny toad, avian tracks, porcupine, and a beaver dam.

5.14.1. What migratory birds and general wildlife species are in the project areas?

Avian species observed within the Alternative A and Alternative K (all options) project areas include year-round and migratory birds. Bird species observed include the following:

- Red-tailed hawk (*Buteo jamaicensis*)
- Turkey vulture (*Cathartes aura*)
- Sharp-tailed grouse (*Tympanuchus phasianellus*)
- Hungarian partridge (*Perdix perdix*)
- Ring-necked pheasant (*Phasianus colchicus*)
- Wild turkey (*Meleagris gallopavo merriami*)
- Black-capped chickadee (*Poecile atricapillus*)
- White-breasted nuthatch (*Sitta carolinensis*).
- White-throated sparrows (*Zonotrichia albicollis*)
- Sandhill cranes (*Grus canadensis*)
- Variety of waterfowl, sparrows, kingbirds, swallows, and warblers.

Protection for migratory birds is provided under the Migratory Bird Treaty Act (MBTA) (916 U.S.C. § 703–711). The MBTA regulates impacts on migratory birds, such as taking, direct mortality, habitat degradation, and displacement of individual birds. The MBTA defines 'taking' to include by any means or in any manner, any attempt at hunting, pursuing, wounding, killing, possessing, or transporting any migratory bird, nest, egg, or part thereof, except when specifically permitted by regulations.

Mammalian species observed within the Alternative A and Alternative K (all options) project areas include the following:

- Elk (*Cervus elaphus*)
- Mule deer (*Odocoileus hemionus*)
- White-tailed deer (*Odocoileus virginianus*)
- Pronghorn (*Antilocapra americana*)
- Porcupine (*Erethizon dorsatum*)
- Coyote (*Canis latrans*)
- Badger (*Taxidea taxus*).

A limited number of reptiles and amphibians were observed during the field surveys, including the following:

- Great Plains toad (*Bufo cognatus*)
- Prairie rattlesnake (*Crotalus viridis*)
- Sagebrush lizard (*Sceloporus graciosus*).

Identification of fish species was not included in the field surveys for Alternative A or Alternative K (all options); however, several fish species are known to occur in the Little Missouri River, including the following (NPS Undated b):

- Chubs (*Cyprinidae* spp.)
- Minnows (*Phoxinus phoxinus*)
- Bluegills (*Lepomis macrochirus*)
- Carpsuckers (*Carpiodes carpio*)
- Goldeneyes (*Hiodon alosoides*)
- Saugers (*Sander canadensis*)
- Channel catfish (*Ictalurus punctatus*)
- Walleye (*Sander vitreus*) (occasionally present)
- Fingerling pike (*Esox Lucius*) (occasionally present).

5.14.2. What raptors are in the project areas?

Under guidance from the DPG Land and Resource Management Plan (USFS 2001b), seven raptor species including the American peregrine falcon (*Falco peregrinus anatum*), bald eagle (*Haliaeetus leucocephalus*), burrowing owl (*Athene cunicularia*), ferruginous hawk (*Buteo regalis*), golden eagle (*Aquila chrysaetos*), merlin (*Falco columbarius*), and prairie falcon (*Falco mexicanus*) are given special consideration for land management activities. Suitable habitat for all of these raptor species exists within the Alternative A and Alternative K (all options) project areas.

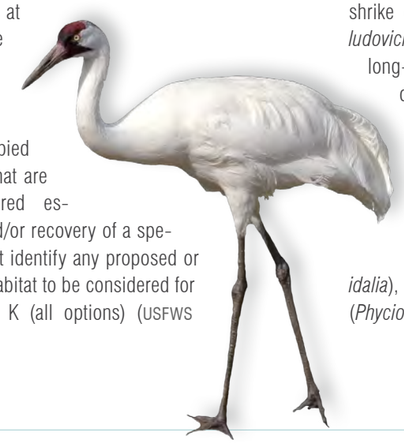
There are no historical observations of the American peregrine falcon, bald eagle, burrowing owl, ferruginous hawk or merlin within or adjacent to the project areas, and no individuals or nests were observed during field surveys. There are no historical observations of the golden eagle or prairie falcon within the Alternative A or Alternative K (all options) project areas; however, these species are known to occur within and/or adjacent to the project areas. Historical observations of golden eagles are recorded within 0.5 miles of Alternative K, Option 1 (Preferred Alternative) and Alternative K, Option 2, and golden eagles were observed during the field surveys adjacent to the project area for Alternative K, Option 1 (Preferred Alternative) and within project area for Alternative K, Option 3. One historical observation of a prairie falcon is located within 0.5 miles of Alternative A and two observations are located within 0.5 miles of Alternative K, Option 1 (Preferred Alternative). In addition, a prairie falcon was observed during the field surveys within the Alternative K, Option 1 project area.

Protection for the bald eagle and golden eagle is also provided under the Bald and Golden Eagle Protection Act (BGEPA) of 1940 (16 U.S.C. § 668–668d). The BGEPA, as amended, was written with the intent to protect and preserve bald and golden eagles, both of which are treated as species of concern within the Department of the Interior. The BGEPA provides additional protection to all bald and golden eagles. Under the BGEPA, 'take' includes to pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb, wherein 'disturb' means to agitate or bother a bald or golden eagle to the degree that interferes with or interrupts normal breeding, feeding, or sheltering habits, causing injury, death, or nest abandonment.

5.14.3. What ESA-listed wildlife species and critical habitats are in the project areas?

An endangered species is one that is in danger of extinction throughout all or a significant portion of its range, while a threatened species is one that is likely to become endangered in the foreseeable future. The USFWS Environmental Conservation Online System: Information for Planning and Conservation (IPaC), identified the following threatened and endangered species to be considered for Alternative A and Alternative K (all options) (USFWS Undated a, USFWS Undated b): black-footed ferret (*Mustela nigripes*), endangered; gray wolf (*Canis lupus*), endangered; whooping crane (*Grus americana*), endangered; and northern long-eared bat (*Myotis septentrionalis*), threatened.

A proposed species is one that is officially proposed in the *Federal Register* to be listed under Section 4 of the ESA, while a candidate species is a plant or animal for which the USFWS has sufficient information on its biological status and threats to propose it as endangered or threatened under the ESA, but for which development of a proposed listing regulation is precluded by other higher priority listing activities. While candidate species are not legally protected under the ESA, it is within the spirit of the ESA to consider these species as having significant value and worth protecting. Critical habitat includes specific areas that are occupied by a species at the time of listing or unoccupied areas that are considered essential to the conservation and/or recovery of a species. The USFWS IPaC did not identify any proposed or candidate species or critical habitat to be considered for Alternative A and Alternative K (all options) (USFWS Undated a, USFWS Undated b).



In accordance with Section 7 of the ESA, each federal agency is required to ensure the following two criteria: (1) any action funded or carried out by such agency must not be likely to jeopardize the continued existence of any federally listed endangered or threatened species or species proposed to be listed and (2) no such action can result in the destruction or adverse modification of habitat of such species that is determined to be critical by the Secretary of the Interior.

No suitable black-footed ferret habitat was identified within the Alternative A or Alternative K (all options) project areas and the species was not observed during field surveys. Suitable habitat for the gray wolf occurs within the Alternative A and Alternative K (all options) project areas, and historical observation of the species have been recorded in Billings County outside of the project areas. No indications of gray wolves were observed during the field surveys. Potential migration stopover habitat for the whooping crane occurs within the Alternative A and Alternative K (all options) project areas; however, the habitat is not believed to be ideal stopover habitat. In addition, whooping cranes were not observed during the field surveys. Suitable habitat for the northern long-eared bat occurs within the Alternative A and Alternative K (all options) project areas. Northern long-eared bats were not observed during the field surveys; however, historical observations were recorded outside of the project areas within the TRNP–North Unit, TRNP–Elkhorn Ranch Unit, and LMNG (Gillam, E. and Barnhart, P. 2012).

5.14.4. What USFS-designated sensitive wildlife species are in the project areas?

Sensitive wildlife species with suitable habitat within the Alternative A and Alternative K (all options) project areas include: bighorn sheep (*Ovis canadensis*), loggerhead shrike (*Lanius ludovicianus*), long-billed curlew (*Numenius americanus*), northern redbelly dace (*Phoxinus eos*), Ottoe skipper (*Hesperia ottoe*), regal fritillary (*Speyeria idalia*), Sprague's pipit (*Anthus spragueii*), and tawny crescent (*Phyciodes batessi*).

Sensitive wildlife species are defined by the USFS as species for which population viability is a concern, as evidenced by significant current or predicted downward trends in population numbers or density and downward trends in habitat capability that would reduce a species' existing distribution (USFS 1991).

There are no historical observations of the loggerhead shrike, long-billed curlew, redbelly dace, Ottoe skipper, regal fritillary, Sprague's pipit, or tawny crescent within or adjacent to the project areas, and no individuals were observed during field surveys. While no bighorn sheep were identified during field surveys, the Alternative A and Alternative K (all options) project areas intersect NDGFD-designated Bighorn Sheep Critical Range (i.e., areas important for bighorn sheep lambing) (NDGFD 2013, Wiedmann, B., and B. Hosek 2013). In addition, portions of the existing roadway under Alternative A runs through DPG MA 3.51A Bighorn Sheep Habitat with Non-Federal Mineral Ownership and DPG MA 3.51B—Bighorn Sheep Habitat with Non-Federal Mineral Ownership, which are managed, in part, to provide quality forage, cover, escape terrain, and solitude for bighorn sheep (USFS 2001b, USFS 2002).

5.14.5. What USFS-designated Management Indicator Species are in the project areas?

Management Indicator Species for the LMNG include the black-tailed prairie dog, greater sage grouse (*Centrocercus urophasianus*), and sharp-tailed grouse (USFS 2001b).

> ***Management Indicator Species** are defined by the USFS as plant and animal species, communities, or special habitats selected for emphasis in planning, which are monitored during forest plan implementation in order to assess the effects of management activities on their populations and the populations of other species with similar habitat needs that they represent (*USFS 1991*).*

No suitable habitat for black-tailed prairie dog occurs within the Alternative A or Alternative K (all options) project areas, and no individuals were observed during field surveys for Alternative A. However, a 21.4-acre prairie dog colony was observed outside of the Alternative K (all options) project area (in Section 36, Township 143 North, Range 103 West) where black-tailed prairie dogs were observed during the field surveys. Greater sage grouse habitat was identified within the Alternative A and Alternative K (all options) survey areas during field surveys; however, the current sage grouse range within North Dakota is limited to the far southwestern portion of the state, and no individuals were observed during the field surveys. Sharp-tailed grouse habitat occurs within the Alternative A and Alternative K (all options) project areas, and individuals were observed during the field surveys within all of the project areas. While no leks (i.e., breeding grounds) were identified within the project areas, two historical sharp-tailed grouse leks have been recorded approximately 0.5 miles from Alternative A and one historical lek has been recorded approximately 0.9 miles from Alternative K (all options).

5.14.6. What wildlife species of concern are in the project areas?

The NDPRD maintains the North Dakota NHI database, which contains information regarding wildlife species of concern and significant ecological communities throughout North Dakota. Recorded observations from the NDPRD NHI indicate one wildlife species of concern within the vicinity of Alternative A (i.e., Cooper's hawk) and one wildlife species of concern within the vicinity of Alternative K (all options) (i.e., sturgeon chub [*Macrhybopsis gelida*]). However, USFWS sampling efforts have not documented the sturgeon chub in the Little Missouri River (USFWS 2000, USFWS 2001). Therefore, potential impacts on the sturgeon chub are not discussed further.

5.14.7. What happens if the Little Missouri River crossing is not constructed?

Under Alternative L (no-build), a bridge over the Little Missouri River would not be provided and vehicles would continue to use fords (when possible in favorable weather conditions) to cross the river. By driving directly through the river at unimproved fords, sedimentation and turbidity can be produced via vehicles disturbing sediment and soil, subsequent storm water runoff of disturbed soil, and waves from vehicles eroding banks. In addition, unimproved fords can create a greater risk of direct contamination from chemical pollutant debris that wash off vehicles, vehicle spills or leaks, and introduction and spread of noxious weeds and invasive species than a bridge crossing. According to the USFS's Low-Water Crossings: Geomorphic, Biological, and Engineering Design Considerations publication, existing research does not show that significant water quality problems can arise from chemical pollutant debris that is washed off vehicles while they drive through the water; however, potential pollutants could include oil, grease, lead, zinc, cadmium, and polychlorinated biphenyls from tire wear (USFS 2006). While this has the potential to have an adverse impact on aquatic habitat and species associated with the river, it is not anticipated to significantly affect the long-term habitat quality of the river.

Apart from aquatic species, under Alternative L, no impacts on migratory birds, general wildlife species, raptors, ESA-listed wildlife species or critical habitat, USFS-designated sensitive wildlife species, USFS-designated Management Indicator Species, or wildlife species of concern would be expected.

5.14.8. What happens if the Little Missouri River crossing is constructed?

5.14.8.1. Alternative A

Would migratory birds and general wildlife species be affected?

The majority of Alternative A (i.e., approximately 10.2 of the total 11 miles) would closely follow an existing roadway alignment; therefore, impacts on habitat are anticipated to be minimal. Some habitat fragmentation would occur in areas where new roadway would be constructed.

According to the Little Missouri River Crossing Traffic Operations Memorandum, an additional 1 percent would be added to the 2.5-percent annual baseline traffic growth rate to account for the redistribution of local trips that may be attracted to the new bridge. Therefore, under Alternative A, a total annual traffic growth rate of 3.5 percent would be expected for roads associated with the alternative and adjacent roadways. Because the traffic increase would be negligible, impacts on wildlife associated with vehicles traveling on the roadway are expected to be minimal.

Construction of Alternative A would include placing piers directly into the river. The bridge would be designed to maintain current flow volume, and the proportion of the river channel that would be occupied by the bridge would be relatively small. Impacts on fish species as a result of altered stream velocities, flow patterns, and river morphology are anticipated to be negligible as the river adjusts to these changes. Bridge construction would require placing cofferdams or earthen ring dikes within the river channel to construct each pier and a temporary causeway or bridge to construct the bridge. These structures would divert more water than the actual piers, which could temporarily affect river flow volumes.

Construction would cause temporary increases in erosion and sedimentation within surface waters. Upon completion of construction, the river is expected to experience less sedimentation and disturbance than under existing conditions due to a reduction in vehicles driving directly through the river.

Increased noise levels and motion associated with construction activities and roadway operation may disturb wildlife species utilizing areas adjacent to the roadway and temporarily or permanently displace those species. However, most wildlife species would be expected to quickly recover once the construction activities ceased or habituate to the disturbances altogether.

Alternative A would cross over Buckhorn Creek, and therefore, one crossing would need to be installed within Buckhorn Creek to allow its waters to flow under the roadway. To minimize impacts on migratory birds, the NDDOT Standard Special Provision (SP) for the MBTA (i.e., SP 0004(14)) would be included in the plan set for the contractor to implement. If nests are not present on the structure, this SP allows the contractor to implement preventative measures to discourage future nesting during construction activities. If nests are present on the structure, the contractor would be required to have a qualified biologist conduct a bird/nest survey prior to beginning work on the structure. If the survey identifies any active nests, construction activities associated with the structure must cease within a 25-foot radius of the active nests, or another radius determined in coordination with the USFWS.

Noise and motion during construction activities could result in temporary disturbance to migratory birds; however, it is anticipated that migratory birds would avoid the construction areas and use other areas in the vicinity of Alternative A. The MBTA and EO 13186 require federal agencies to minimize or avoid impacts on migratory birds listed in 50 CFR § 10.13. If design and implementation of a project cannot avoid measurable adverse impacts on migratory birds, EO 13186 requires the responsible agency to consult with the USFWS and obtain a Migratory Bird Depredation Permit. Construction activities would be conducted in a manner to avoid adverse impacts on migratory birds to the maximum extent practicable. It is not anticipated that Alternative A would result in any measurable negative impacts on migratory birds (e.g., direct mortality, decrease in population size, decrease in fitness, repetitive nest failure).

Would raptors be affected?

For analyzing potential impacts on raptors from Alternative A, one of the following determinations of effect were made for each species considered: *no impact*; *may impact* individuals or habitat, but is not likely to adversely affect the reproductive success; *will impact* individuals or habitat and may adversely affect the reproductive success; or *beneficial impact*.

Due to the minimal impact on suitable habitat and lack of observations within and adjacent to the project area, Alternative A is anticipated to

have no impact on the American peregrine falcon, bald eagle, burrowing owl, Cooper's hawk, ferruginous hawk, golden eagle, merlin, and prairie falcon.

Would ESA-listed wildlife species be affected?

Per USFWS guidance, for analyzing potential impacts on ESA-listed species from Alternative A, one of the following determinations of effect were made for each species considered: *no effect*; *may affect, but is not likely to adversely affect*; or *may affect, and is likely to adversely affect*.

There is no black-footed ferret habitat present within the Alternative A project area; therefore, Alternative A is anticipated to have *no effect* on the black-footed ferret. Since the gray wolf is a wide-ranging species known to survive even in urban settings, where tolerated (USFWS 2011), Alternative A is anticipated to have *no effect* on the gray wolf.

Potential whooping crane migration stopover habitat would be disturbed by Alternative A; therefore, Alternative A *may affect, but is not likely to adversely affect*, the whooping crane. While no new overhead utility lines would be installed as a result of Alternative A, existing lines may need to be raised or offset. After any overhead utility line relocation, the potential for bird strikes on lines would still be present. However, the shift in utility line location would be minor and the inclusion of bird diverters that are not currently on the utility lines would prevent additional collision hazards compared to existing conditions.

Suitable northern long-eared bat habitat would be disturbed by Alternative A; therefore, Alternative A *may affect, but is not likely to adversely affect*, the northern-long eared bat. Due to timing restrictions of tree removal, impacts would be limited to minor displacement of individuals.

Would USFS-designated sensitive wildlife species be affected?

For analyzing potential impacts on USFS-designated sensitive wildlife species from Alternative A, one of the following determinations of effect were made for each species considered: *no impact*; *may impact* individuals or habitat, but will not likely contribute to a trend toward federal listing or cause loss of viability to the populations or species; *will impact* individuals or habitat with a consequence that the action may contribute to a trend toward federal listing or cause a loss of viability to the population or species; or *beneficial impact*.

No suitable habitat for the Sprague's pipit would be impacted by Alternative A; therefore, Alternative A is anticipated to have *no impact* on the Sprague's pipit.

Alternative A would result in minor impacts on potential habitat for the bighorn sheep, loggerhead shrike, long-billed curlew, northern redbelly dace, Ottoe skipper, regal fritillary, and tawny crescent; therefore, Alternative A *may impact* individuals or habitat, but will not likely contribute to a trend toward federal listing or cause loss of viability to the populations or species. Impacts on USFS-designated sensitive wildlife species from construction would be similar to those described for migratory birds and general wildlife species.

Would USFS-designated Management Indicator Species be affected?

For analyzing potential impacts on USFS-designated Management Indicator Species from Alternative A, one of the following determinations of effect were made for each species considered: *no impact*; *may impact* individuals or habitat, but is not likely to adversely affect the reproductive success; *will impact* individuals or habitat and may adversely affect the reproductive success; or *beneficial impact*.

There are no black-tailed prairie dog colonies present within the Alternative A project area; therefore, Alternative A is anticipated to have *no impact* on the black-tailed prairie dog. The current range of the greater sage grouse does not occur within the Alternative A project area; therefore, Alternative A is anticipated to have *no impact* on the greater sage grouse.

Alternative A would result in minor impacts on potential habitat for the sharp-tailed grouse, and there are leks within 1-mile of the existing roadway; therefore, Alternative A *may impact* individuals or habitat, but is not likely to adversely affect the reproductive success of this species. Impacts on the sharp-tailed grouse from construction would be similar to those described for migratory birds and general wildlife species.

Would wildlife species of concern be affected?

Due to the minimal impact on suitable habitat and lack of observations within and adjacent to the project area, Alternative A is anticipated to have *no impact* on the Cooper's hawk.

5.14.8.2. Alternative K (All Options)

Impacts on migratory birds, general wildlife species, ESA-listed wildlife species, USFS-designated sensitive wildlife species, and USFS-designated Management Indicator Species from Alternative K (all options) would be similar to, but less than, those described for Alternative A. The length of the alignment for all options under Alternative K would be less than 11 miles. Therefore, Alternative K (all options) would have less earthwork and slightly less disturbance in the area.

Of the three options, Alternative K, Option 1 (Preferred Alternative) would have the shortest alignment, approximately 8.3 miles. Alternative K, Option 2 would be approximately 8.4 miles long and Alternative K, Option 3 would be approximately 9.9 miles long.

Alternative K (all options) would include the replacement of an existing 50-foot-long bridge that crosses over Roosevelt Creek and Alternative K, Option 3 would include the replacement of an existing crossing over Crooked Creek. The replacement structures would be a bridge of similar size or a box culvert of equivalent water capacity. To minimize impacts on migratory birds, the NDDOT Standard SP for the MBTA (i.e., SP 0004(14)) would be included in the plan set for the contractor to implement.

No suitable habitat for the Sprague's pipit would be impacted by Alternative K, Option 2; therefore, Alternative K Option 2 is anticipated to have *no impact* on the Sprague's pipit. Alternative K, Option 1 (Preferred Alternative) and Alternative K, Option 3 would result in minor impacts on potential habitat for the Sprague's pipit; therefore, Alternative K, Option 1 (Preferred Alternative) and Alternative K, Option 3 *may impact* individuals or habitat, but will not likely contribute to a trend toward federal listing or cause loss of viability to the populations or species.

Would raptors be affected?

For consideration of potential impacts on raptors from Alternative K (all options), the same determinations of effect described under Alternative A were used. Due to the minimal impact on suitable habitat and lack of observations within and adjacent to the project area, Alternative K (all options) is anticipated to have *no impact* on the American peregrine falcon, bald eagle, burrowing owl, ferruginous hawk, or merlin.

Though Alternative K (all options) would result in minimal impacts on suitable habitat for the golden eagle, there were historical observations and visual observations of golden eagles during the field surveys; therefore, Alternative K (all options) *may impact*, but is not likely to adversely affect the reproductive success of this species or degrade winter roost quality.

Though Alternative K (all options) would result in minimal impacts on suitable habitat for the prairie falcon, NHI and USFS records indicate the presence of prairie falcons within 1 mile of Alternative K, Option 1 (Preferred Alternative), and a prairie falcon was observed flying overhead during the field surveys; therefore, Alternative K, Option 1 *may impact*, but is not likely to adversely affect the reproductive success of this species.

Would wildlife species of concern be affected?

Alternative K (all options) would not affect wildlife species of concern, as there are no wildlife species of concern within the study area.

5.14.9. What mitigation measures and BMPs would be implemented?

During the initial project design phase, impacts on wildlife and potential habitat within the area (including wetlands and Other Waters) were minimized to the maximum extent practicable. For all of the alternatives, the alignment would follow an existing roadway as closely as possible to minimize new roadway construction and potential long-term, direct impacts on wildlife and their habitat. Unavoidable impacts on wetlands would be mitigated onsite, adjacent to the project, or at an NDDOT-approved mitigation site or bank, as necessary, to mitigate for loss of habitat.

Prior to construction activities, the contractor would be required to obtain an NDPDES permit and develop a SWPPP. The SWPPP would outline phasing for erosion- and sediment-controls, stabilization measures, pollution-prevention measures, and prohibited discharges. The SWPPP would also include BMPs to minimize erosion, sedimentation, and stormwater runoff (e.g., fiber rolls, straw waddles, erosion mats, silt fencing, turbidity barriers, mulching, filter fabric fencing, sediment traps and ponds, surface water interceptor swales, ditches). The SWPPP would require that secure and contained refueling areas are located away from surface waters, maintenance and monitoring measures are implemented to reduce the potential for spills and leaks, and the amount of stockpiled material is minimized and stored away from surface waters. In addition, waste material would be disposed of in accordance with state and federal laws.

To minimize impacts on migratory birds, the NDDOT Standard SP for the MBTA (i.e., SP 0004(14)) would be included in the plan set for the contractor to implement. If construction occurs during the migratory bird nesting and breeding season in North Dakota (i.e., between February 1 and July 15), construction areas would be mowed and/or grubbed prior to the nesting and breeding season. If mowing and/or grubbing is not completed prior to the nesting and breeding season, a

qualified biologist would conduct pre-construction surveys for migratory birds and their nests within the construction areas. If active nests are identified, the NDDOT would coordinate with the USFWS prior to construction to determine any measures necessary to minimize harm.

To minimize the risk of spreading aquatic nuisance species, the contractor would conduct equipment cleaning and inspections prior to placing any equipment within waters of the state (i.e., the Little Missouri River), in accordance with NDCC Chapter 20.1-17. To minimize impacts on fish species, instream riverine water flow would be maintained at baseline depth during construction to allow fish passage.

Due to the presence of several historical observations within 1 mile of the project area, and since construction activities would occur during the raptor nesting and breeding season in North Dakota (i.e., between February 1 and August 15), a qualified biologist would conduct a pre-construction raptor survey within five days prior to the initiation of all construction activities to check the status of existing and historical nests and search for new nests. If any active nests are found, appropriate measures, such as timing and avoidance buffers, would be implemented to minimize and avoid potential impacts on any identified raptor nests. Active nests would be avoided during the breeding and nesting period in accordance with DPG Land and Resource Management Plan guidelines if it is determined that construction activities are likely to adversely affect raptor reproductive success or degrade winter roost quality. Please refer to **'Table 18, DPG Raptor Guidelines'** for guidance on the minimum distances and dates recommended by the DPG Land and Resource Management Plan to minimize disturbance to raptors. The guidelines may be modified for raptor species other than those listed in **Table 18**, as well as in coordination with the USFS to account for the type, source, frequency and duration of disruption and extent screening of topography and vegetation. The NDDOT would coordinate with the USFWS prior to the continuation of construction activities to determine any measures necessary to minimize harm to bald and/or golden eagles.

Table 18, DPG Raptor Guidelines

Raptors	Minimum Distance (Miles)	Date
Bald Eagle Nest	1	February 1 to July 31
Bald Eagle Winter Roost	1	November 15 to March 1
Golden Eagle Nest	0.5	February 1 to July 31
American Peregrine Falcon Nest	1	February 1 to July 31
Prairie Falcon Nest	0.25	April 1 to July 31
Merlin Nest	0.5	April 1 to August 15
Ferruginous Hawk Nest	0.5	March 1 to July 31
Burrowing Owl Nest	0.25	April 15 to August 31

Training materials (e.g., presentation, poster, pamphlet) would be provided to the contractor to aid in threatened and endangered species identification. In accordance with the NDDOT Standard Specifications, if the contractor encounters threatened or endangered species anywhere the contractor performs the work, the contractor shall immediately suspend the work and notify the project engineer. In addition, the contractor would be required to notify the project engineer immediately in the event a whooping crane is identified within 1 mile of construction activities. The project engineer would then cease all construction activities within 1 mile of the sighting; establish an avoidance area; and immediately notify and coordinate with the USFWS, FHWA, USFS, and NDDOT. The contractor would not be permitted to resume work within the avoidance area until the project engineer has confirmed that the bird(s) have left the area. The NDDOT Utility Engineer or consultant would request that utility companies install line markers (bird diverters) at a 1:1 ratio (per linear foot) on overhead utility lines to be raised, lowered, and/or moved to reduce the risk of flight collisions for birds, including the whooping crane. The utility company would determine the type, number and placement/spacing of the line markers and may conclude that the placement of line markers is not feasible in certain situations.

Areas that are reclaimed would be vegetated in accordance with USFS Seeding Rate Guidelines (i.e., 37-28A Seed Mixture). Grasses in this seed mixture include cool-season, warm-season, and alternate warm-season grasses and forbs. Tree removal would not occur from June 1 through July 31 to avoid adversely impacting potential maternity roost trees during pup season. The number of trees impacted would be assessed during construction and any necessary mitigation would be determined in coordination with the NDDOT, NDGFD, and USFS.

A meeting was held with the NDGFD and USFS to discuss mitigation or minimization measures that could be established to minimize potential impacts on bighorn sheep. From this coordination, the NDGFD developed eight potential mitigation options (e.g., cedar removal, road reclamation, wildlife crossings) for the bighorn sheep. Two meetings were held with Billings County to discuss these potential mitigation options, and those efforts concluded that the options were either not viable or reasonable due to the rural nature of the project area, landowner interest, and financial risk. No mitigation is planned at this time for potential impacts on bighorn sheep.

5.15. Historic and Archaeological Preservation/Cultural Resources

5.15.1. Are there historic and archaeological resources in the project areas?

The NDDOT and FHWA established a Programmatic Agreement (November 2006, revised September 2014) regarding consultation with numerous Tribes, all of which have expressed concern and have requested to be consulted with on transportation projects in North Dakota. Additional information regarding the Programmatic Agreement is provided in **'Chapter 8. Public Involvement & Outreach'**.

In accordance with several regulations, including 16 U.S.C. § 470hh[a] – *Confidentiality of information concerning nature and location of archaeological resources* and 43 CFR § 7 – *Protection of Archaeological Resources*, information concerning the nature and location of archaeological resources and traditional cultural properties and detailed information regarding archaeological and cultural resources is confidential. Therefore, is not included in this EIS.

Information provided in this section was derived from the Little Missouri River Crossing: A Class III Cultural Resource Inventory in Billings, Golden Valley, and McKenzie Counties, North Dakota, conducted by KLJ (2015); Little Missouri River Crossing: Evaluation Plan for Sites 32BI234, 32BI272, 32BI290, 32BI713, 32BI1127, 32GV299, and 32GV300 in Billings and Golden Valley Counties, North Dakota, developed by KLJ (2015); Evaluative Testing at 32BI713 for the Little Missouri River Crossing developed by KLJ (2016); Addendum to "The Little Missouri River Crossing: A Class III Cultural Resource Inventory in Billings, Golden Valley, and McKenzie Counties, North Dakota" For the Expanded Alternative K, Option 1 Area conducted by KLJ (2016); and Little Missouri River Crossing Cultural Resource Discovery Plan (2017). All of these reports are **appended by reference**. On July 10, 2015, the NDSHPO provided concurrence, finding the Little Missouri River Crossing: A Class III Cultural Resource Inventory in Billings, Golden Valley, and McKenzie Counties, North Dakota acceptable. Please refer to **'J.3. North Dakota State Historic Preservation Office Section 106 of the National Historic Preservation Act of 1966 (16 U.S.C. § 470) Concurrence— July 10, 2015' on page J-22**.

Section 106 of the NHPA of 1966 (16 U.S.C. § 470), as amended, requires that federally-funded projects be evaluated for the effects on historic and cultural properties included in, or eligible for listing on, the NRHP.

The Archaeological and Historic Preservation Act of 1974 (16 U.S.C. § 461 et seq., and 23 U.S.C. § 305) provides for the survey, recovery, and preservation of significant scientific, prehistoric, archaeological, or paleontological data when such data may be destroyed or irreparably lost due to a federally-licensed or federally-funded project.

KLJ conducted a Class III Cultural Resource Inventory in the project areas for the alternatives in 2012. Tribal Historic Preservation Investigators from the Turtle Mountain Tribal Cultural Specialist (TCS) and the Rosebud Sioux TCS were also present during the inventory. Portions of the project areas were revisited in August 2013. In 2016, KLJ and a Mandan-Hidatsa-Arikara Nation TCS conducted evaluative testing for one site and an additional survey was completed within expanded areas for Alternative K. The following were the results of the cultural resource inventories:

- A total of 10 isolated finds and 11 sites were identified within the Alternative A project area. In addition, one site lead was

The Native American Graves Protection and Repatriation Act of 1990 is triggered by the possession of human remains or cultural items by a federally-funded repository or by the discovery of human remains or cultural items on federal or Tribal lands and provides for the inventory, protection, and return of cultural items to affiliated Native American groups. Permits are required for intentional excavation and removal of Native American cultural items from federal or Tribal lands.

The American Indian Religious Freedom Act of 1978 requires consultation with Native American groups concerning proposed actions on sacred sites on federal land or affecting access to sacred sites. It establishes federal policy to protect and preserve for American Indians, Eskimos, Aleuts, and Native Hawaiians the right to free exercise of their religion in the form of site access, use and possession of sacred objects, as well as the freedom to worship through ceremonial and traditional rites.

The Act requires federal agencies to consider the impacts of their actions on religious sites and objects important to American Indians, regardless of eligibility for listing on the NRHP.

reputed to possibly be within, or extend into, the corridor. However, the site lead was not encountered within the project area. All 10 isolated finds are *Not Eligible* for listing on the NRHP. Of the 11 sites, two are *Not Eligible*, eight are *unevaluated*, and one is *Eligible* for listing on the NRHP.

- A total of five isolated finds and three sites were identified within the Alternative K, Option 1 (Preferred Alternative) project area. All five isolated finds are *Not Eligible* for listing on the NRHP. Of the three sites, two are *Not Eligible* for the NRHP and one that was initially noted as *unevaluated* was determined to be *Not Eligible* after further evaluation.
- A total of four isolated finds and two sites were identified within the Alternative K, Option 2 project area. All four isolated finds are *Not Eligible* for listing on the NRHP. Of the two sites, one is *Not Eligible* and one that was initially noted as *unevaluated* was determined to be *Not Eligible* after further evaluation.
- A total of nine isolated finds, three sites, and two site leads were identified within the Alternative K, Option 3 project area. All nine isolated finds are *Not Eligible* for listing on the NRHP. Of the three sites, two are *Not Eligible* and one that was initially noted as *unevaluated* was determined to be *Not Eligible* after further evaluation. Of the two site leads, one is *Not Eligible*. The other site lead is noted as *unevaluated*, and no evidence of the site or site lead was encountered during fieldwork; therefore, the site is located outside of the project area.

Within the vicinity of the project areas for all of the alternatives is one additional site, the Theodore Roosevelt Elkhorn Ranch and Greater Elkhorn Ranchlands National Historic District. The National Historic District encompasses approximately 4,402 acres around the TRNP–Elkhorn Ranch Unit and is listed on the NRHP under Criterion A (i.e., associated with a significant event) and Criterion B (i.e., associated with a significant person) (USFS 2015; USFS 2012). Within the boundaries of the National Historic District, there is public land managed by the NDPRD, USFS, and NPS, as well as privately-owned land (USFS 2015). Blacktail Road also runs through the National Historic District. It is a federal aid route and major roadway in Billings County that receives regular maintenance.

The National Historic District site was formally listed by the Keeper of the Register (i.e., NPS) for listing on the NRHP in 2012. The following is stated in the NRHP registration form: "Whereas Roosevelt traveled throughout the Badlands, the viewshed most seen by him was in the vicinity of the ranch headquarters. The district boundary is designed to encompass this viewshed and attempt to protect the integrity of this view as it exists from the Elkhorn Ranch Headquarters" (USFS 2012).

- The northern boundary of the National Historic District is located approximately 2 to 3 miles south of the new roadway and bridge under Alternative A.
- The southern boundary of the National Historic District is located approximately 1 to 2 miles north of the new roadway and bridge under Alternative K, Option 1 (Preferred Alternative).
- The southern boundary of the National Historic District is located approximately 2 to 3 miles north of the new roadway and bridge under Alternative K, Option 2.
- The southern boundary of the National Historic District is located approximately 3 to 4 miles north of the new roadway and bridge under Alternative K, Option 3.

Alternative K, Option 1 (Preferred Alternative) is the closest alternative to the National Historic District. The most ideal location for viewing the bridge under Alternative K, Option 1 (Preferred Alternative) is from the southern boundary of the National Historic District. This location is on private property, has steep terrain, and is not accessible by vehicle or easily accessible on foot.

Through coordination with the National Trust for Historic Preservation and NDSHPO, it was determined that viewshed analyses in relation to the Elkhorn Ranchlands, TRNP–Elkhorn Ranch Unit, and National Historic District would be conducted for Alternative A and Alternative K, Option 1 (Preferred Alternative), as these alternatives are closest to these areas. The viewshed analyses were conducted from the vantage point of an observer to determine if an observer would be within visual range of the roadways and bridges while situated at the Elkhorn Ranchlands, TRNP–Elkhorn Ranch Unit, and National Historic District. The National Trust for Historic Preservation and NDSHPO requested that the viewshed analyses be conducted from low-, mid-, and high-elevation points, some of which were provided to the NDDOT, FHWA, and KLJ by the National Trust for Historic Preservation.

Photographs were taken from various high-, mid-, and low-elevations within and along the boundaries of these areas, facing out toward Alternative A and Alternative K, Option 1 (Preferred Alternative). The photographs were taken during ideal conditions (i.e., clear skies) in the off-season (i.e., low to no foliage). The photographs were digitized along with computer simulations of the bridges to determine if an observer would be within visual range of the roadways and bridges while situated at the Elkhorn Ranchlands, TRNP–Elkhorn Ranch Unit, and National Historic District. Please refer to **Figure 53 on page 83 through Figure 60 on page 90** for the viewshed simulations for Alternative A and **Figure 61 on page 91 through Figure 74 on page 104** for the viewshed simulations for Alternative K, Option 1 (Preferred Alternative).

In addition, computer models showing the viewshed of the observer located at common, high-use federal- and state-managed lands; the Elkhorn Ranchlands; the TRNP–Elkhorn Ranch Unit; the Elkhorn Ranch Headquarters; and the National Historic District were developed. The computer models provide the line-of-sight at various locations within the boundaries of these areas, but do not account for terrain, vegetation, or other structures (e.g., oil and gas development). The computer models represent the field of view of the camera lens, not the human eye. Please refer to **Figure 75 on page 105 through Figure 83 on page 113** for depictions of the computer models.

Upon completion of the viewshed analyses, it was determined that the new roadways and bridges under Alternative A and Alternative K, Option 1 (Preferred Alternative) would not be able to be seen from the Elkhorn Ranchlands, TRNP–Elkhorn Ranch Unit, Elkhorn Ranch Headquarters, or National Historic District. Further, Alternative A and Alternative K, Option 1 (Preferred Alternative) would not alter the viewshed or diminish the integrity of the view from the Elkhorn Ranchlands, TRNP–Elkhorn Ranch Unit, Elkhorn Ranch Headquarters, or National Historic District. Since Alternative K, Option 2 and Alternative K, Option 3 are even further away from the Elkhorn Ranchlands, TRNP–Elkhorn Ranch Unit, and National Historic District, the new roadways and bridges under these alternatives would not be able to be seen from these locations either. Therefore, none of the alternatives would affect the National Historic District's eligibility for the NRHP.

The results of the viewshed analyses were presented to the NDDOT, FHWA, USFS, USACE, NDSHPO, Advisory Council on Historic Preservation (ACHP), National Trust for Historic Preservation, and NPS. The ACHP verbally agreed with the results of the viewshed analyses.

5.15.2. What happens if the Little Missouri River crossing is not constructed?

Under Alternative L (no-build), no impacts on historic or archaeological preservation or cultural resources would be expected.

5.15.3. What happens if the Little Missouri River crossing is constructed?

5.15.3.1. Alternative A

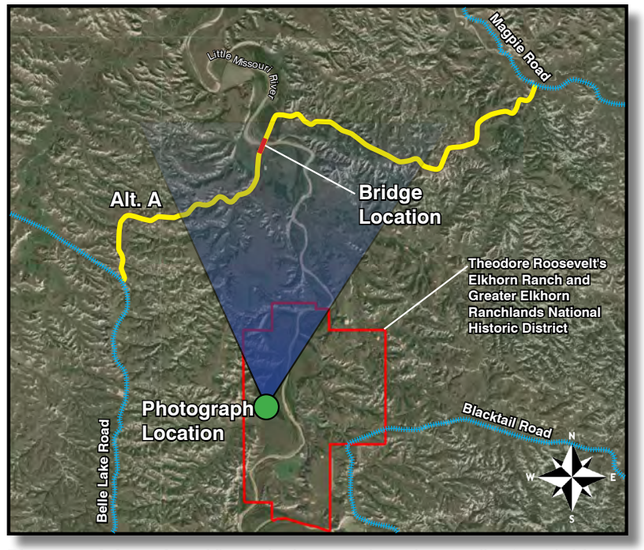
The 10 isolated finds are *Not Eligible*, so avoidance of these areas is not required. Of the 11 sites within the Alternative A project area, five sites (i.e., sites 32BI290, 32BI681, 32BI1122, 32BI1126, and 32BI1128) would be avoided by the roadway. Sites 32BI290, 32BI1122, 32BI1126, and 32BI1128 are *unevaluated* for the NRHP, and site 32BI681 is recommended *Not Eligible* for the NRHP. Since these sites would be avoided, no further research is necessary at these locations. However, the site boundaries of the four *unevaluated* sites would be staked or fenced to aid in complete avoidance by construction activities. In addition, no pedestrian entry by construction personnel would be allowed within these areas.

It is currently unknown if all portions of three sites (i.e., sites 32BI234, 32GV299, and 32GV300) could be avoided. These sites weren't evaluated for impacts or eligibility for the NRHP since Alternative A is not identified as the Preferred Alternative. If Alternative A is later determined to be the Preferred Alternative, these three sites would be reassessed for the potential for impacts. If any of these sites would be disturbed, further research would be completed to determine their eligibility for the NRHP. The methodology for further evaluation would be determined through consultation with the NDSHPO, with an Evaluation Plan being created and approved by the lead agency and NDSHPO. If any of these sites are determined *Eligible* for the NRHP, mitigation could potentially be required. Mitigation would be determined on a case by case basis, but may include documentation, excavation, curation, etc.

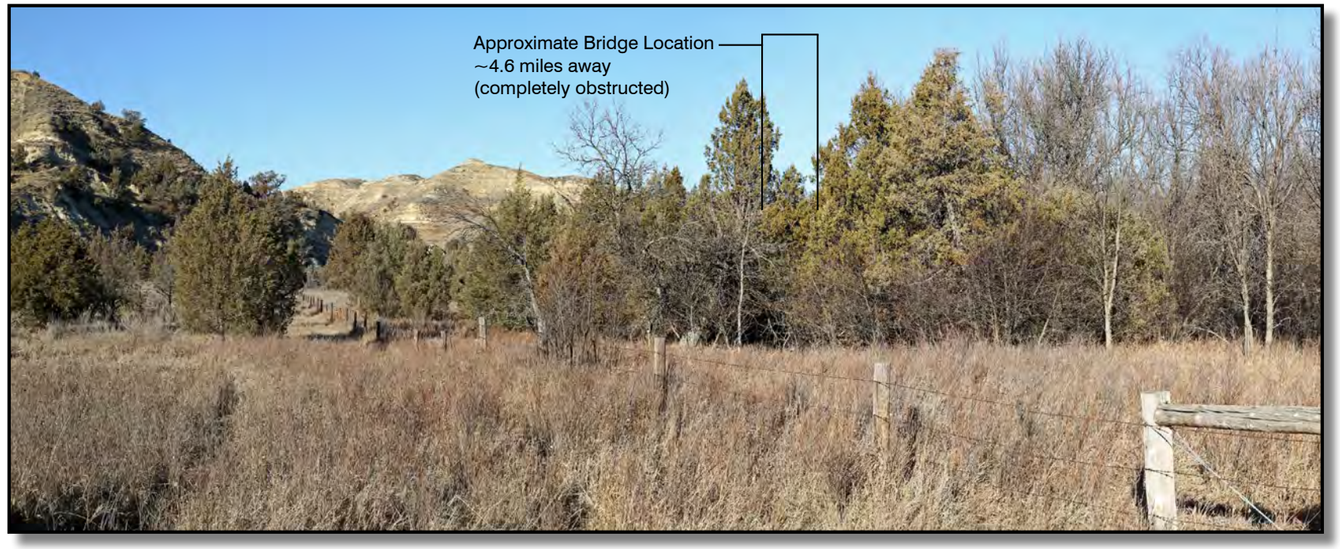
The three remaining sites (i.e., sites 32BI220, 32BI272, and 32BI1127) could not be avoided by Alternative A. However, site 32BI220 has been recommended *Not Eligible* for the NRHP, with no further research or avoidance required. Site 32BI272 is *Eligible* for listing on the NRHP. In accordance with the guidelines provided in the NRHP nomination form, an impact analysis would be formulated in consultation with the USFS and other required agencies for areas that would be impacted outside the existing roadway. Site 32BI1127 is *unevaluated* for the NRHP. Since the site would be impacted by the roadway, further research is necessary if Alternative A is later selected to be the Preferred Alternative. The methodology for further evaluation would be determined through consultation with the NDSHPO, with an Evaluation Plan being created and approved by the lead agency and NDSHPO. If the site is determined *Eligible* for the NRHP, mitigation would be undertaken. Mitigation would be determined on a case by case basis, but may include documentation, excavation, curation, etc.

If Alternative A is later selected to be the Preferred Alternative, the *unevaluated* sites that would be impacted would need to be further evaluated and an effect determination would need to be coordinated with the NDSHPO.

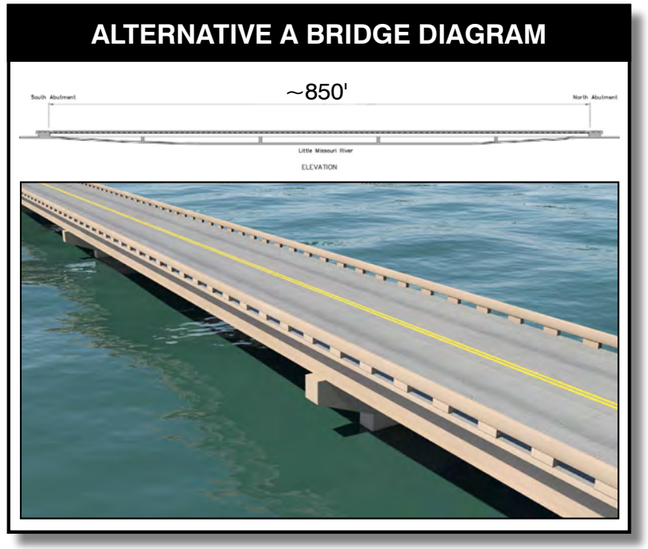
Existing Condition – View north from TRNP - Elkhorn Ranch Units western entrance.



Photograph Location: Viewpoint is approximately 4.6 miles from bridge location.



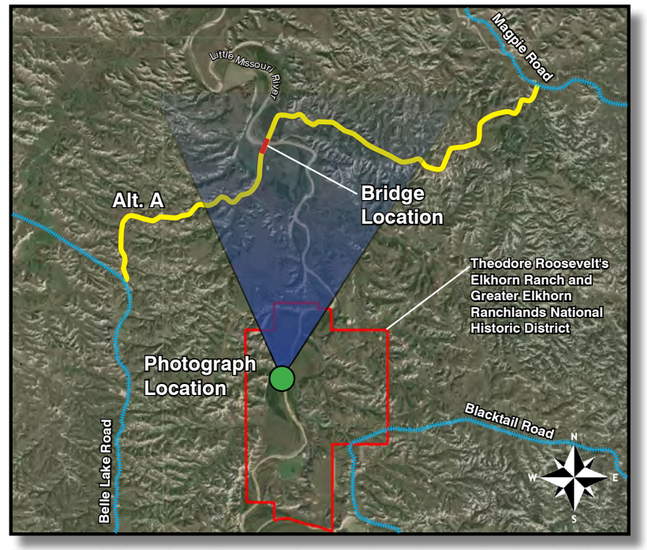
Simulation – Bridge is completely obstructed by vegetation and terrain (see Alternative A Bridge Diagram).



Site Conditions: Clear
Photo Date and Time: 12-3-15, 12:55 p.m. Focal Length: 50mm
3D models in this simulation were prepared based on preliminary engineering and may change based on final engineering and design.

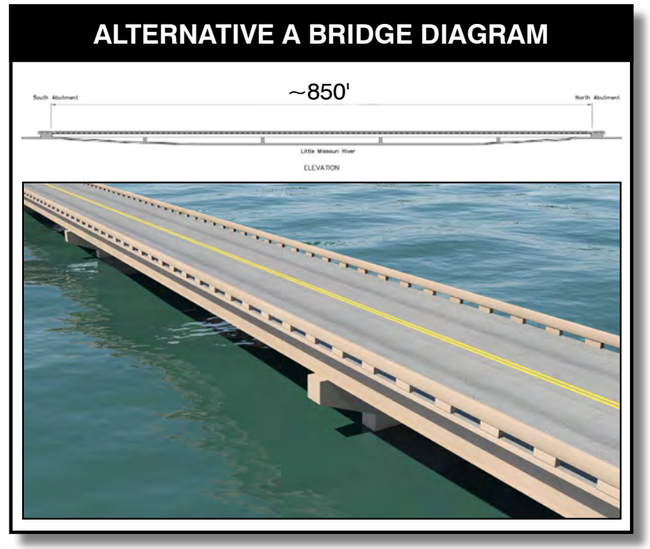
Figure 53, Viewshed Simulation for Alternative A (TRNP–Elkhorn Ranch Unit's Western Entrance)

Existing Condition – View north from TRNP - Elkhorn Ranch Unit (cabin site).



Photograph Location: Viewpoint is approximately 4.3 miles from bridge location.

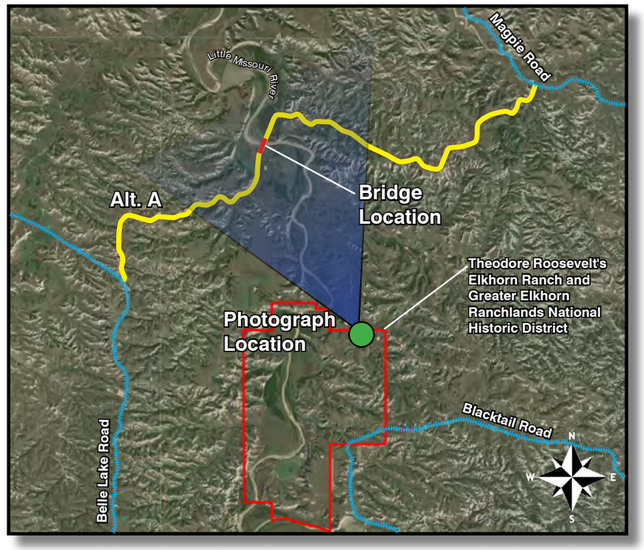
Simulation – Bridge is completely obstructed by vegetation and terrain (see Alternative A Bridge Diagram).



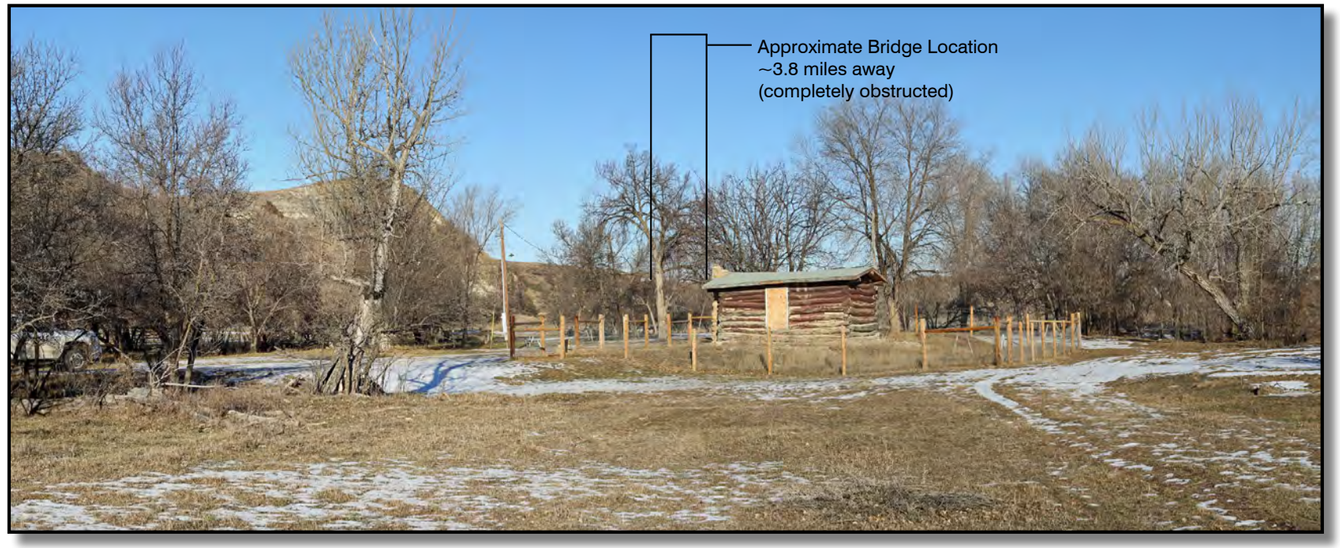
Site Conditions: Clear
Photo Date and Time: 12-3-15, 2:06 p.m. Focal Length: 50mm
3D models in this simulation were prepared based on preliminary engineering and may change based on final engineering and design.

Figure 54, Viewshed Simulation for Alternative A (TRNP–Elkhorn Ranch Unit; Cabin Site)

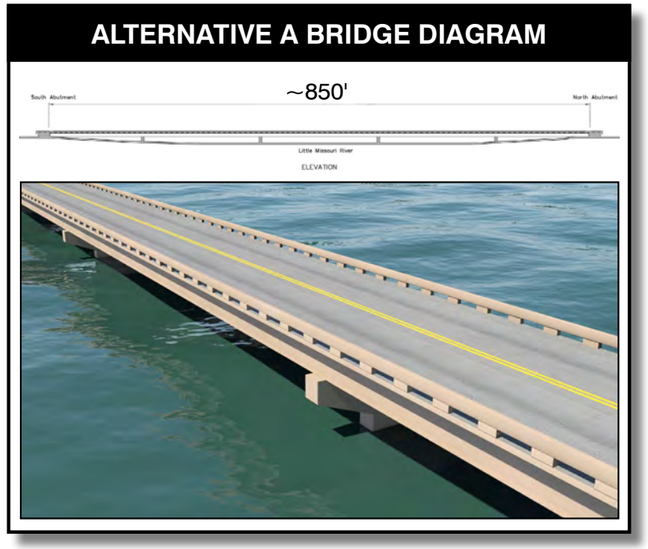
Existing Condition – View northwest from cabin site on the Elkhorn Ranchlands.



Photograph Location: Viewpoint is approximately 3.8 miles from bridge location.



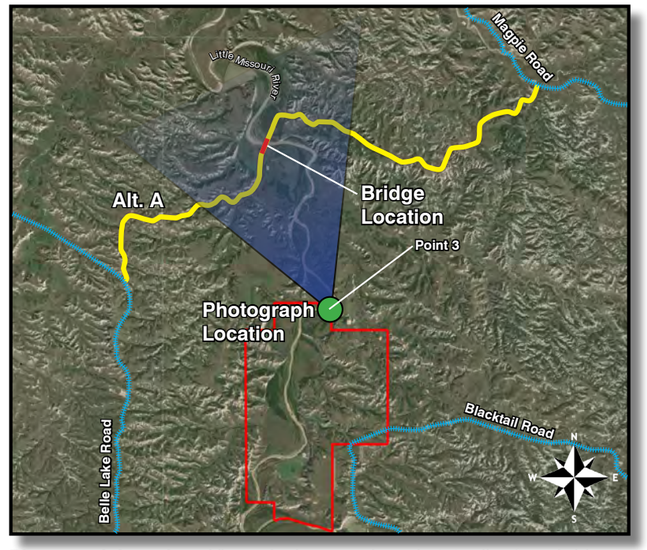
Simulation – Bridge is completely obstructed by vegetation and terrain (see Alternative A Bridge Diagram).



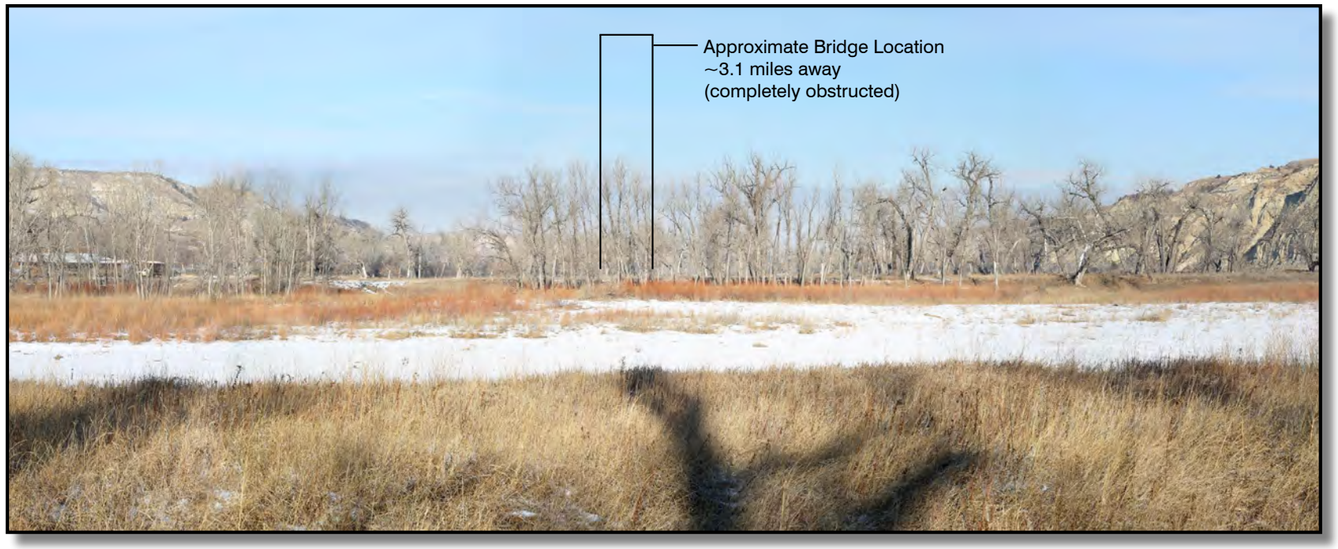
Site Conditions: Clear
Photo Date and Time: 12-3-15, 9:41 a.m. Focal Length: 50mm
3D models in this simulation were prepared based on preliminary engineering and may change based on final engineering and design.

Figure 55, Viewshed Simulation for Alternative A (Elkhorn Ranchlands; Cabin Site)

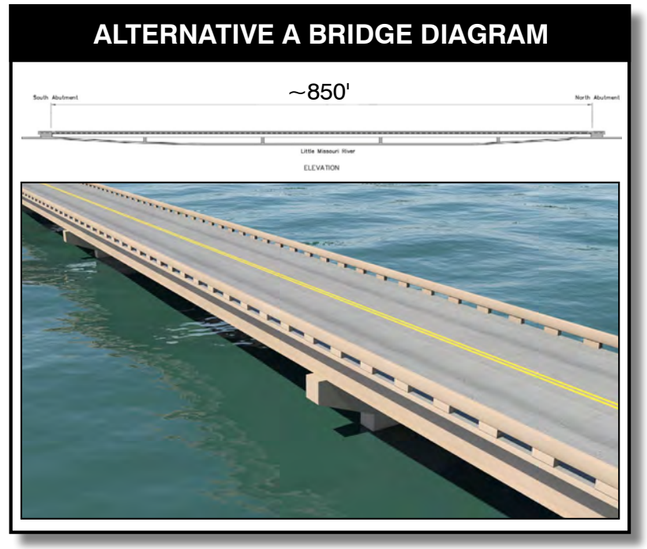
Existing Condition – View northwest from north side of National Historic District boundary.



Photograph Location: Viewpoint is approximately 3.1 miles from bridge location.



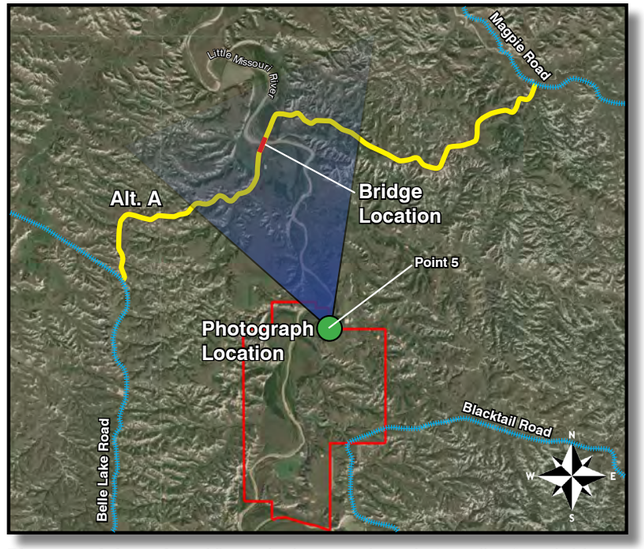
Simulation – Bridge is completely obstructed by vegetation and terrain (see Alternative A Bridge Diagram).



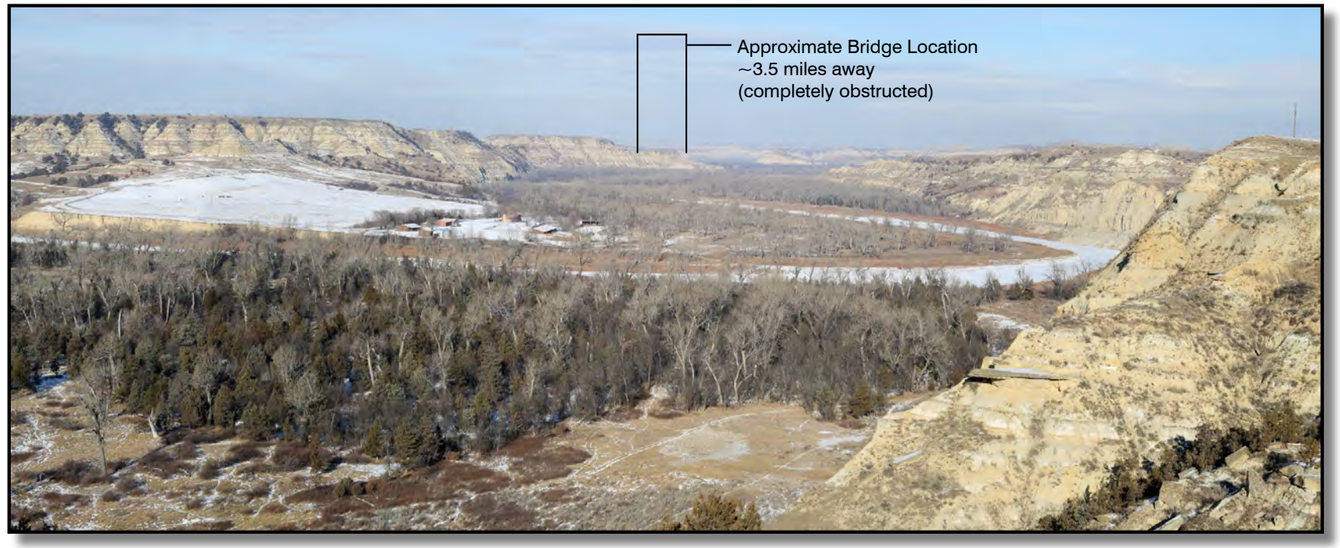
Site Conditions: Clear
Photo Date and Time: 1-6-16, 10:31 a.m. Focal Length: 50mm
When printed on 11x17 inch paper, this simulation is meant to be viewed at a distance of 9 inches.
3D models in this simulation were prepared based on preliminary engineering and may change based on final engineering and design.

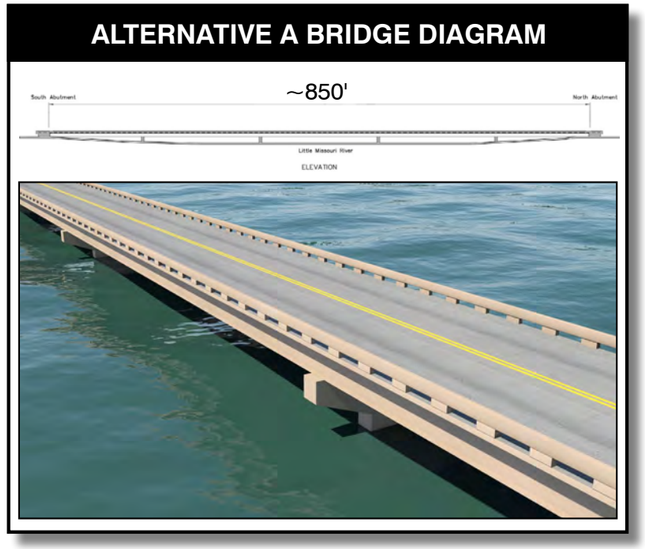
Figure 56, Viewshed Simulation for Alternative A (North Side of National Historic District; 3.1 Miles)

Existing Condition – View northwest from north side of National Historic District boundary.



Photograph Location: Viewpoint is approximately 3.5 miles from bridge location.



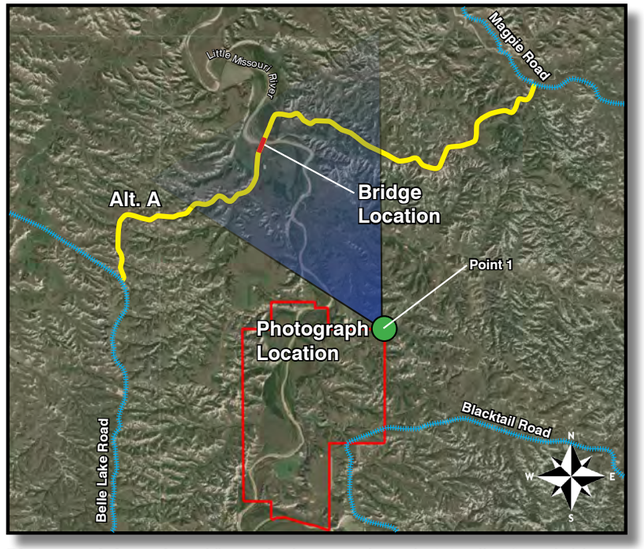


Simulation – Bridge is obstructed by vegetation and terrain (see Alternative A Bridge Diagram).

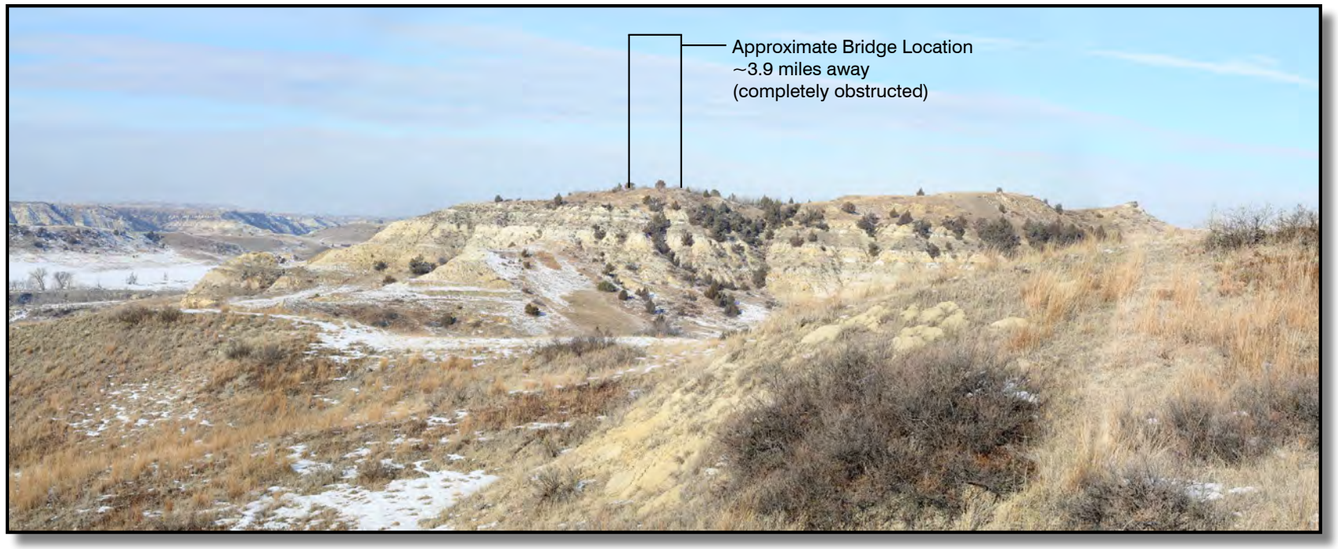
Site Conditions: Slight haze
Photo Date and Time: 1-6-16, 11:04 a.m. Focal Length: 50mm
When printed on 11x17 inch paper, this simulation is meant to be viewed at a distance of 9 inches.
3D models in this simulation were prepared based on preliminary engineering and may change based on final engineering and design.

Figure 57, Viewshed Simulation for Alternative A (North Side of National Historic District; 3.5 Miles)

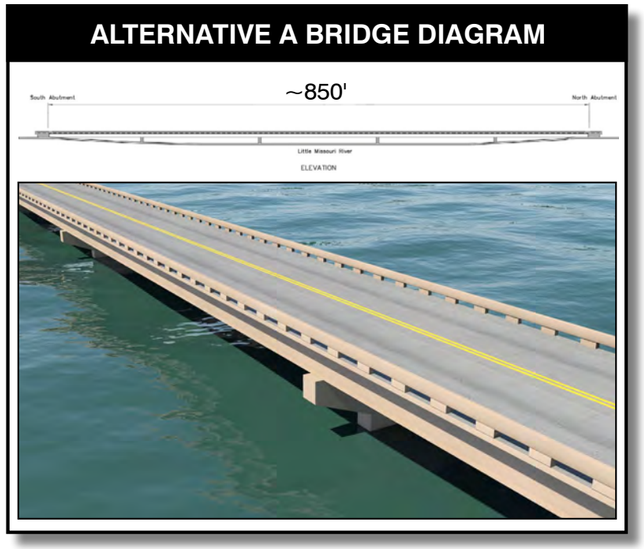
Existing Condition – View northwest from northeast corner of the National Historic District boundary.



Photograph Location: Viewpoint is approximately 3.9 miles from bridge location.



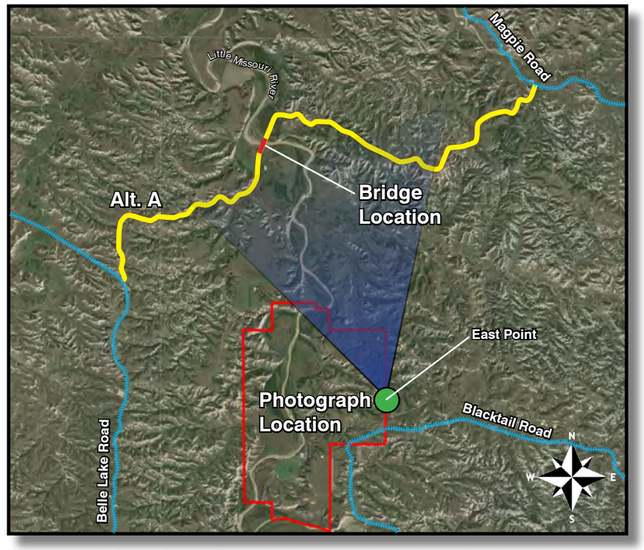
Simulation – Bridge is completely obstructed by vegetation and terrain (see Alternative A Bridge Diagram).



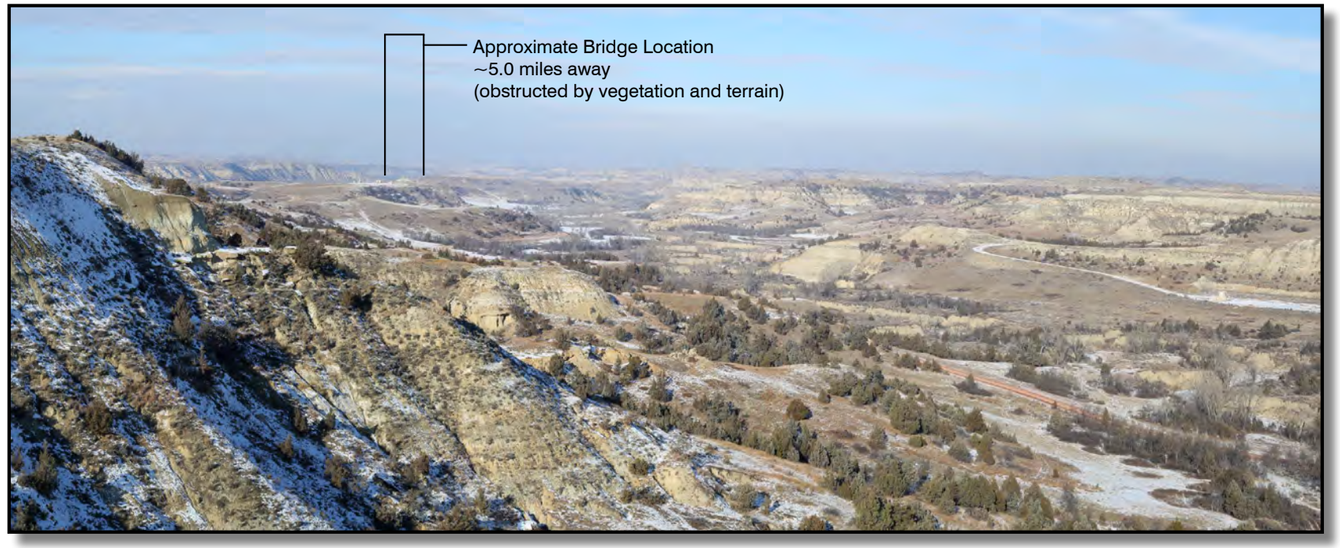
Site Conditions: Clear
Photo Date and Time: 1-6-16, 11:34 a.m. Focal Length: 50mm
When printed on 11x17 inch paper, this simulation is meant to be viewed at a distance of 9 inches.
3D models in this simulation were prepared based on preliminary engineering and may change based on final engineering and design.

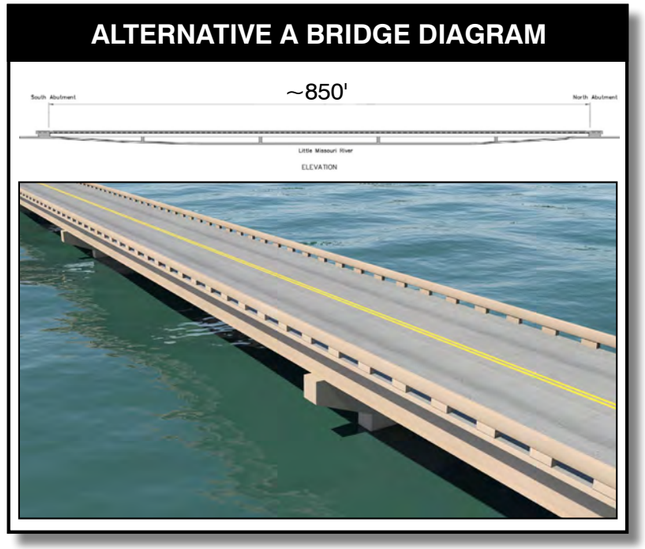
Figure 58, Viewshed Simulation for Alternative A (Northeast Corner of National Historic District)

Existing Condition – View northwest from east side of National Historic District boundary.



Photograph Location: Viewpoint is approximately 5 miles from bridge location.



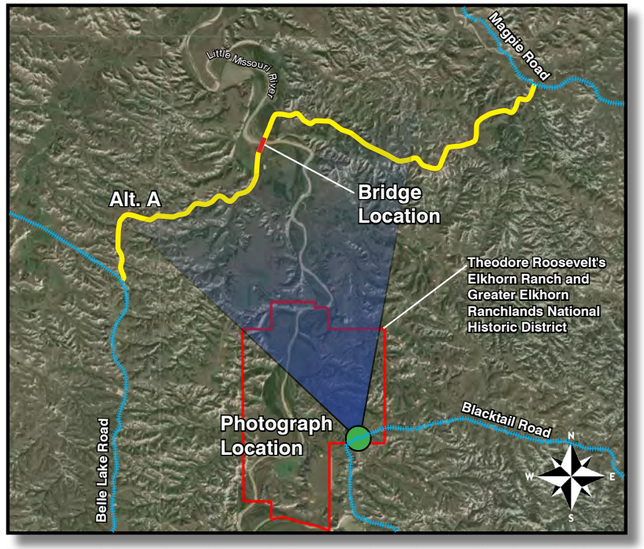


Simulation – Bridge is obstructed by vegetation and terrain (see Alternative A Bridge Diagram).

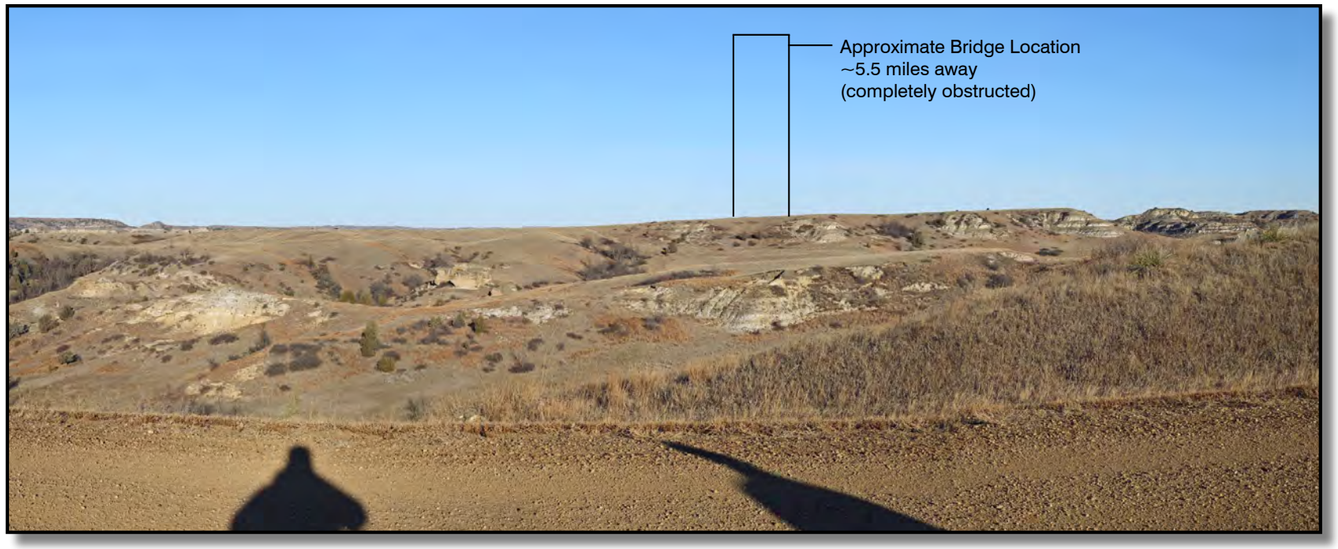
Site Conditions: Slight haze
Photo Date and Time: 1-6-16, 12:21 p.m. Focal Length: 50mm
When printed on 11x17 inch paper, this simulation is meant to be viewed at a distance of 9 inches.
3D models in this simulation were prepared based on preliminary engineering and may change based on final engineering and design.

Figure 59, Viewshed Simulation for Alternative A (East Side of National Historic District)

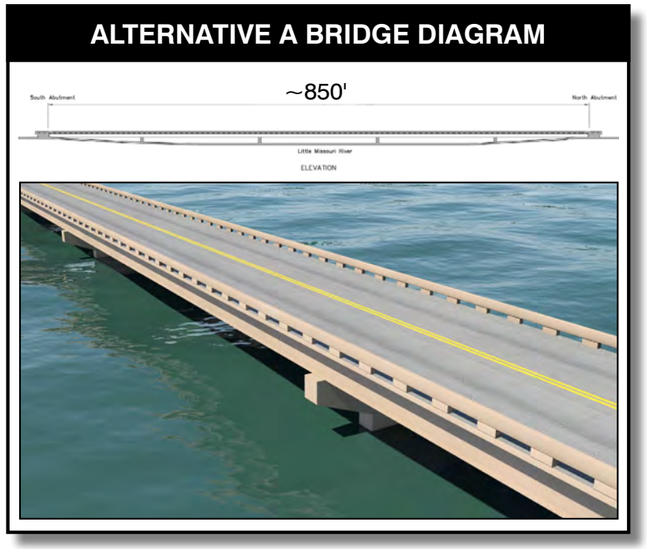
Existing Condition – View northwest from Blacktail Road.



Photograph Location: Viewpoint is approximately 5.5 miles from bridge location.



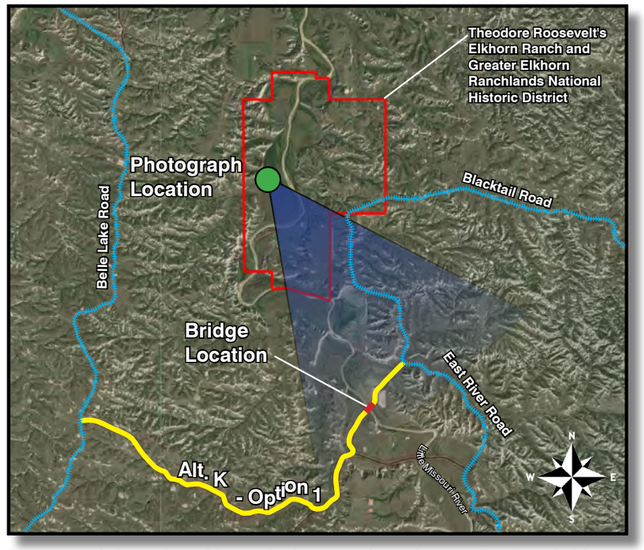
Simulation – Bridge is completely obstructed by vegetation and terrain (see Alternative A Bridge Diagram).



Site Conditions: Clear
Photo Date and Time: 12-3-15, 8:55 a.m. Focal Length: 50mm
3D models in this simulation were prepared based on preliminary engineering and may change based on final engineering and design.

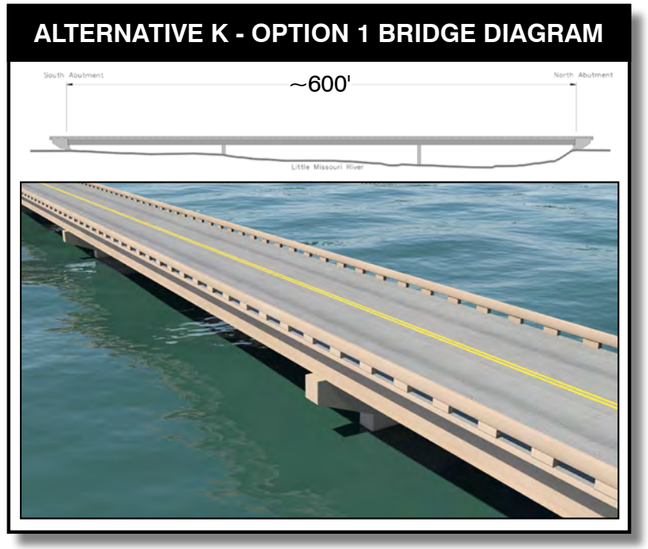
Figure 60, Viewshed Simulation for Alternative A (Blacktail Road)

Existing Condition – View southeast from entrance to TRNP - Elkhorn Ranch Unit.



Photograph Location: Viewpoint is approximately 4.5 miles from bridge location.

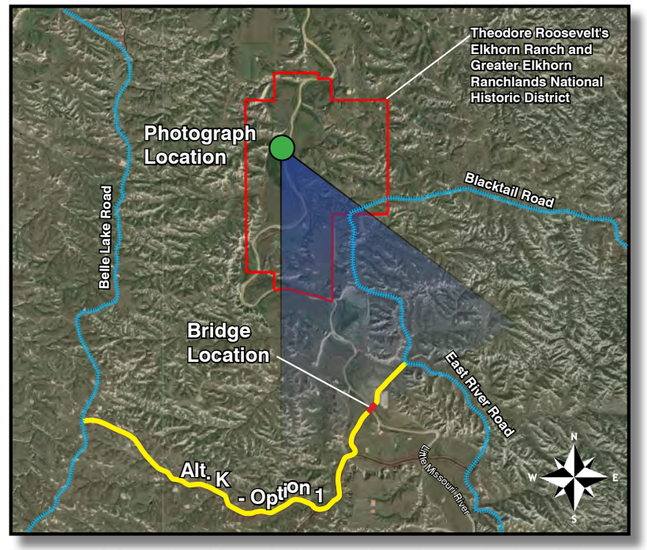
Simulation – Bridge is completely obstructed by vegetation and terrain (see Alternative K - Option 1 Bridge Diagram).



Site Conditions: Clear
Photo Date and Time: 12-3-15, 12:54 p.m. Focal Length: 50mm
3D models in this simulation were prepared based on preliminary engineering and may change based on final engineering and design.

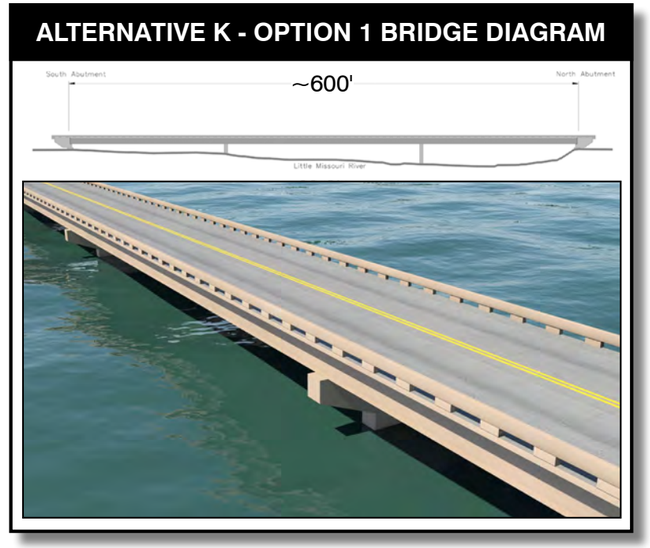
Figure 61, Viewshed Simulation for Alternative K, Option 1 (Entrance to TRNP – Elkhorn Ranch Unit)

Existing Condition – View southeast from TRNP - Elkhorn Ranch Unit (cabin site).



Photograph Location: Viewpoint is approximately 4.8 miles from bridge location.

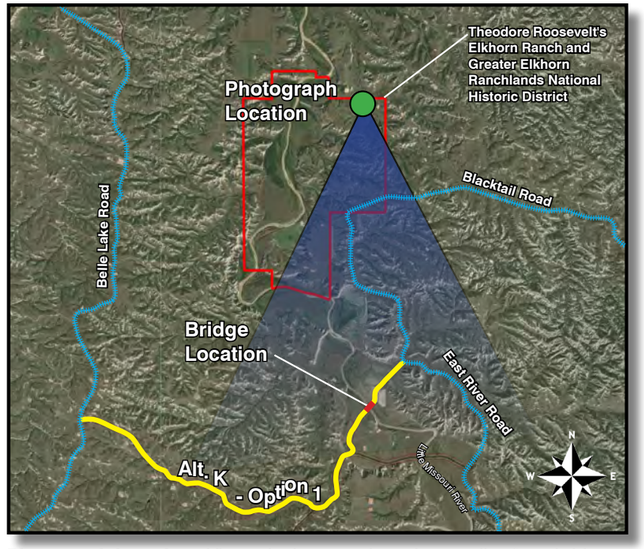
Simulation – Bridge is completely obstructed by vegetation and terrain (see Alternative K - Option 1 Bridge Diagram).



Site Conditions: Clear
Photo Date and Time: 12-3-15, 1:58 p.m. Focal Length: 50mm
3D models in this simulation were prepared based on preliminary engineering and may change based on final engineering and design.

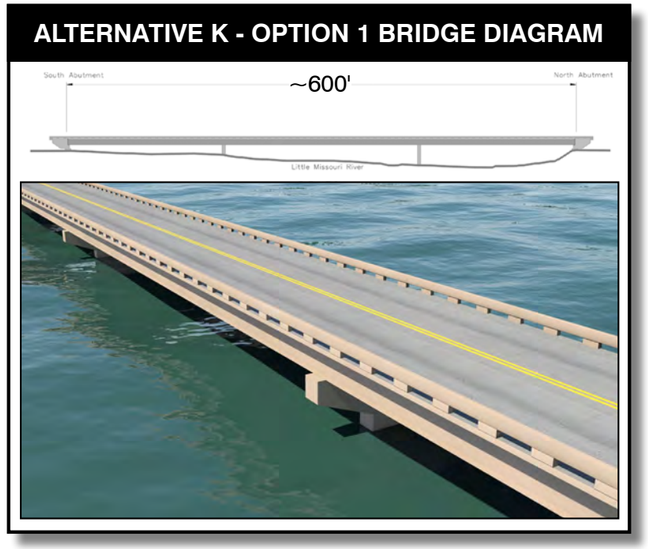
Figure 62, Viewshed Simulation for Alternative K, Option 1 (TRNP – Elkhorn Ranch Unit; Cabin Site)

Existing Condition – View south from cabin site on the Elkhorn Ranchlands.



Photograph Location: Viewpoint is approximately 5.4 miles from bridge location.

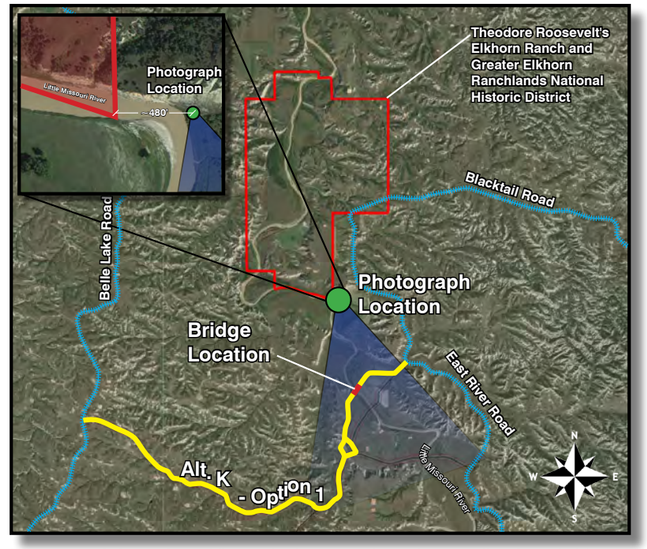
Simulation – Bridge is completely obstructed by vegetation and terrain (see Alternative K - Option 1 Bridge Diagram).



Site Conditions: Clear
Photo Date and Time: 12-3-15, 9:38 a.m. Focal Length: 50mm
3D models in this simulation were prepared based on preliminary engineering and may change based on final engineering and design.

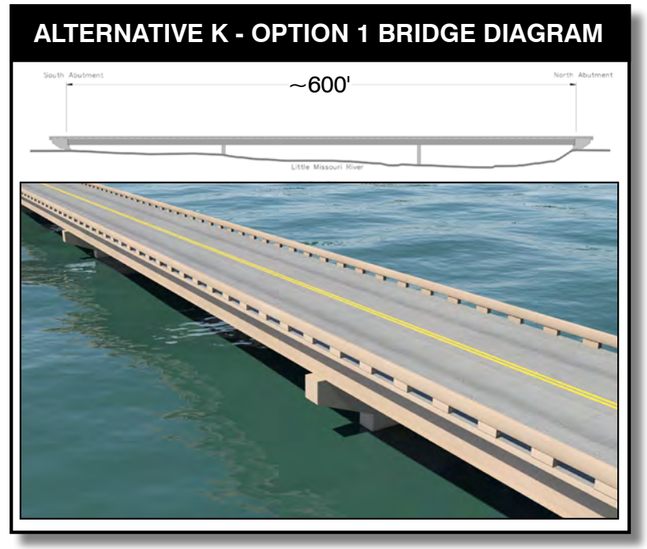
Figure 63, Viewshed Simulation for Alternative K, Option 1 (Elkhorn Ranchlands; Cabin Site)

Existing Condition – View south from south side of National Historic District boundary.



Photograph Location: Viewpoint is approximately 1.6 miles from bridge location.

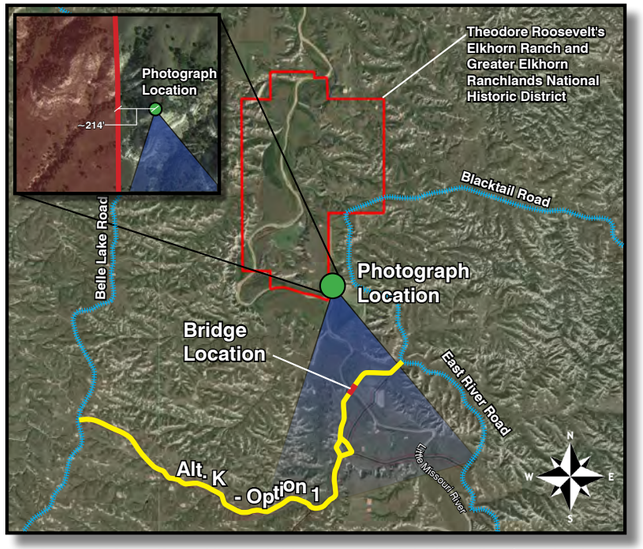
Simulation – Bridge completely obstructed by vegetation and terrain (see Alternative K - Option 1 Bridge Diagram).



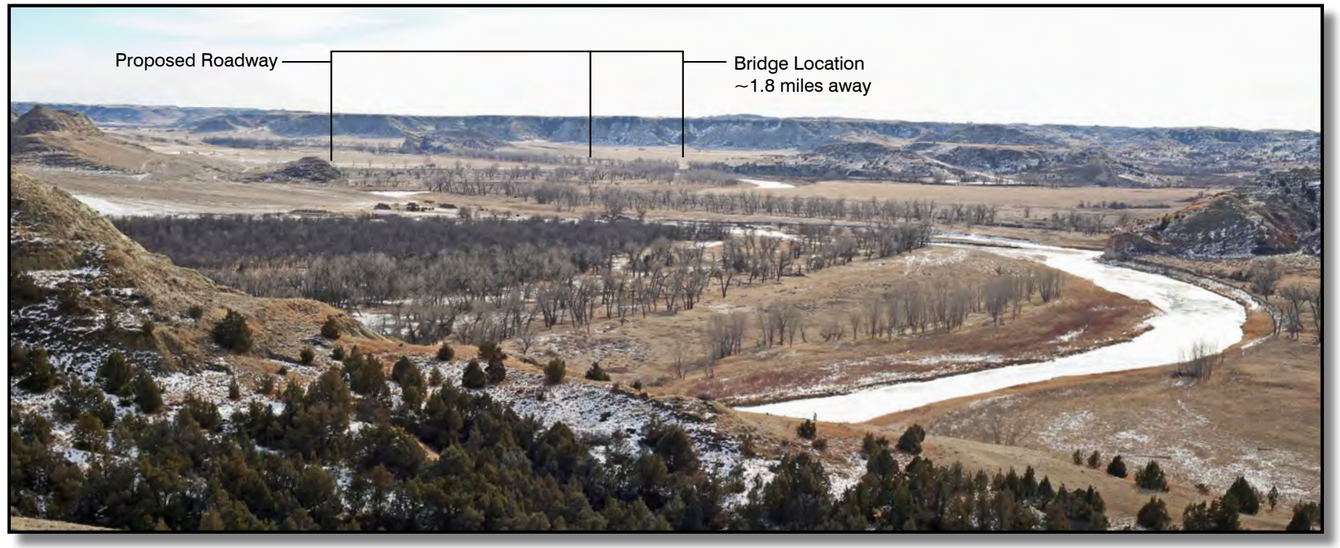
Site Conditions: Clear
Photo Date and Time: 1-27-16, 11:34 a.m. Focal Length: 50mm
When printed on 11x17 inch paper, this simulation is meant to be viewed at a distance of 9 inches.
3D models in this simulation were prepared based on preliminary engineering and may change based on final engineering and design.

Figure 64, Viewshed Simulation for Alternative K, Option 1 (South Side of National Historic District; 1.6 miles)

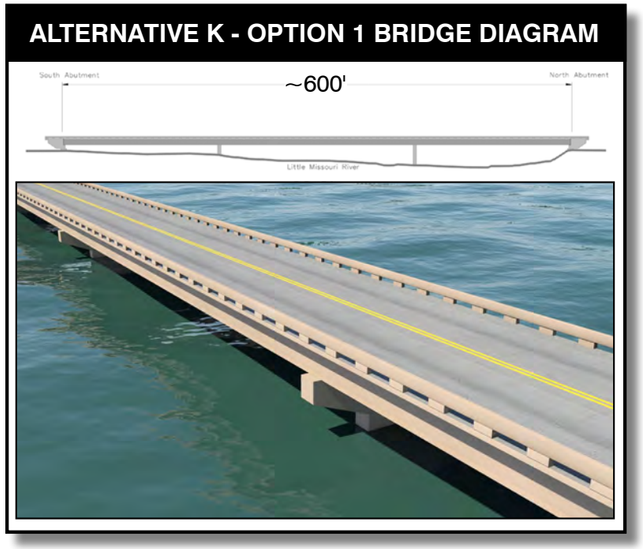
Existing Condition – View south from south side of National Historic District boundary.



Photograph Location: Viewpoint is approximately 1.8 miles from bridge location.



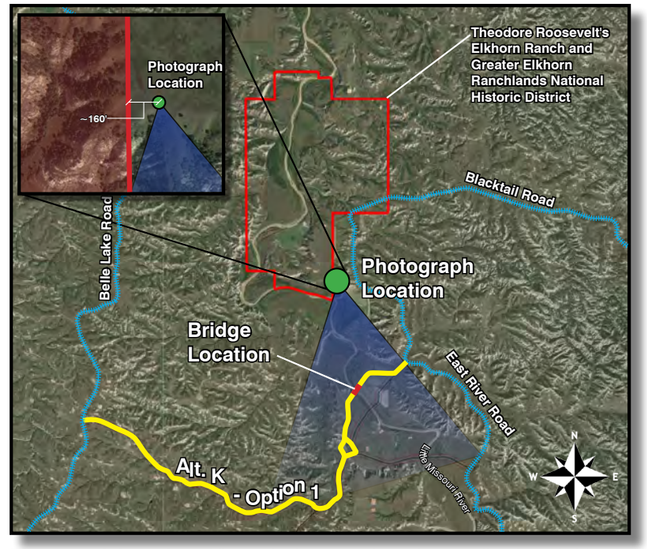
Simulation – Project alignment with the bridge (see Alternative K - Option 1 Bridge Diagram).



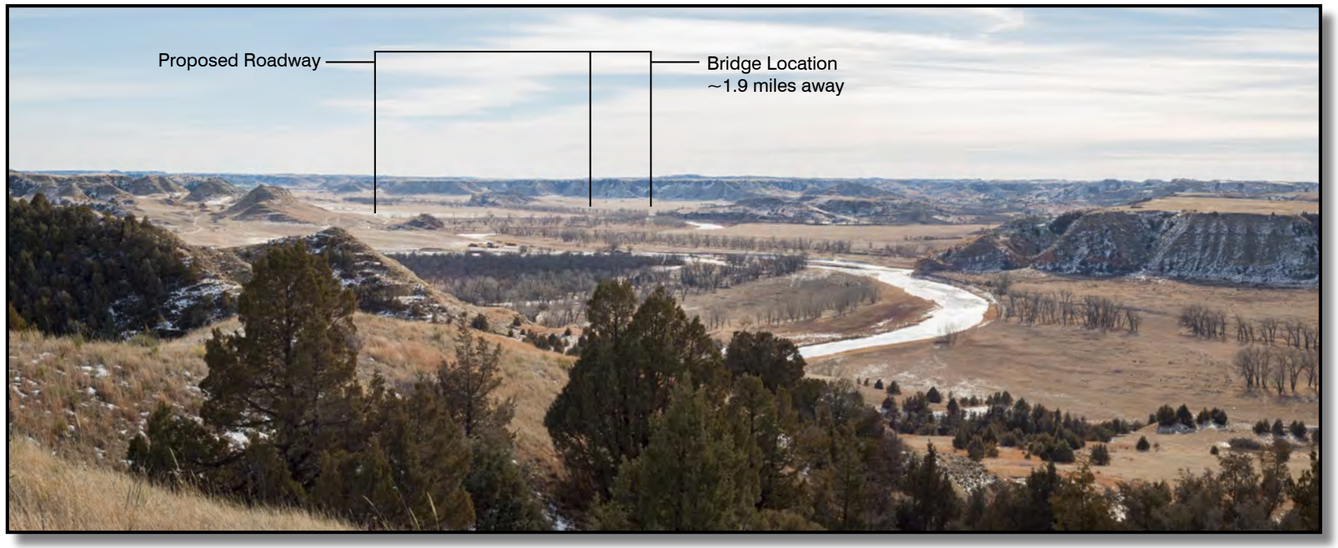
Site Conditions: Clear
Photo Date and Time: 1-27-16, 1:02 p.m. Focal Length: 50mm
When printed on 11x17 inch paper, this simulation is meant to be viewed at a distance of 15 inches.
3D models in this simulation were prepared based on preliminary engineering and may change based on final engineering and design.

Figure 65, Viewshed Simulation for Alternative K, Option 1 (South Side of National Historic District; 1.8 miles)

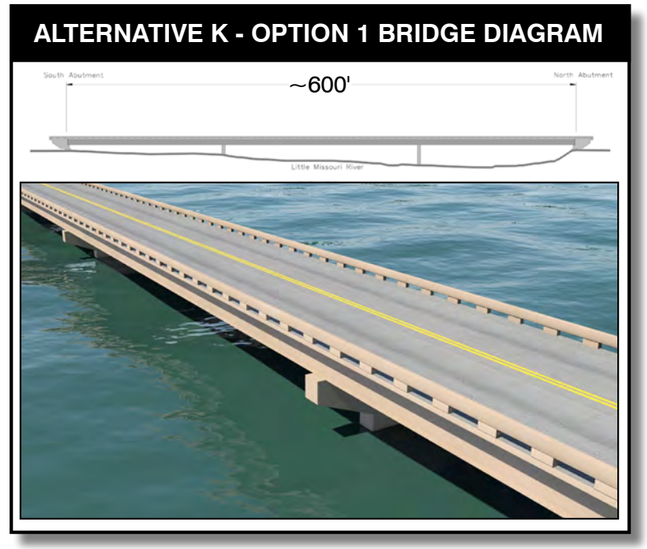
Existing Condition – View south from south side of National Historic District boundary.



Photograph Location: Viewpoint is approximately 1.9 miles from bridge location.



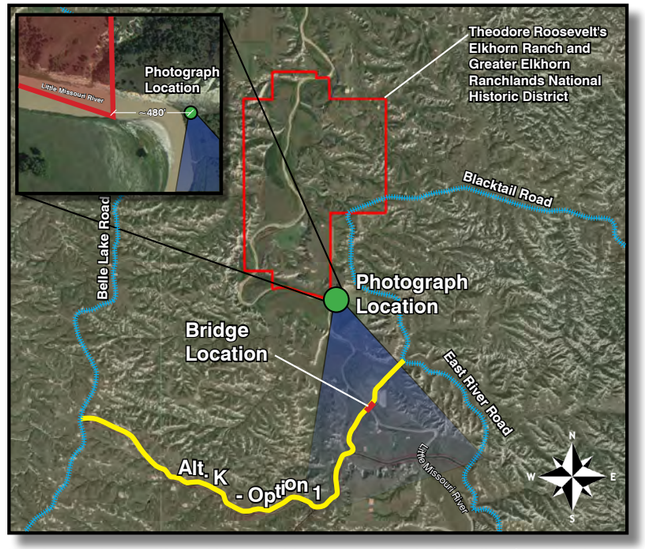
Simulation – Project alignment with the bridge (see Alternative K - Option 1 Bridge Diagram).



Site Conditions: Clear
Photo Date and Time: 1-27-16, 12:53 p.m. Focal Length: 50mm
When printed on 11x17 inch paper, this simulation is meant to be viewed at a distance of 9 inches.
3D models in this simulation were prepared based on preliminary engineering and may change based on final engineering and design.

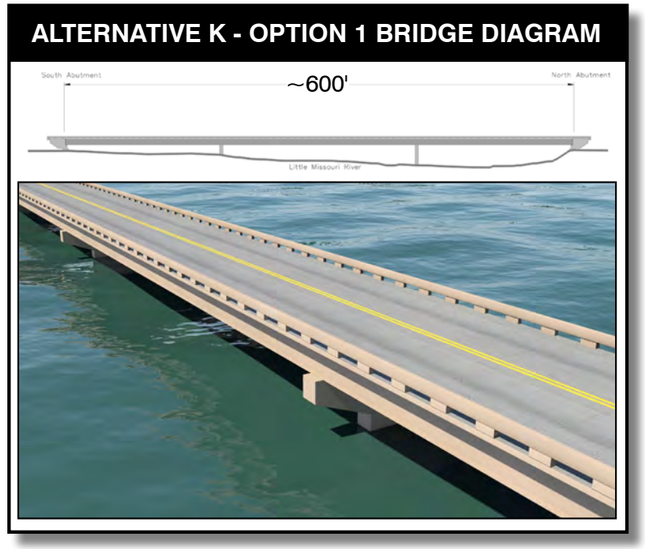
Figure 66, Viewshed Simulation for Alternative K, Option 1 (South Side of National Historic District; 1.9 miles)

Existing Condition – View south from south side of National Historic District boundary.



Photograph Location: Viewpoint is approximately 2.0 miles from bridge location.

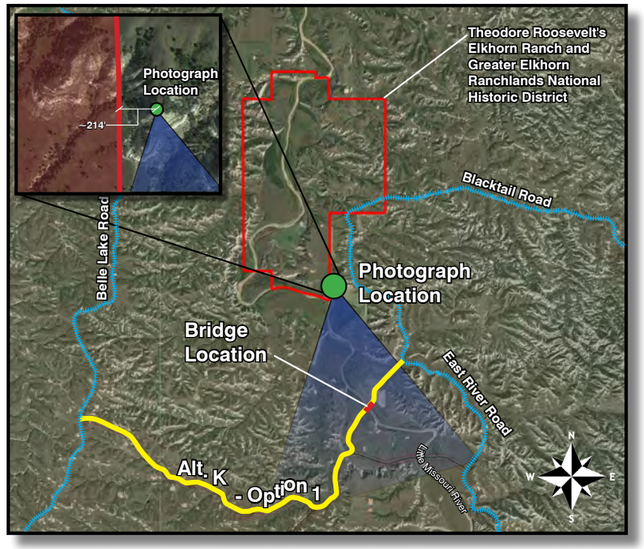
Simulation – Bridge completely obstructed by vegetation and terrain (see Alternative K - Option 1 Bridge Diagram).



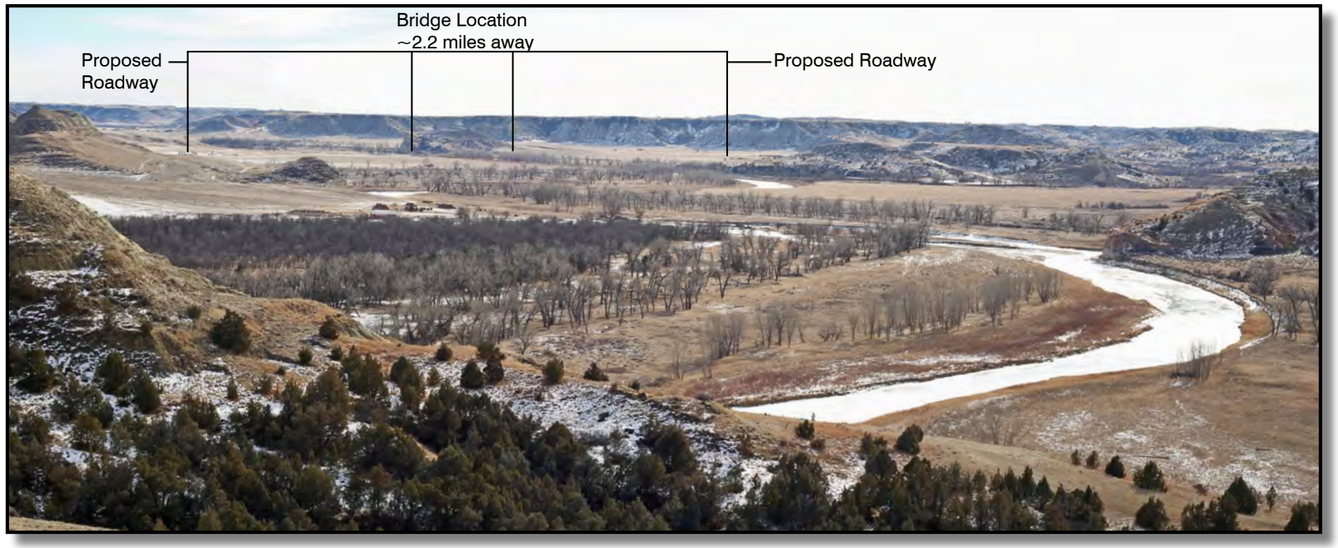
Site Conditions: Clear
Photo Date and Time: 1-27-16, 11:34 a.m. Focal Length: 50mm
When printed on 11x17 inch paper, this simulation is meant to be viewed at a distance of 9 inches.
3D models in this simulation were prepared based on preliminary engineering and may change based on final engineering and design.

Figure 67, Viewshed Simulation for Alternative K, Option 1 (South Side of National Historic District; 2.0 miles)

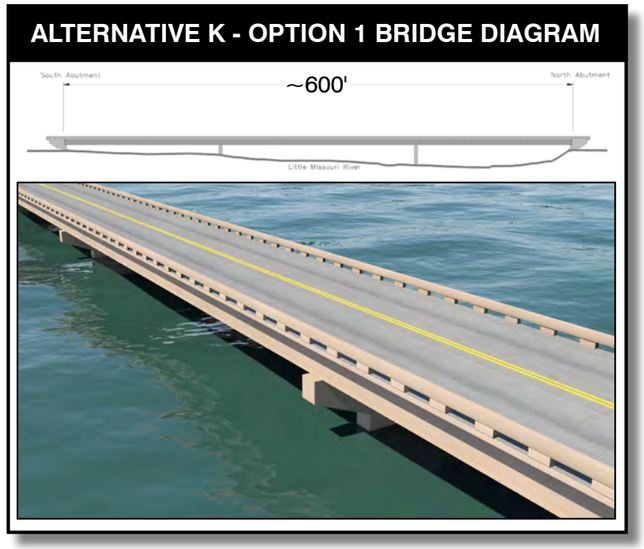
Existing Condition – View south from south side of National Historic District boundary.



Photograph Location: Viewpoint is approximately 2.2 miles from bridge location.



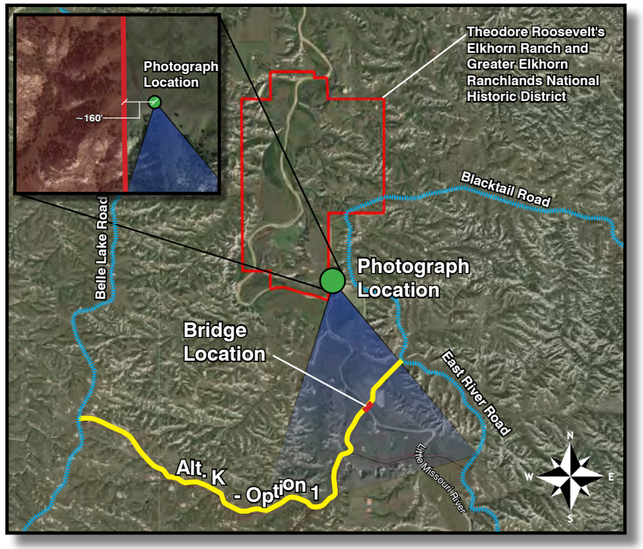
Simulation – Project alignment with the bridge (see Alternative K - Option 1 Bridge Diagram).



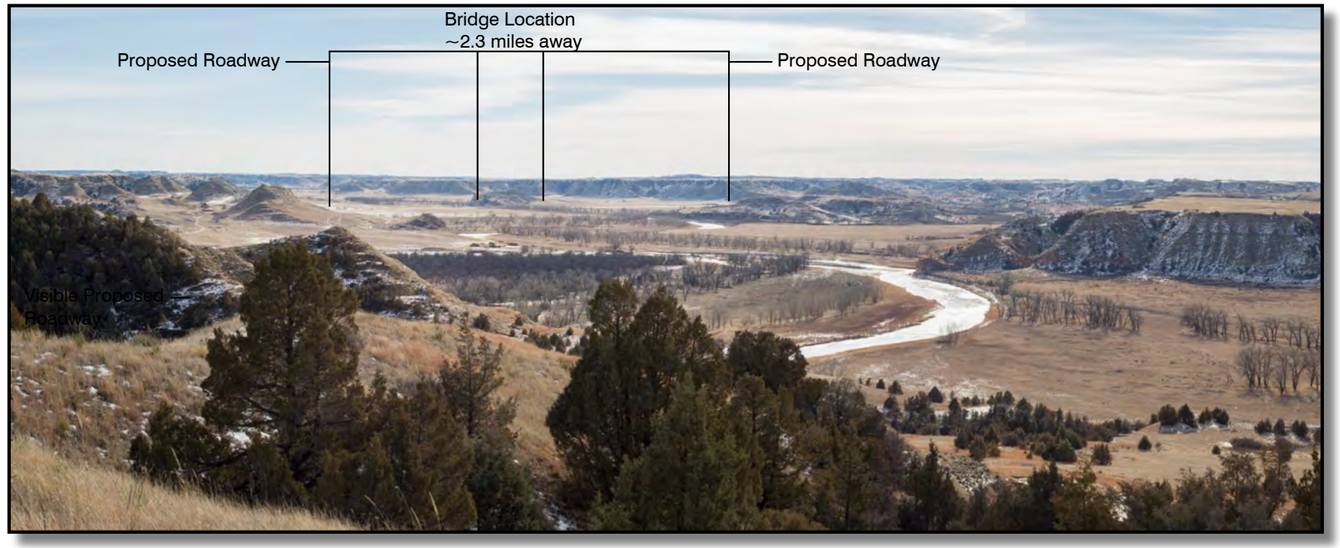
Site Conditions: Clear
Photo Date and Time: 1-27-16, 1:02 p.m. Focal Length: 50mm
When printed on 11x17 inch paper, this simulation is meant to be viewed at a distance of 15 inches.
3D models in this simulation were prepared based on preliminary engineering and may change based on final engineering and design.

Figure 68, Viewshed Simulation for Alternative K, Option 1 (South Side of National Historic District; 2.2 miles)

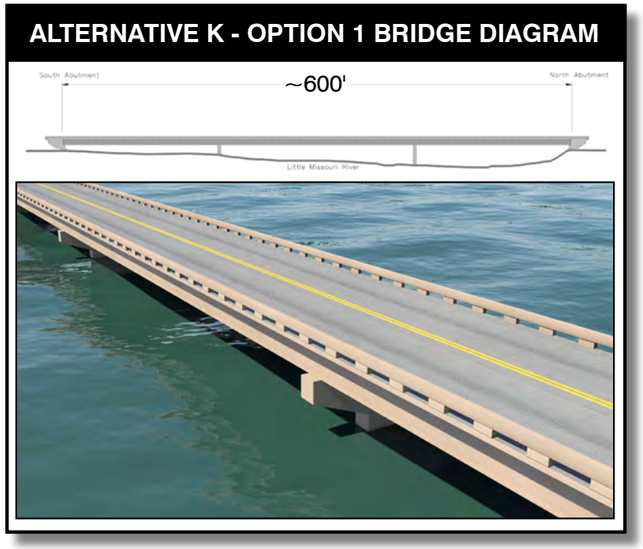
Existing Condition – View south from south side of National Historic District boundary.



Photograph Location: Viewpoint is approximately 2.3 miles from bridge location.



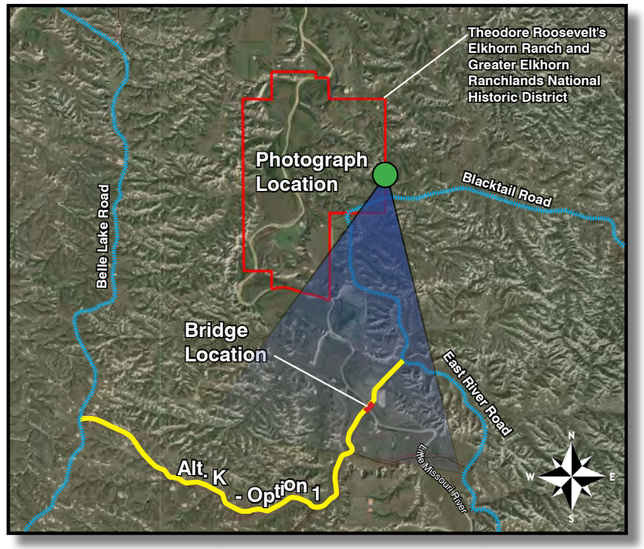
Simulation – Project alignment with the bridge (see Alternative K - Option 1 Bridge Diagram).



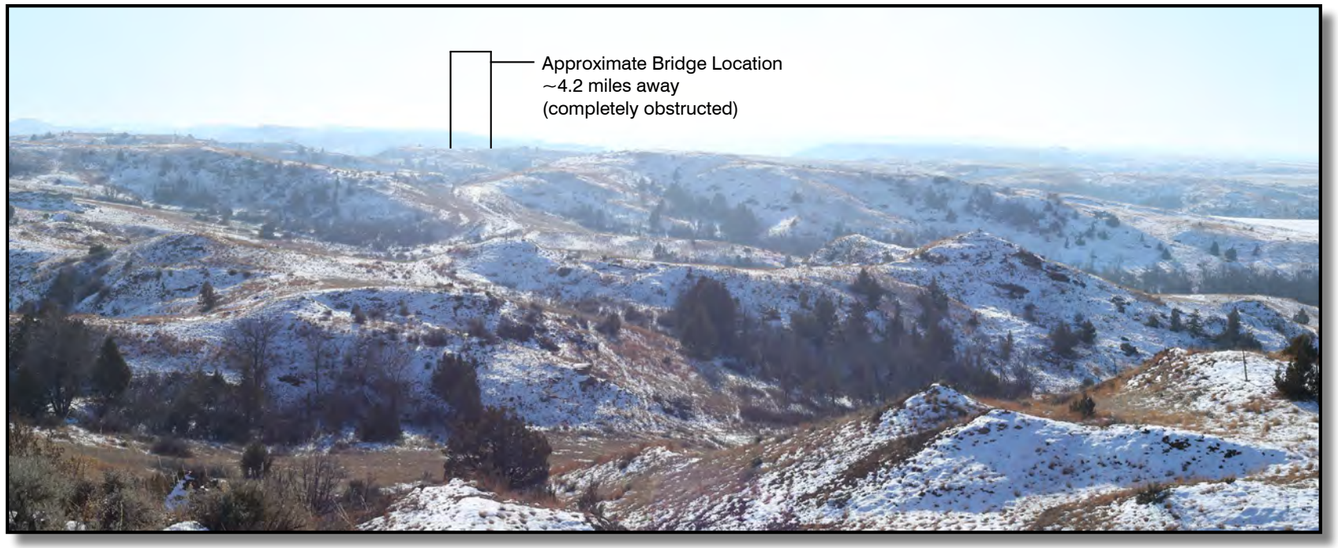
Site Conditions: Clear
Photo Date and Time: 1-27-16, 12:53 p.m. Focal Length: 50mm
When printed on 11x17 inch paper, this simulation is meant to be viewed at a distance of 9 inches.
3D models in this simulation were prepared based on preliminary engineering and may change based on final engineering and design.

Figure 69, Viewshed Simulation for Alternative K, Option 1 (South Side of National Historic District; 2.3 miles)

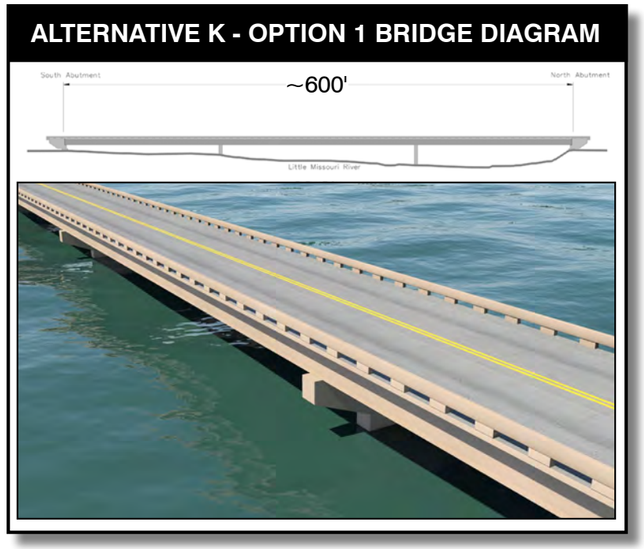
Existing Condition – View south from east side of National Historic District boundary.



Photograph Location: Viewpoint is approximately 4.2 miles from bridge location.



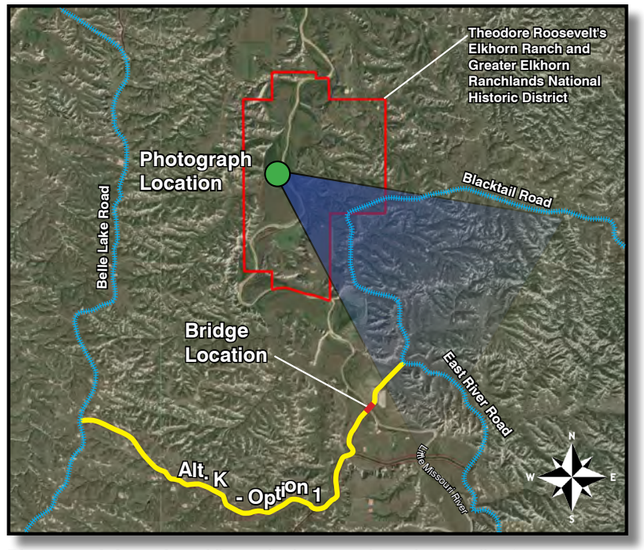
Simulation – Project alignment with the bridge completely obstructed by vegetation and terrain (see Alternative K - Option 1 Bridge Diagram).



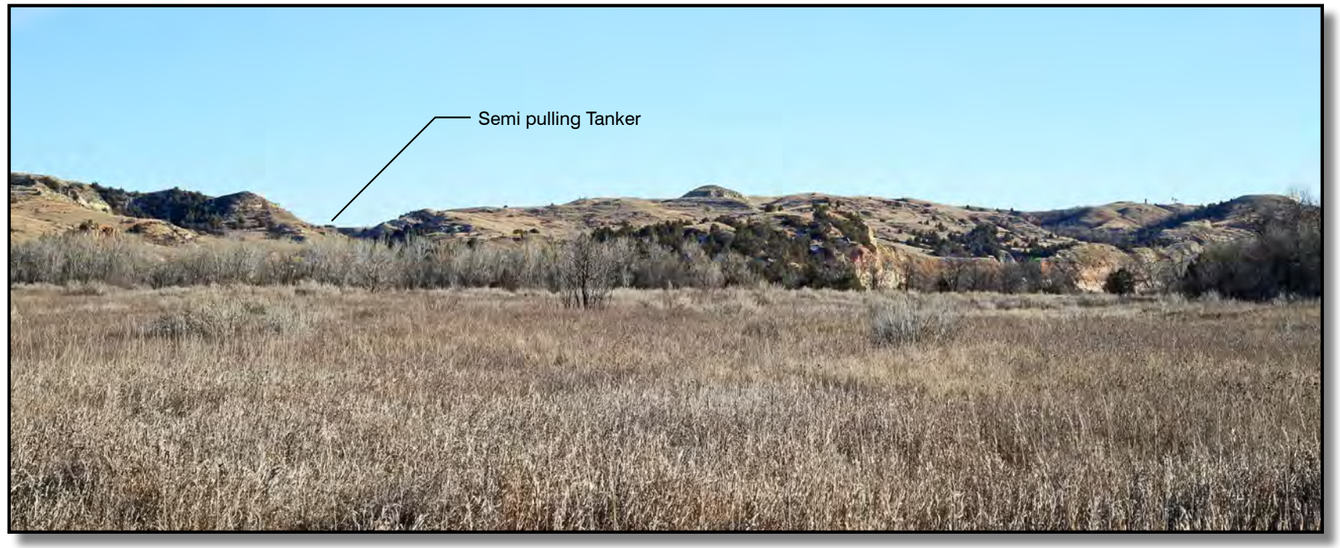
Site Conditions: Slight haze
Photo Date and Time: 1-6-16, 12:29 p.m. Focal Length: 50mm
When printed on 11x17 inch paper, this simulation is meant to be viewed at a distance of 9 inches.
3D models in this simulation were prepared based on preliminary engineering and may change based on final engineering and design.

Figure 70, Viewshed Simulation for Alternative K, Option 1 (East Side of National Historic District)

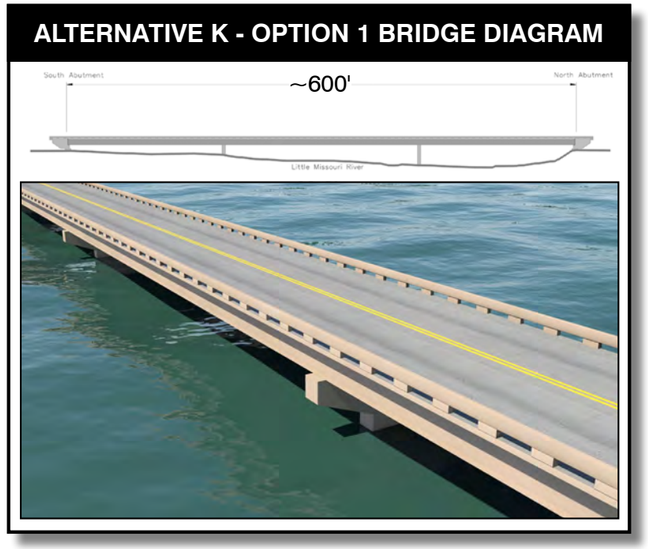
Existing Condition – View southeast from trail towards Blacktail Road and existing oil rig.



Photograph Location: Viewpoint is approximately 1.5 miles from Blacktail Road.

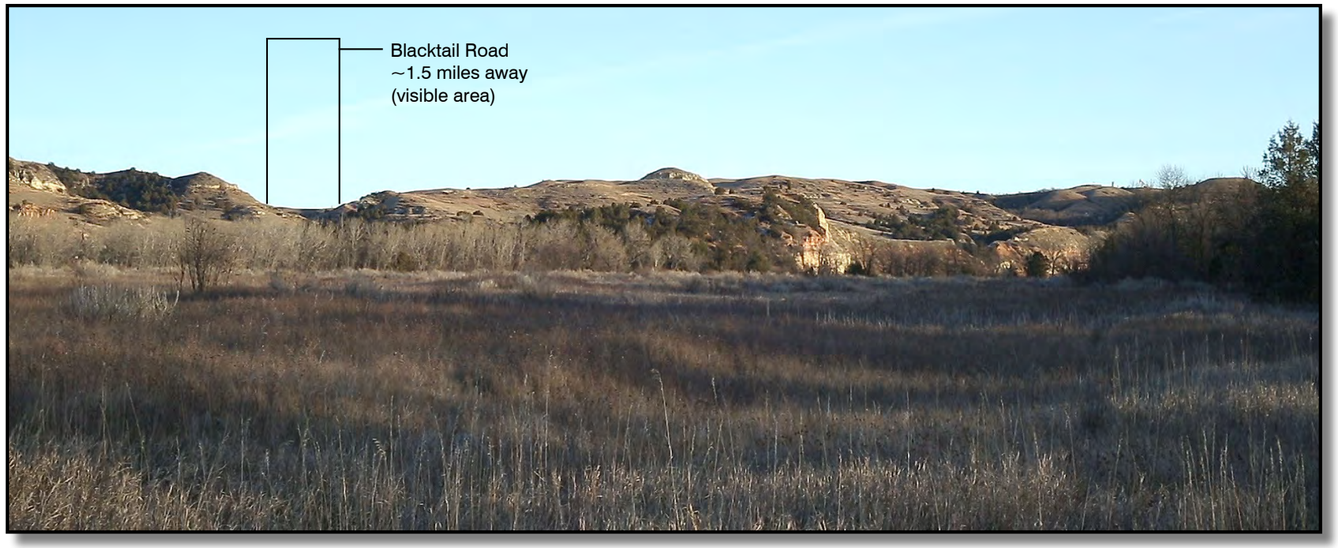


Simulation – Vehicles are visible for a duration of approximately 9-12 seconds

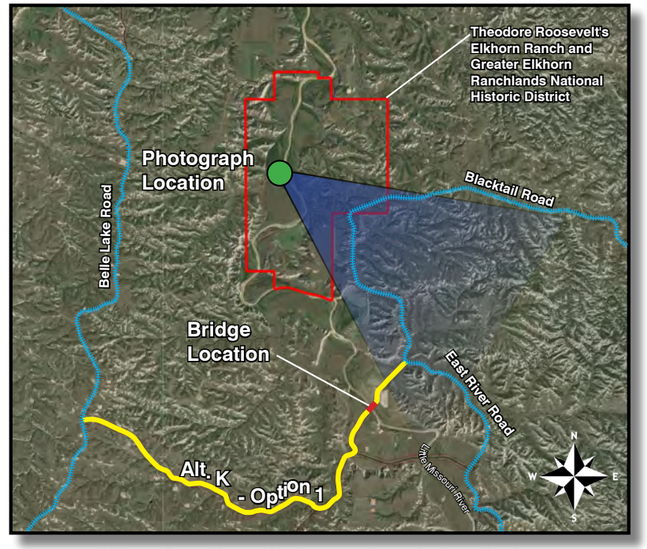


Site Conditions: Clear
Photo Date and Time: 12-3-15, 1:11 p.m. Focal Length: 50mm
3D models in this simulation were prepared based on preliminary engineering and may change based on final engineering and design.

Figure 71, Viewshed Simulation for Alternative K, Option 1 (Trail Toward Blacktail Road 1)

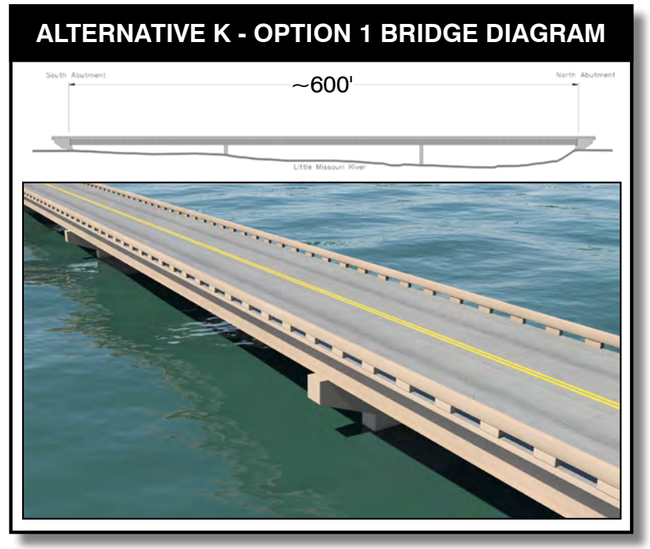


Existing Condition – View southeast from trail towards Blacktail Road and existing oil rig.



Photograph Location: Viewpoint is approximately 1.5 miles from Blacktail Road.

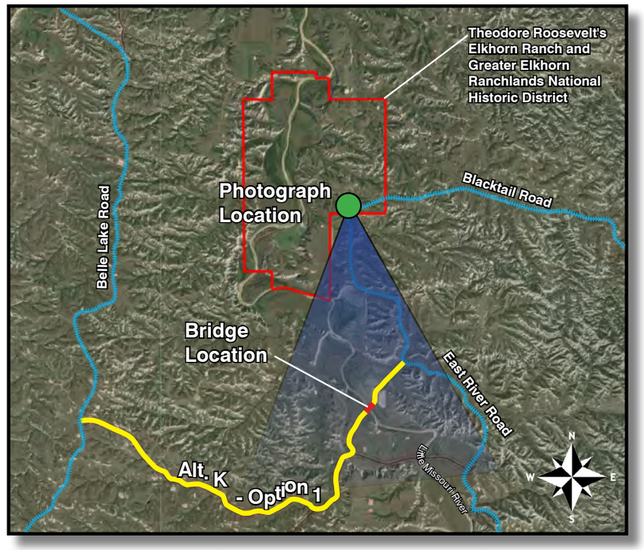
Simulation – Car visible for a duration of approximately 9 seconds



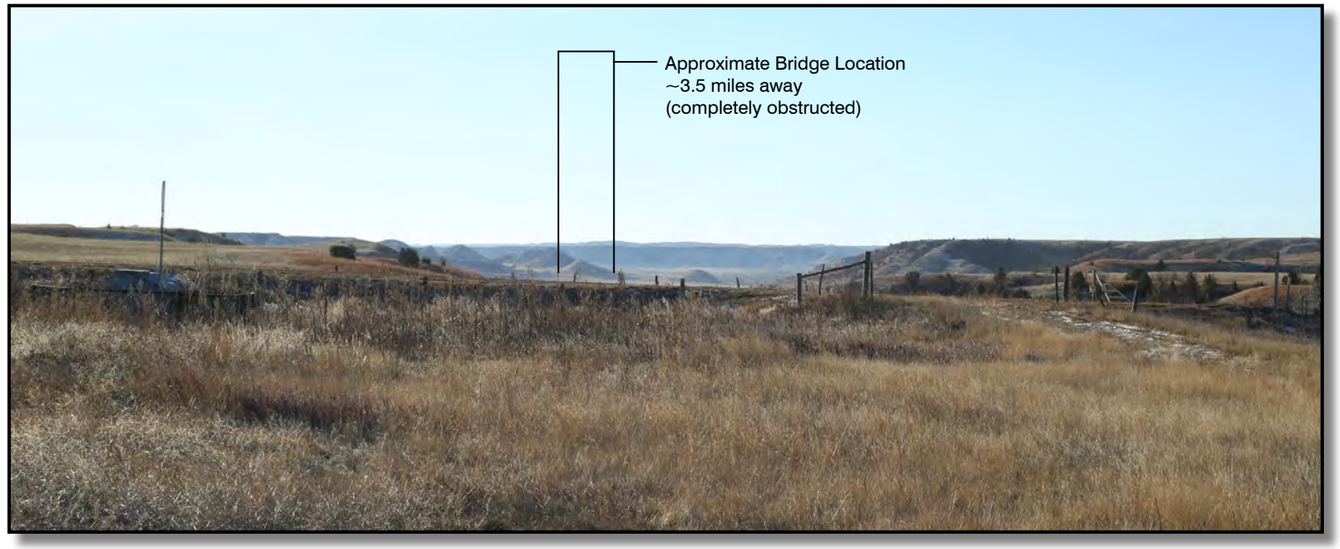
Site Conditions: Clear
Photo Date and Time: 12-3-15, 3:00 p.m. Focal Length: 50mm
3D models in this simulation were prepared based on preliminary engineering and may change based on final engineering and design.

Figure 72, Viewshed Simulation for Alternative K, Option 1 (Trail Toward Blacktail Road 2)

Existing Condition – View south from schoolhouse looking towards Blacktail Road.



Photograph Location: Viewpoint is approximately 3.5 miles from bridge location.



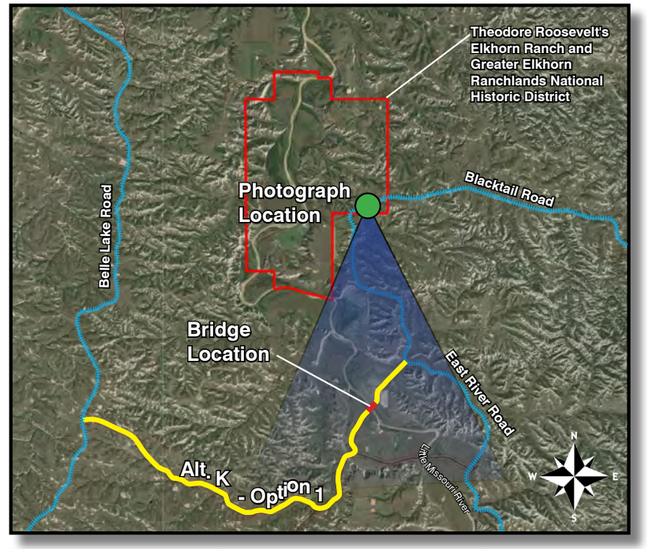
Simulation – Project alignment with the bridge completely obstructed by vegetation and terrain (see Alternative K - Option 1 Bridge Diagram).

ALTERNATIVE K - OPTION 1 BRIDGE DIAGRAM

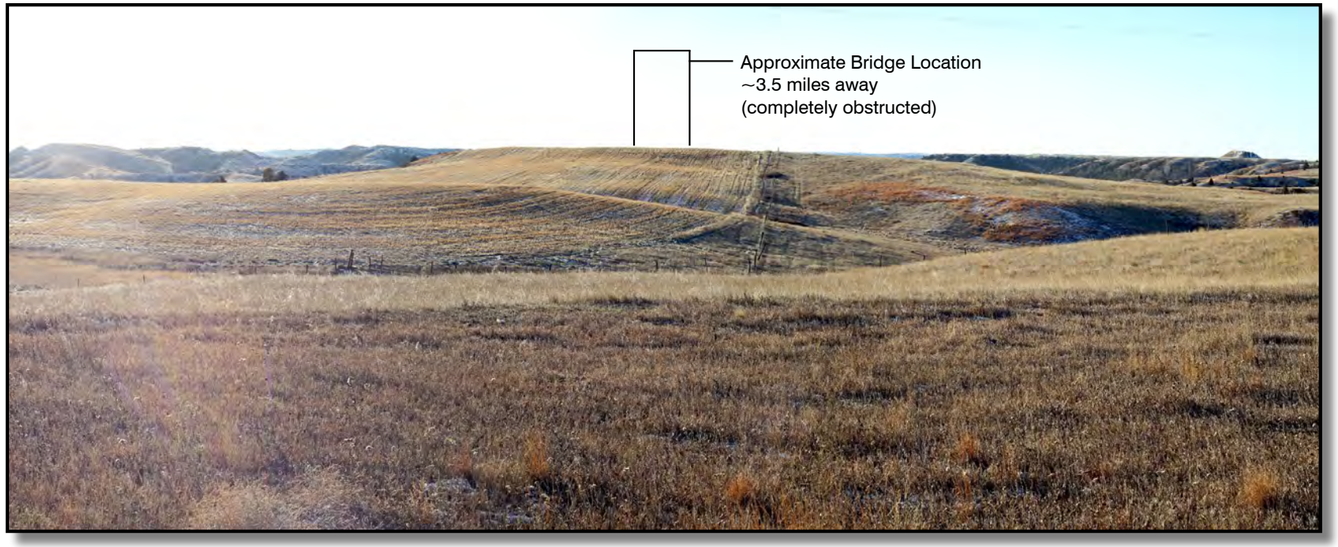
Site Conditions: Clear to slight haze
Photo Date and Time: 12-3-15, 9:12 a.m. Focal Length: 50mm
3D models in this simulation were prepared based on preliminary engineering and may change based on final engineering and design.

Figure 73, Viewshed Simulation for Alternative K, Option 1 (Schoolhouse)

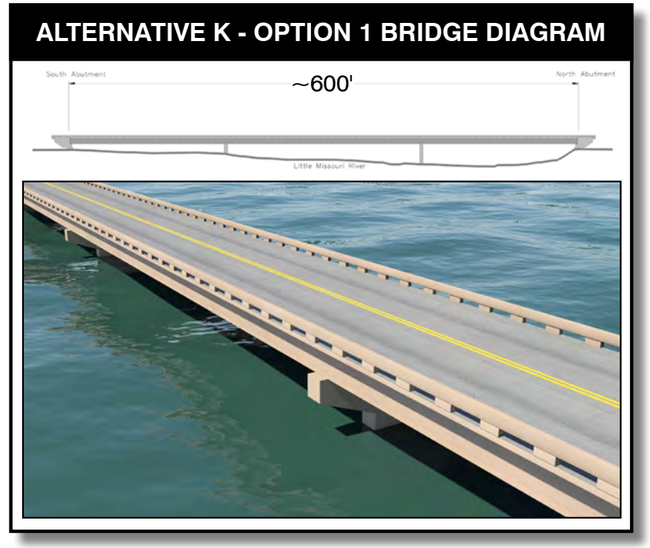
Existing Condition – View south from Blacktail Road.



Photograph Location: Viewpoint is approximately 3.5 miles from bridge location.



Simulation – Bridge is completely obstructed by vegetation and terrain (see Alternative K - Option 1 Bridge Diagram).



Site Conditions: Clear
Photo Date and Time: 12-3-15, 8:59 a.m. Focal Length: 50mm
3D models in this simulation were prepared based on preliminary engineering and may change based on final engineering and design.

Figure 74, Viewshed Simulation for Alternative K, Option 1 (Blacktail Road)

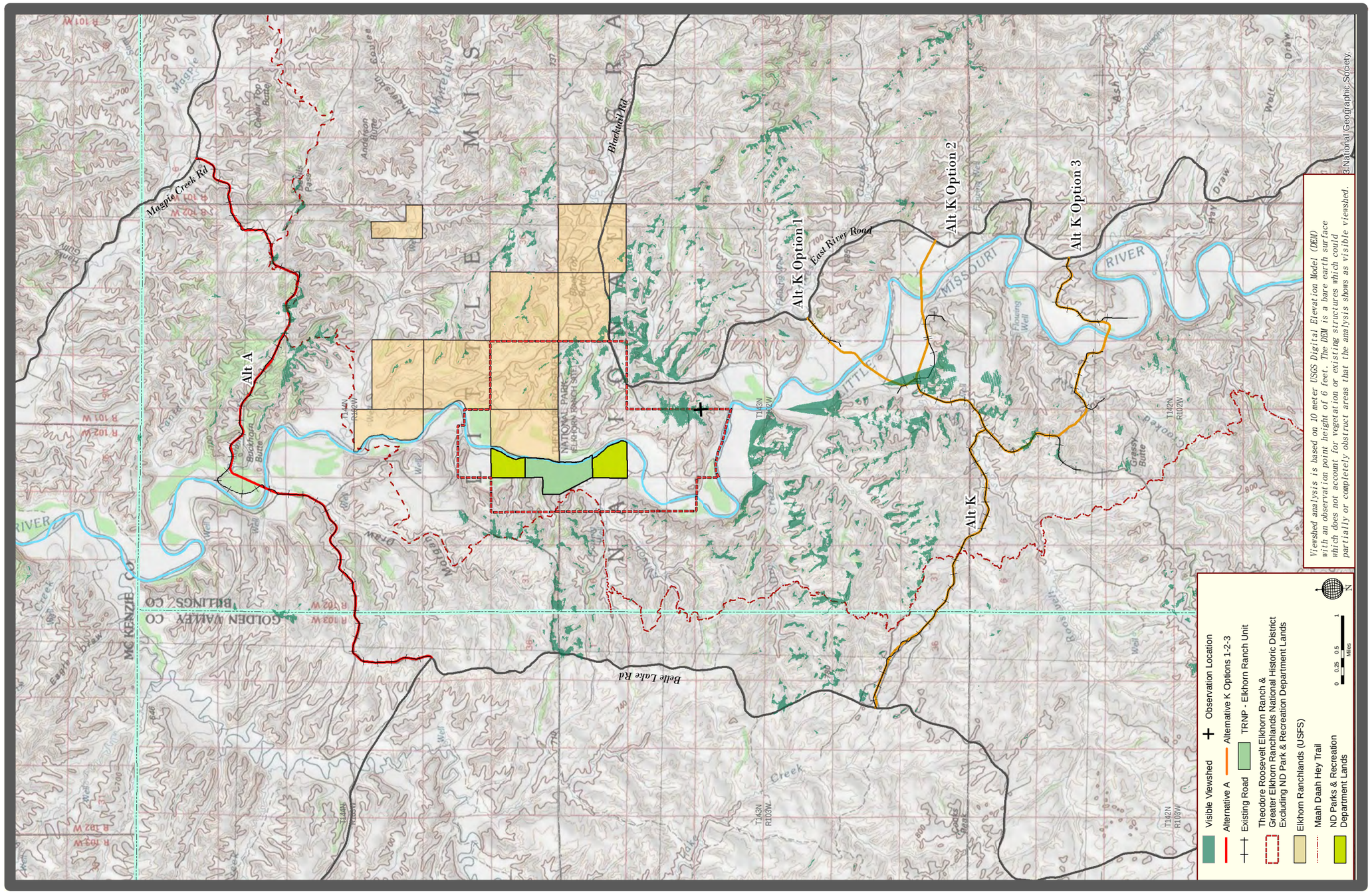


Figure 75, Computer Model for National Historic District—Highest Elevation

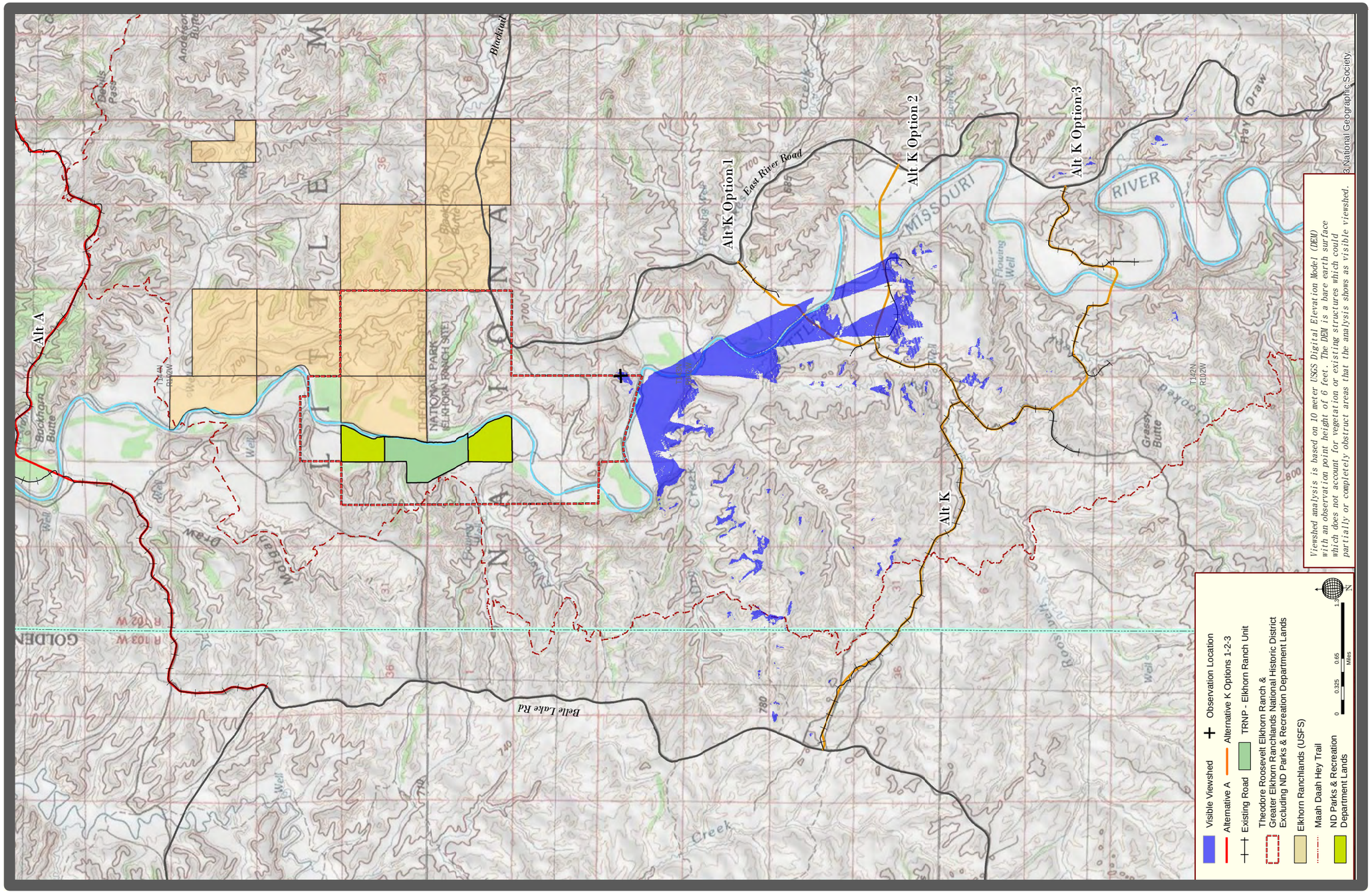


Figure 76, Computer Model for National Historic District—Mid-Elevation

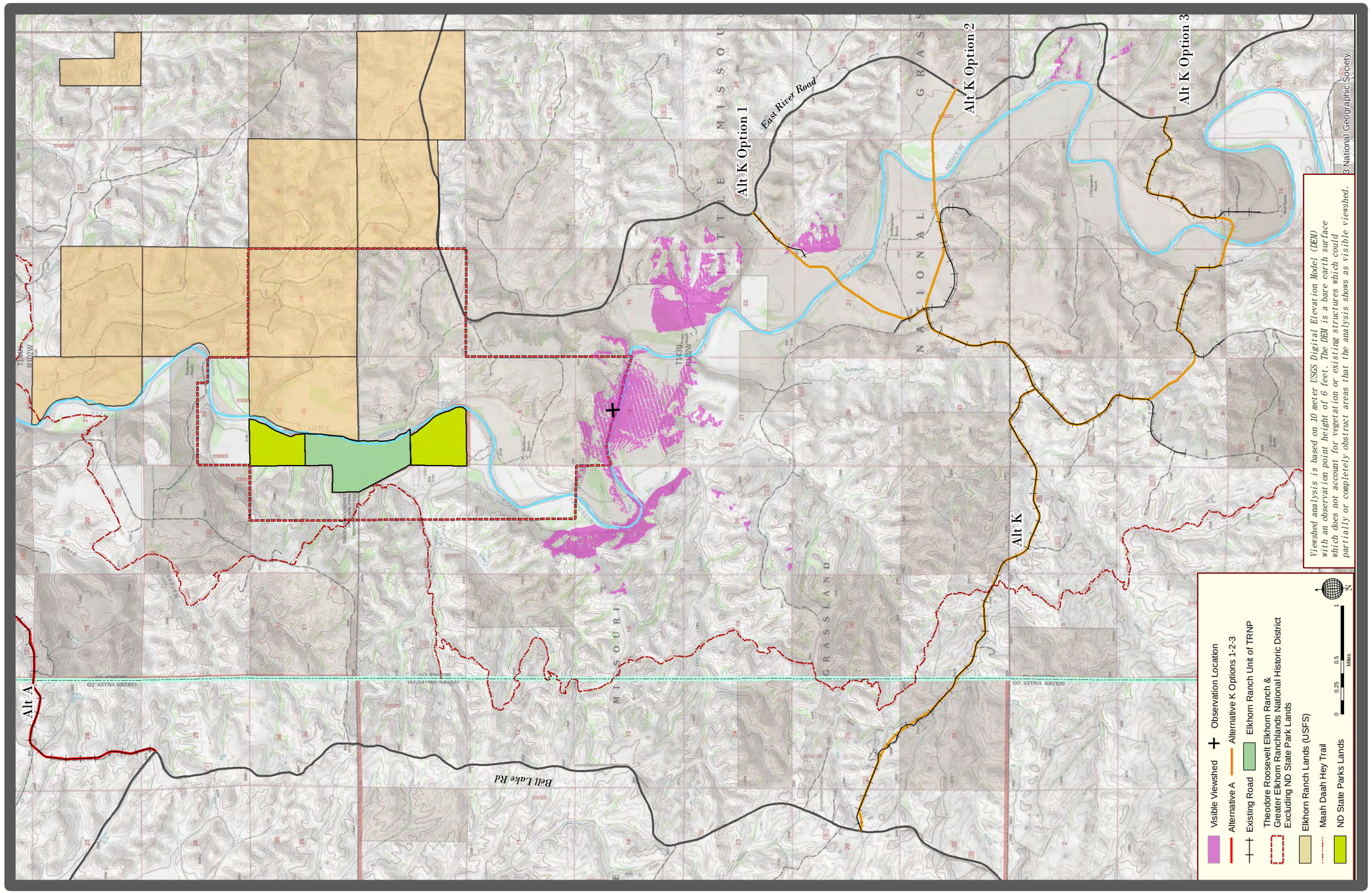


Figure 77, Computer Model for National Historic District—Lowest Elevation

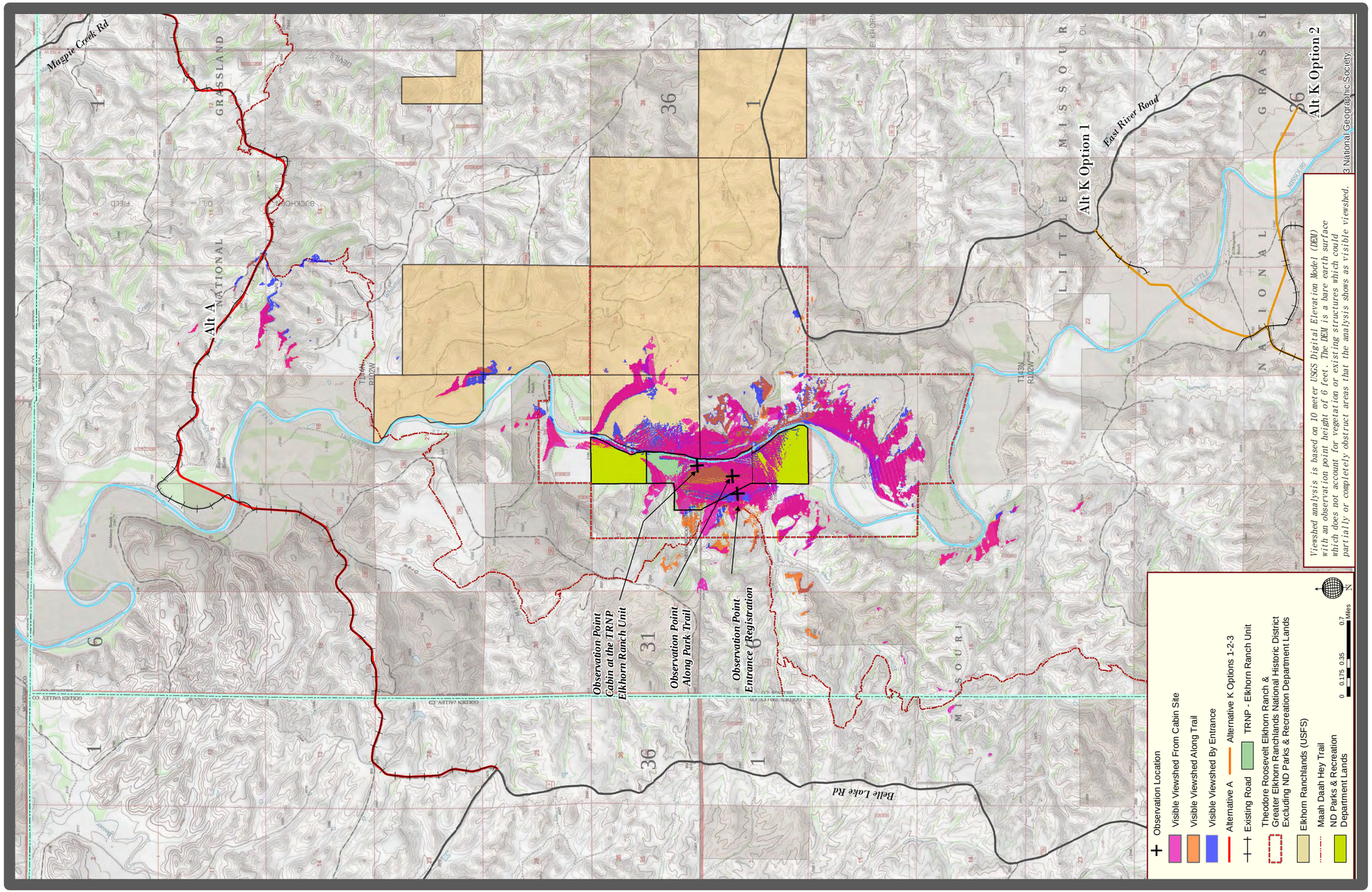


Figure 78, Computer Model for TRNP – Elkhorn Ranch Unit; Entrance, Cabin, and Trail

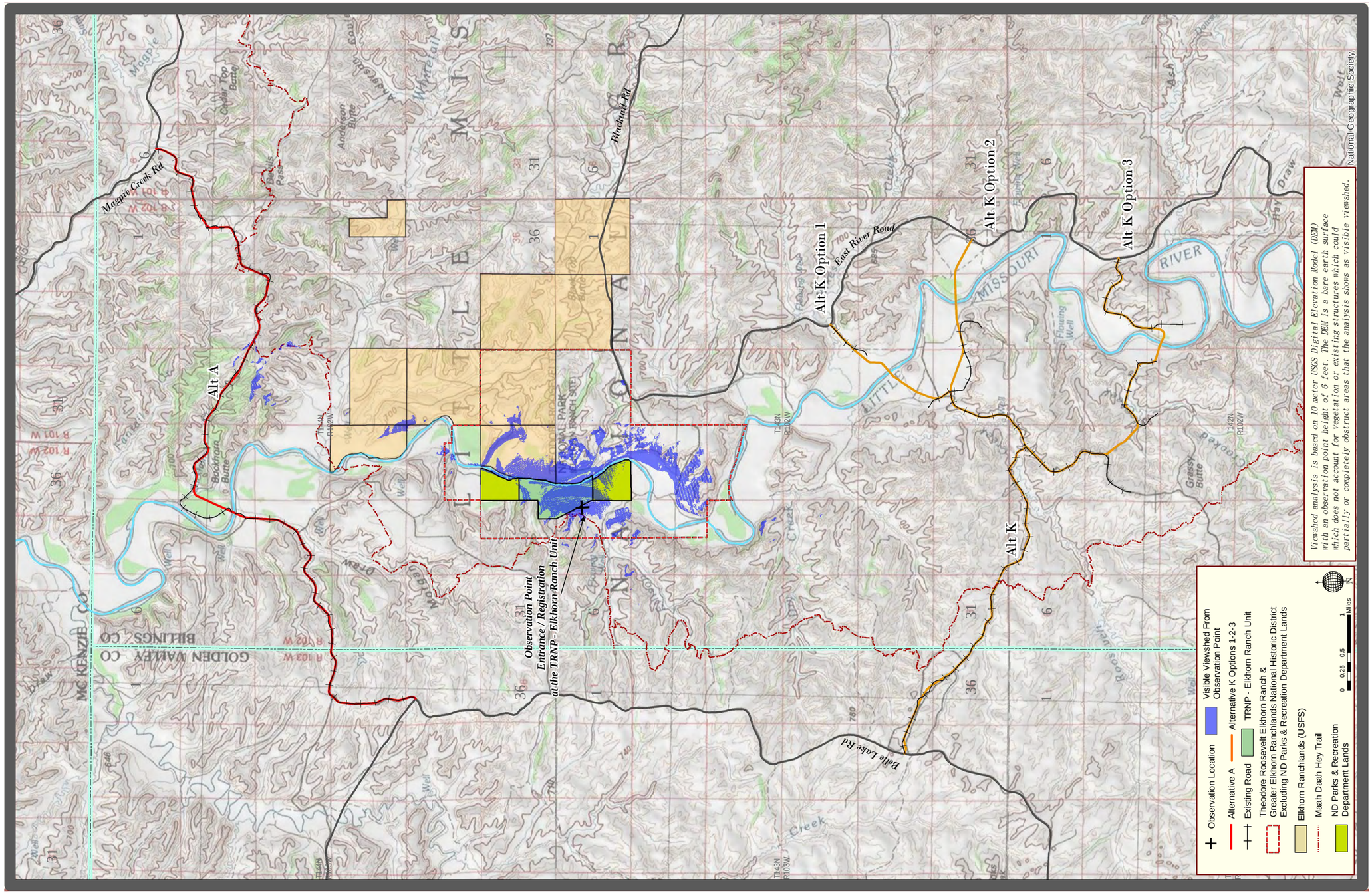


Figure 79, Computer Model for TRNP–Elkhorn Ranch Unit; Entrance

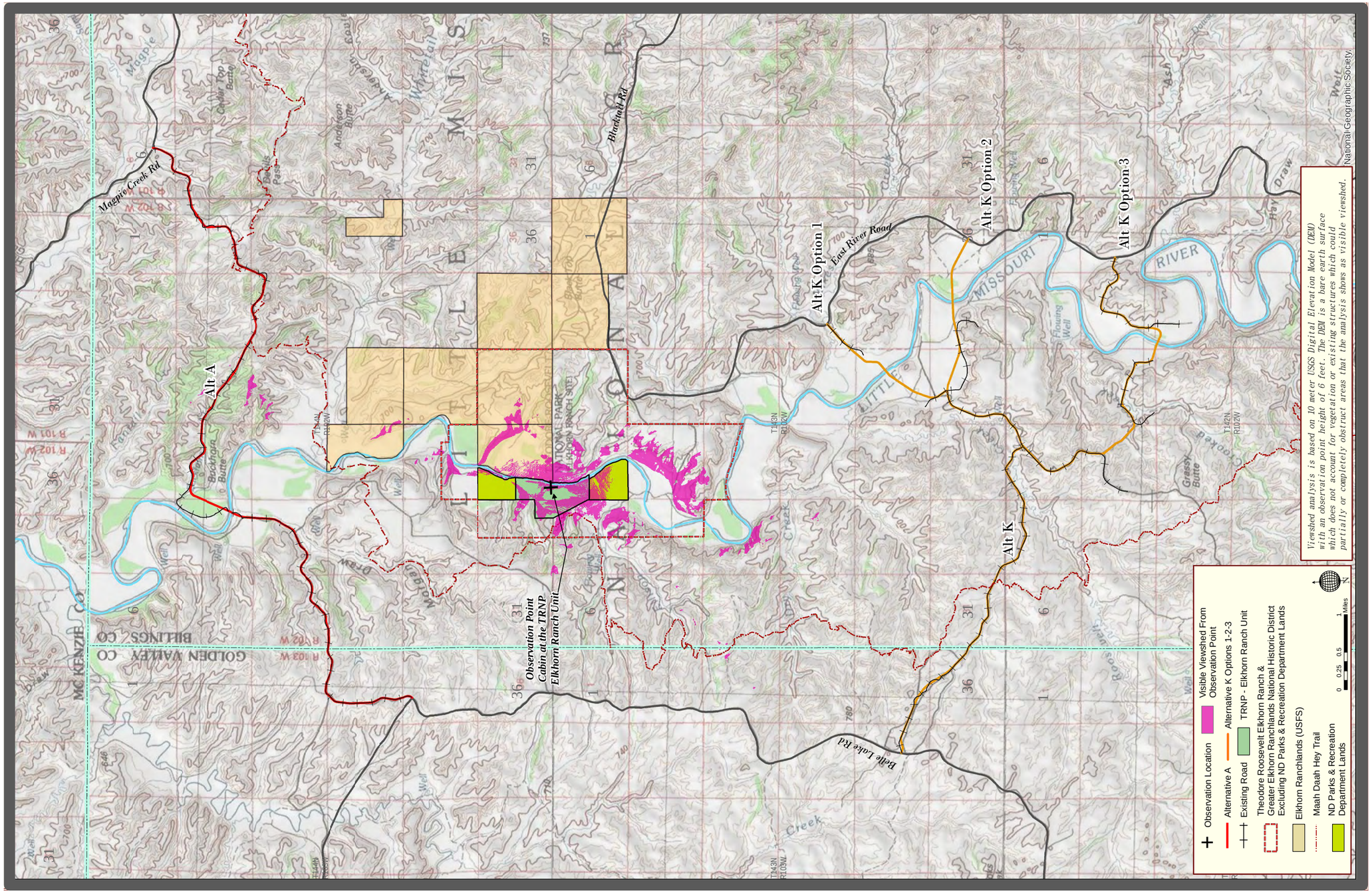


Figure 80, Computer Model for TRNP—Elkhorn Ranch Unit; Cabin

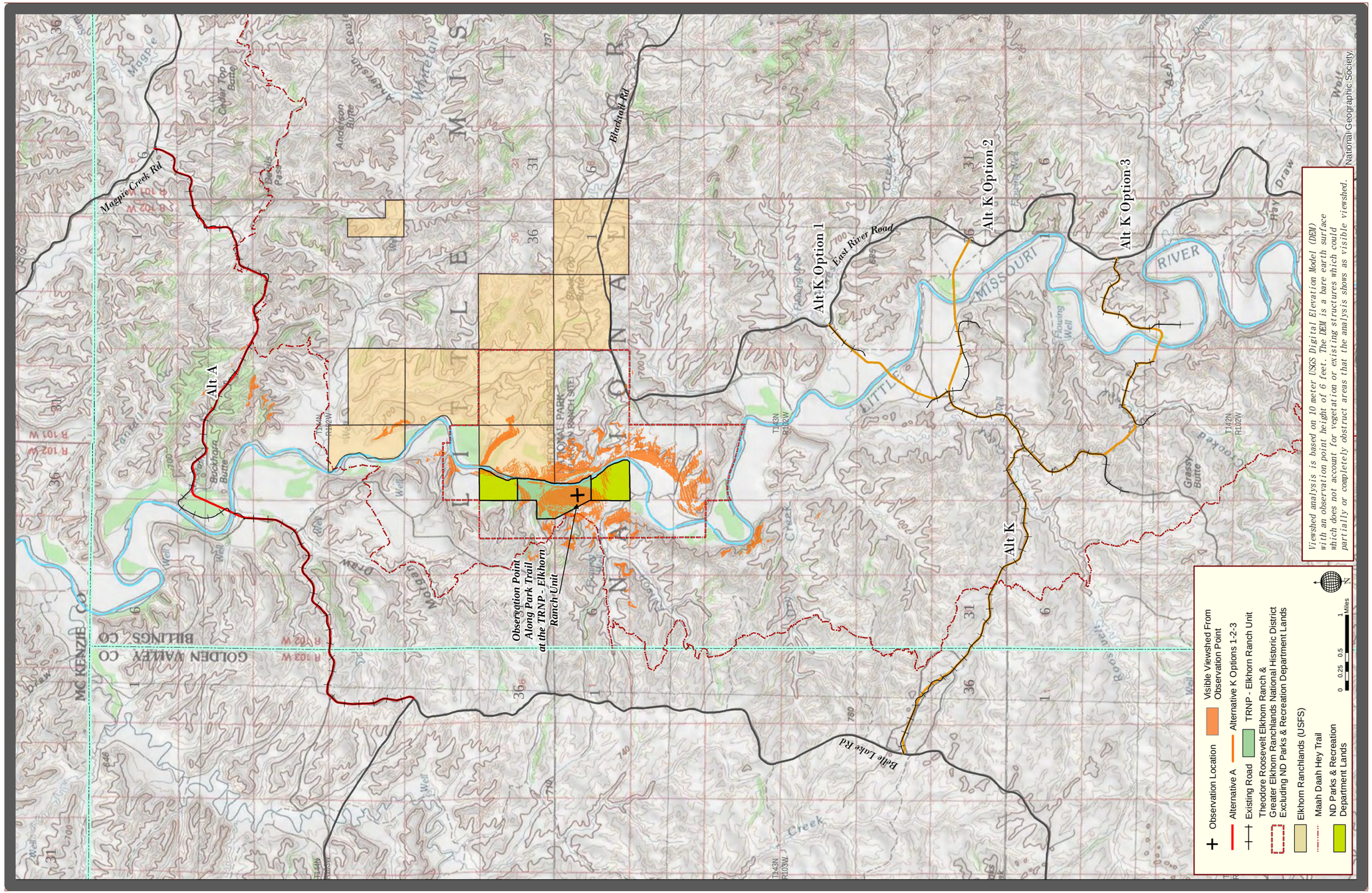


Figure 81, Computer Model for TRNP–Elkhorn Ranch Unit; Trail

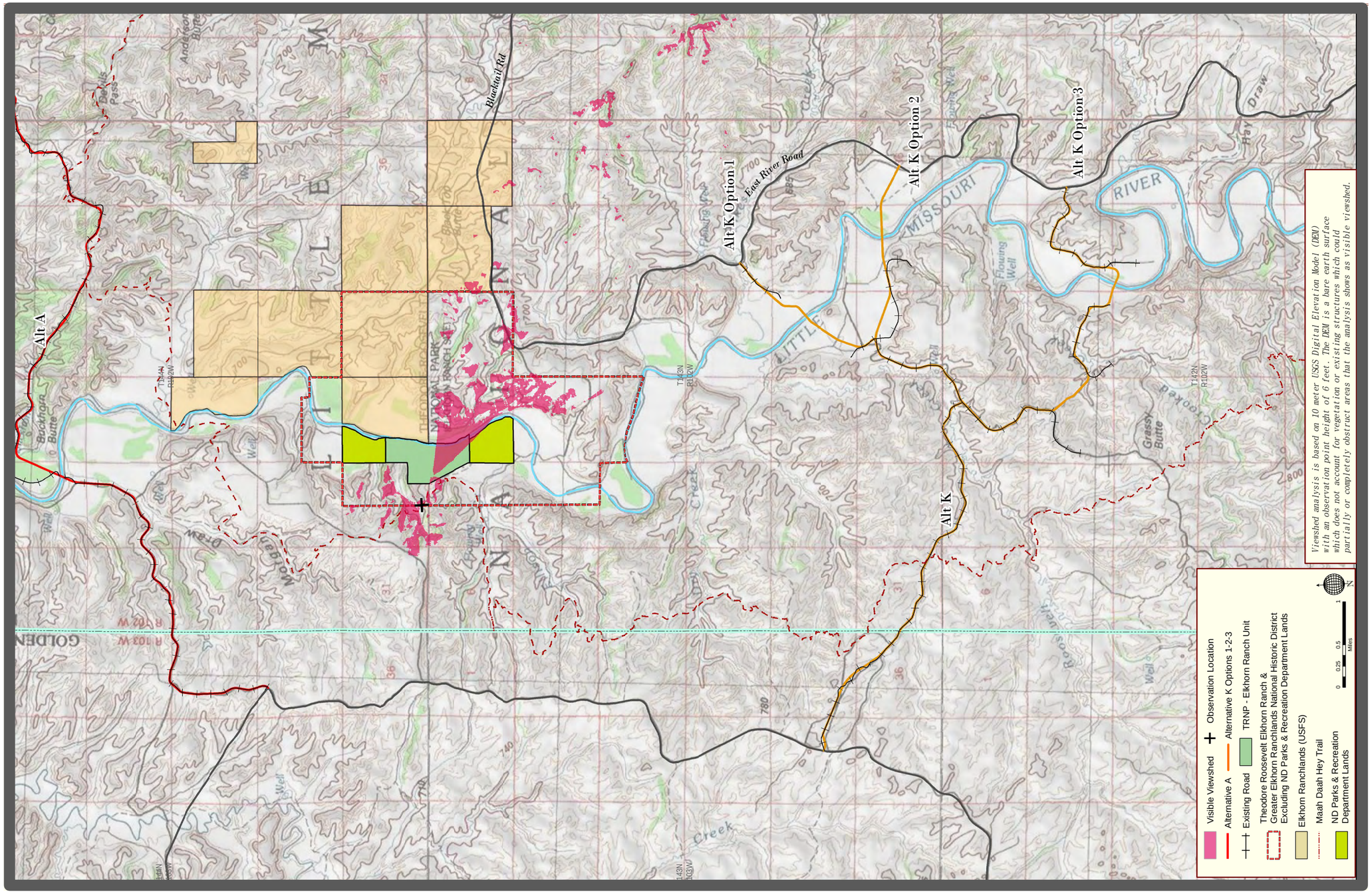


Figure 82, Computer Model for Maah Daah Hey Trail

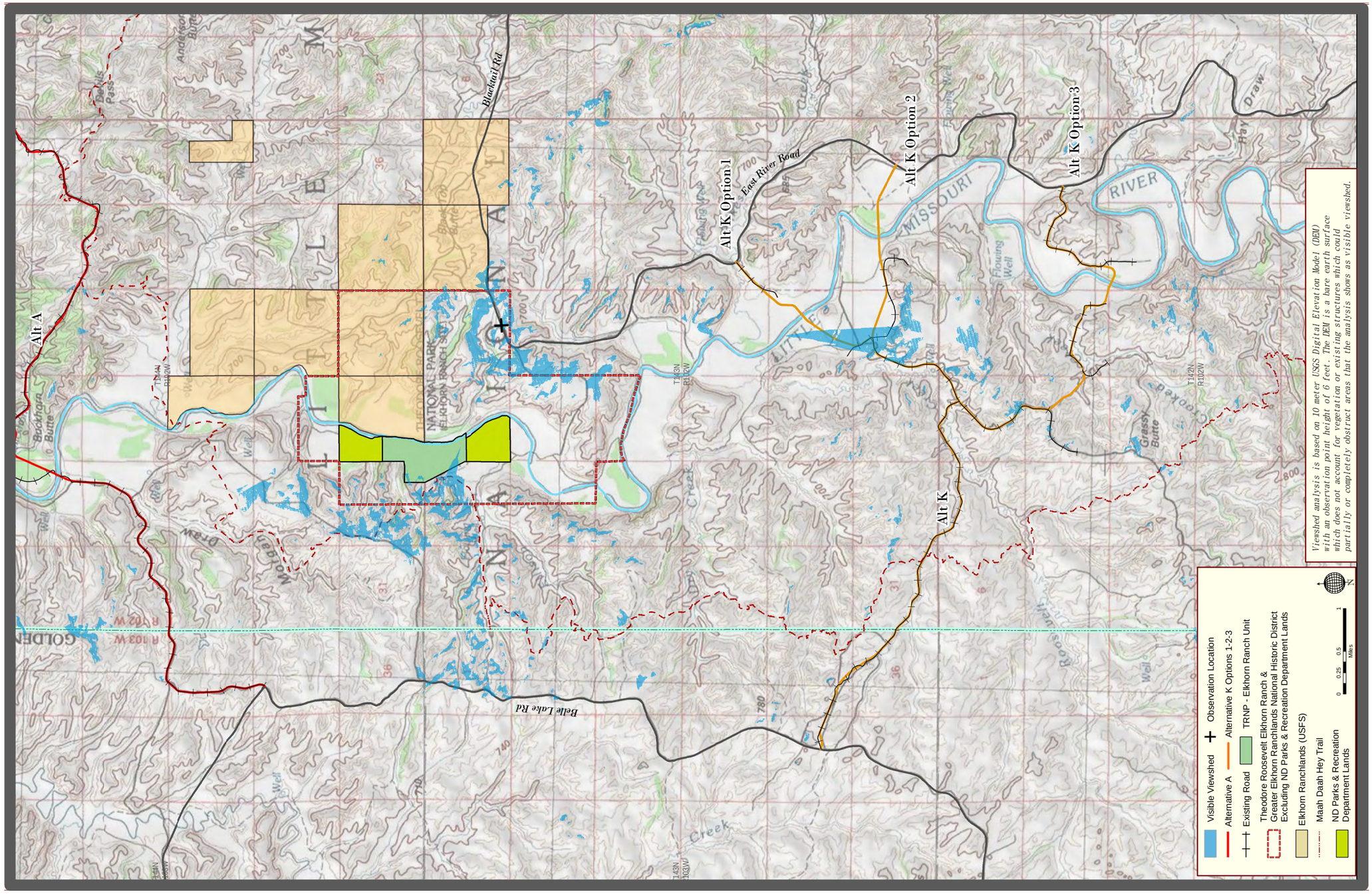


Figure 83, Computer Model for Blacktail Road

Alternative A would not result in direct impacts on the Theodore Roosevelt Elkhorn Ranch and Greater Elkhorn Ranchlands National Historic District. Upon completion of the viewshed analyses, it was determined that the roadways and bridges under Alternative A would not be able to be seen from the Elkhorn Ranchlands, TRNP–Elkhorn Ranch Unit, Elkhorn Ranch Headquarters, or National Historic District. Further, Alternative A would not alter the viewshed or diminish the integrity of the view from the Elkhorn Ranchlands, TRNP–Elkhorn Ranch Unit, Elkhorn Ranch Headquarters, or National Historic District.

Potential temporary, indirect impacts on the National Historic District during construction activities would include fugitive dust emissions from ground-disturbing activities. Potential indirect impacts on the National Historic District upon completion of construction activities would include fugitive dust emissions from vehicles traveling on the roadway. Fugitive dust emissions from construction activities would be greatest during initial site-preparation activities and would vary from day to day, depending on the construction phase, level of activity, and prevailing wind and weather conditions. All fugitive dust emissions from construction activities would be localized and temporary in nature. The National Historic District is approximately 2 to 3 miles away from Alternative A. Due to the distance, fugitive dust is anticipated to dissipate, so impacts on the National Historic District would be negligible or minor.

According to the Little Missouri River Crossing Traffic Operations Memorandum, an additional 1 percent would be added to the 2.5-percent annual baseline traffic growth rate to account for the redistribution of local trips that may be attracted to the new bridge. Therefore, under Alternative A, a total annual traffic growth rate of 3.5 percent would be expected for roads associated with the alternative and adjacent roadways. There would be a slight increase in fugitive dust emissions from vehicles using roadways within the study area. However, since Alternative A is approximately 2 to 3 miles away and the traffic increase would be negligible, potential impacts from fugitive dust emissions would be negligible or minor. Overall, fugitive dust emissions during and upon completion of construction are not anticipated to alter the viewshed or diminish the integrity of the view from the National Historic District.

5.15.3.2. Alternative K (all options)

The documented isolated finds, sites, and site leads that would be impacted by Alternative K (all options) were determined to be *Not Eligible* or located outside of the project area. Impacts on the Theodore Roosevelt Elkhorn Ranch and Greater Elkhorn Ranchlands National Historic District from Alternative K (all options) would be the same as those described for Alternative A. Similar to Alternative A, the roadways and bridges under Alternative K (all options) would not be able to be seen from the Elkhorn Ranchlands, TRNP–Elkhorn Ranch Unit, Elkhorn Ranch Headquarters, or National Historic District. Further, Alternative K (all options) would not alter the viewshed or diminish the integrity of the view from the Elkhorn Ranchlands, TRNP–Elkhorn Ranch Unit, Elkhorn Ranch Headquarters, or National Historic District.

Similar to Alternative A, potential, temporary indirect impacts on the National Historic District during construction activities would include fugitive dust emissions from ground-disturbing activities. Potential indirect impacts on the National Historic District upon completion of construction activities would include fugitive dust emissions from vehicles traveling on the roadway. Fugitive dust emissions from construction activities would be greatest during initial site-preparation activities and would vary from day to day, depending on the construction phase, level of activity, and prevailing wind and weather conditions. All fugitive dust emissions from construction activities would be localized and temporary in nature. The National Historic District is approximately 1 to 2 miles away from Alternative K, Option 1 (Preferred Alternative); 2 to 3 miles away from Alternative K, Option 2; and 3 to 4 miles away from Alternative K, Option 3. Due to the distance, fugitive dust is anticipated to dissipate, so impacts on the National Historic District from Alternative K (all options) would be negligible or minor.

According to the Little Missouri River Crossing Traffic Operations Memorandum, an additional 1 percent would be added to the 2.5-percent annual baseline traffic growth rate to account for the redistribution of local trips that may be attracted to the new bridge. Therefore, under Alternative K (all options), a total annual traffic growth rate of 3.5 percent would be expected for roads associated with the alternative and adjacent roadways. There would be a slight increase in fugitive dust emissions from vehicles using roadways within the study area. However, since Alternative K (all options) is approximately 1 to 4 miles away and the traffic increase would be negligible, potential impacts from fugitive dust emissions would be negligible or minor. Overall, fugitive dust emissions during and upon completion of construction are not anticipated to alter the viewshed or diminish the integrity of the view from the National Historic District.

Therefore, a recommended finding of *No Historic Properties Affected* has been determined for Alternative K (all options). On December 6, 2016, the NDSHPO provided concurrence with the determination of *No Historic Properties Affected* for Alternative K, Option 1 (Preferred Alternative). Please refer to **'J.4. North Dakota State Historic Preservation Office Section 106 of the National Historic Preservation Act of 1966 (16 U.S.C. § 470) Concurrence— December 6, 2016' on page J-23**.

5.15.4. What mitigation measures and BMPs would be implemented?

If cultural resources are inadvertently discovered during construction activities, procedures and requirements outlined in the Little Missouri River Crossing Cultural Resource Discovery Plan (2017) would be followed: work would be immediately stopped, the affected site secured, and the NDDOT and NDSHPO would be notified. Work would not resume until written authorization to proceed was received from the NDDOT. All project workers would be prohibited from collecting artifacts or disturbing cultural resources in any area under any circumstances.

Prior to construction activities, the contractor would be required to develop a SWPPP, which would include dust-control measures during construction. Upon completion of construction activities, Billings County would implement dust control, such as applying water, calcium chloride, and/or magnesium chloride to the roadway, as necessary and when feasible to prevent traffic hazards, damages, and nuisances to adjacent property owners. In addition, the county uses clay in their surface aggregate to help control dust.

5.16. Hazardous Waste

5.16.1. Are there any potentially contaminated sites in the project areas?

Facilities and properties that (1) have documented releases of hazardous substances or wastes to the environment or (2) manage hazardous substances or wastes in substantial quantities and have the potential to release hazardous substances or wastes to the environment are required to report these activities to federal and state regulatory agencies. The NDDH and USEPA maintain databases to track and monitor these facilities and properties.

The NDDH's Environmental Health Section and North Dakota Department of Mineral Resources' (NDDMR) Oil and Gas Division receive reports of environmental incidents. Incidents reported to the NDDH are classified as Resource Conservation and Recovery Act (RCRA) General Environmental Incidents. Incidents reported to the NDDMR are classified as exempt RCRA Oilfield Environmental Incidents.

Review of the general environmental incident and oilfield environmental databases revealed that there have historically been spills involving oil, brine (i.e., sodium chloride solution), saltwater, gas, produced water (i.e., water produced as a byproduct along with oil and gas), and ECOPOL-NE601 (i.e., non-emulsifier that prevents sludge buildup in acid and fracturing fluids) within 0.5 miles of Alternative A and Alternative K (all options). In accordance with the USEPA's Regulatory Determination for Oil and Gas and Geothermal Exploration, Development, and Production Wastes (40 CFR § 261.4(b)(5)), oil, brine, saltwater, gas, and produced water are categorized by the USEPA as 'special wastes' or exempt exploration and production (E&P) wastes. They are exempt from federal hazardous waste regulations under Subtitle C of RCRA, as they were generated from a material or process uniquely associated with the exploration, development, and production of crude oil and natural gas. Therefore, they are not treated as hazardous substances. The product ECOPOL-NE601 is treated as a non-hazardous waste when spilled.

According to the USEPA database, there are no other known facilities or properties with documented releases or facilities or properties with the potential to release hazardous substances or wastes within the vicinity (0.5 miles) of Alternative A or Alternative K (all options) (USEPA 2016A). According to the NDDH database, there are no other known facilities or properties with documented releases of hazardous substances or wastes within the vicinity (0.5 miles) of Alternative A or

RCRA defines a hazardous waste in 42 U.S.C. § 6903, as "a solid waste, or combination of solid wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may: (A) cause, or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or (B) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed."

A hazardous substance, pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (42 U.S.C. § 9601(14)), is defined as: "(A) any substance designated pursuant to section 1321(b)(2)(A) of Title 33; (B) any element, compound, mixture, solution, or substance designated pursuant to section 9602 of this title; (C) any hazardous waste having the characteristics identified under or listed pursuant to section 3001 of the Resource Conservation and Recovery Act (RCRA) of 1976, as amended, (42 U.S.C. § 6921); (D) any toxic pollutant listed under section 1317(a) of Title 33; (E) any hazardous air pollutant listed under Section 112 of the CAA (42 U.S.C. § 7412); and (F) any imminently hazardous chemical substance or mixture with respect to which the Administrator of the USEPA has taken action pursuant to section 2606 of Title 15. The term does not include petroleum, including crude oil or any fraction thereof, which is not otherwise specifically listed or designated as a hazardous substance, and the term does not include natural gas, natural gas liquids, liquefied natural gas, or synthetic gas usable for fuel (or mixtures of natural gas and such synthetic gas)."

Alternative K (all options). In addition, there are no brownfields (i.e., former industrial or commercial sites where future use is affected by environmental contamination), underground storage tanks (USTs), leaking USTs, RCRA, or other facilities or properties with the potential to release hazardous substances or wastes within the vicinity (0.5 miles) of Alternative A or Alternative K (all options) (NDDH 2016A, NDDH 2009, NDDH 2014, NDDH 2015A, NDDH 2016B).

5.16.2. What happens if the Little Missouri River crossing is not constructed?

Under Alternative L (no-build), no hazardous waste-related impacts would be expected.

5.16.3. What happens if the Little Missouri River crossing is constructed?

5.16.3.1. Alternative A

Under Alternative A, no hazardous waste-related impacts would be expected. There are no known or documented facilities or properties with releases of hazardous substances or wastes adjacent to or within 0.5 miles of the project area that would impact Alternative A. In addition, there are no known facilities or properties with the potential to release hazardous substances or wastes adjacent to or within 0.5 miles of the project area that would impact Alternative A. No RCRA sites or USTs would be impacted by Alternative A.

Construction activities would require the use of small amounts of hazardous materials. It is anticipated that the quantity of products containing hazardous materials used during construction would be minimal and their use would be of short duration. Minor releases during construction (e.g., accidental hazardous materials spills, leaking equipment) could occur; however, any inadvertent releases would be contained and handled in accordance with the SWPPP.

The quantity of hazardous wastes generated from construction activities would be minor and would not exceed the capacities of existing hazardous waste disposal facilities. All hazardous wastes generated as a result of Alternative A would be handled in accordance with the RCRA Subtitle C waste management program and the requirements and regulations of the NDDH.

5.16.3.2. Alternative K (All Options)

Hazardous waste-related impacts from Alternative K (all options) would be the same as those described for Alternative A. There are no known or documented facilities or properties with releases of hazardous substances or wastes adjacent to or within 0.5 miles of the project areas that would impact Alternative K (all options). In addition, there are no known facilities or properties with the potential to release hazardous substances or wastes adjacent to or within 0.5 miles of the project areas that would impact Alternative K (all options). No RCRA sites or USTs would be impacted by Alternative K (all options).

The existing crossing over Roosevelt Creek (associated with all options under Alternative K) and the existing crossing over Crooked Creek (associated with Alternative K, Option 3) could contain asbestos-containing building materials (ACBMs). Prior to removal/demolition, the crossings would be inspected for asbestos. The contractor would submit an State Form Number (SFN) 17987 Asbestos Notification of Demolition and Renovation form to the NDDH at least 10 days prior to removing/demolishing the crossings. Any ACBMs removed as part of removal/demolition of the crossings would be disposed of in accordance with local, state, and federal regulations.

Similar to Alternative A, any inadvertent releases during construction (e.g., accidental hazardous materials spills, leaking equipment) would be contained and handled in accordance with the SWPPP, and all hazardous wastes generated as a result of Alternative K (all options) would be handled in accordance with the RCRA Subtitle C waste management program and the requirements and regulations of the NDDH.

5.16.4. What mitigation measures and BMPs would be implemented?

Prior to construction activities, the contractor would be required to obtain an NDPDES permit and develop a SWPPP. The SWPPP would outline phasing for erosion- and sediment-controls, stabilization measures, pollution-prevention measures, and prohibited discharges. The SWPPP would require that secure and contained refueling areas are located away from surface waters, maintenance and monitoring measures are implemented to reduce the potential for spills and leaks, and the amount of stockpiled material is minimized and stored away from surface waters. In addition, waste material would be disposed of in accordance with state and federal laws.

In accordance with the NDDOT Standard Specifications, if the contractor encounters abnormal conditions (e.g., presence of barrels, obnoxious odors, excessively hot earth, smoke) during construction that indicate the presence of hazardous materials or toxic wastes anywhere the contractor performs work, the contractor would immediately suspend the work and notify the project engineer. The contractor would continue construction in other areas of the project, but would not resume work in the area of the abnormal condition, unless directed to by the project engineer.

5.17. Visual

5.17.1. What visual features are in the study area?

Visual resources are the natural and human-made features that give a particular setting or area its aesthetic qualities. These features define the landscape character of an area and form the overall impression that an observer receives of that area. Evaluating the aesthetic qualities of an area is a subjective process because the value that an observer places on a specific feature varies depending on their perspective. In general, a feature observed within a landscape can be considered as characteristic (or character-defining) if it is inherent to the composition and function of the landscape.

The general area associated with the alternatives is characterized as a diverse landscape comprised of badlands, buttes, and plateaus accented by wooded draws, all of which support a variety of vegetation types. Cultivated fields, farmsteads, and oil and gas developments are scattered throughout the area, and the Little Missouri River flows north through the rugged topography in the area. The transportation system in the area is comprised of rural, unpaved gravel/graded roads, primitive roadways, and trails.

For purposes of this analysis, visual resources are characterized from the vantage point of the user of the areas in the vicinity of the new roadway and bridge (e.g., local residents, recreationists, tourists). Human-made visual resources within the immediate vicinity of Alternative A include a seasonal residence. The seasonal residence is located approximately 0.1 miles east-northeast of the new roadway and bridge. This seasonal residence could likely be within the viewshed of the new roadway and bridge.

Human-made visual resources within the immediate vicinity of Alternative K (all options) include two farmsteads. One farmstead, located approximately 0.6 miles east-southeast of the new roadway and bridge under Alternative K, Option 1 (Preferred Alternative) and 0.4 miles north-northwest of the new roadway and bridge under Alternative K, Option 2, could likely be within the viewshed of these alternatives. The other farmstead, located approximately 0.4 miles south of the new roadway and bridge under Alternative K, Option 3, could likely be within the viewshed of this alternative.

5.17.2. Are there any visual resources of concern in the study area?

Through coordination with the National Trust for Historic Preservation and NDSHPO, the following visual resources of concern were identified: Elkhorn Ranchlands, TRNP–Elkhorn Ranch Unit, and Theodore Roosevelt Elkhorn Ranch and Greater Elkhorn Ranchlands National Historic District. The primary concerns of the National Trust for Historic Preservation included visual impacts and impacts from fugitive dust emissions on these areas.

- The Elkhorn Ranchlands comprise 5,200 acres and were acquired by the USFS in 2007 (USFS 2015). There are existing roads and facilities within the Elkhorn Ranchlands that are used to access the fields and livestock management facilities. There is also a road network associated with oil and gas production that has been constructed in the area.
  - The nearest portion of Elkhorn Ranchlands to the new roadway and bridge under Alternative A is approximately 2 miles to the southeast.
  - The nearest portion of Elkhorn Ranchlands to the roadway and bridge under Alternative K, Option 1 (Preferred Alternative) is approximately 4 miles to the north.
  - The nearest portion of the Elkhorn Ranchlands to the new roadway and bridge Alternative K, Option 2 is approximately 5 miles to the north.
  - The nearest portion of the Elkhorn Ranchlands to the new roadway and bridge under Alternative K, Option 3 is approximately 7 miles to the north.
- The TRNP–Elkhorn Ranch Unit contains the Elkhorn Ranch Headquarters and comprises approximately 218 acres. The park preserves land that profoundly affected President Theodore Roosevelt and supports numerous recreational activities (NPS Undated a, NPS 2016).
  - The northern boundary of the TRNP–Elkhorn Ranch Unit is located approximately 4 miles south of the new roadway and bridge under Alternative A.
  - The southern boundary of the TRNP–Elkhorn Ranch Unit is located approximately 4 miles north-northwest of the new roadway and bridge under Alternative K, Option 1 (Preferred Alternative).
  - The southern boundary of the TRNP–Elkhorn Ranch Unit is located approximately 5 miles north-northwest of the new roadway and bridge under Alternative K, Option 2.
  - The southern boundary of the TRNP–Elkhorn Ranch Unit is located approximately 8 miles north-northwest of the new roadway and bridge under Alternative K, Option 3.
- The National Historic District comprises approximately 4,402 acres. Within the boundaries of the National Historic District, there is public land managed by the NDPRD, USFS, and NPS, as well as privately-owned land (USFS 2015). Blacktail Road also runs through the National Historic District. It is a federal aid route and major roadway in Billings County that receives regular maintenance.
  - The northern boundary of the National Historic District is located approximately 2 to 3 miles south of the new roadway and bridge under Alternative A.
  - The southern boundary of the National Historic District is located approximately 1 to 2 miles north of the new roadway and bridge under Alternative K, Option 1 (Preferred Alternative).
  - The southern boundary of the National Historic District is located approximately 2 to 3 miles north of the new roadway and bridge under Alternative K, Option 2.
  - The southern boundary of the National Historic District is located approximately 3 to 4 miles north of the new roadway and bridge under Alternative K, Option 3.

It was determined that viewshed analyses in relation to the Elkhorn Ranchlands, TRNP–Elkhorn Ranch Unit, and National Historic District would be conducted for Alternative A and Alternative K, Option 1 (Preferred Alternative), as these alternatives are closest to these areas. The viewshed analyses were conducted from the vantage point of an observer to determine if an observer would be within visual range of the roadways and bridges while situated at the Elkhorn Ranchlands, TRNP–Elkhorn Ranch Unit, and National Historic District. The National Trust for Historic Preservation and NDSHPO requested that the viewshed analyses be conducted from low-, mid-, and high-elevation points, some of which were provided to the NDDOT, FHWA, and KLJ by the National Trust for Historic Preservation. Details regarding the viewshed analyses are provided in **section '5.15. Historic and Archaeological Preservation/ Cultural Resources' on page 81**.

Upon completion of the viewshed analyses, it was determined that the new roadways and bridges under Alternative A and Alternative K (all options) would not be able to be seen from the Elkhorn Ranchlands, TRNP–Elkhorn Ranch Unit, Elkhorn Ranch Headquarters, or National Historic District. Further, Alternative A and Alternative K (all options) would not alter the viewshed or diminish the integrity of the view from the Elkhorn Ranchlands, TRNP–Elkhorn Ranch Unit, Elkhorn Ranch Headquarters, or National Historic District.

5.17.3. Are there lightscapes and light pollution in the study area?

Other important considerations for visual resources associated with the alternatives are lightscapes (i.e., night skies) and light pollution. Many people seek national parks and wilderness areas to experience starry skies and dark nights. The NPS uses the term 'natural lightscapes', which refers to resources that exist in the absence of human-induced light at nighttime. Resources can include a starry night sky and nocturnal habitat for wildlife that rely on natural light patterns. The Organic Act directs the NPS to conserve the scenery and natural and historic objects and wildlife therein, and to provide for the enjoyment of the same in such a manner, and by such means as will leave them unimpaired for the enjoyment of future generations (16 U.S.C. § 1). While scenery has been traditionally thought of as being geologic curiosities, distant vistas, and sublime landscapes, it also includes the night sky (NPS 2012).

Lightscape management policies for the NPS include the following:

- The NPS will preserve, to the greatest extent possible, the natural lightscapes of parks.
- To prevent the loss of dark conditions and of natural night skies, the NPS will minimize light that emanates from park facilities.
- The NPS will seek the cooperation of park visitors, neighbors, and local government agencies to prevent or minimize the intrusion of artificial light into the night scene of the ecosystems of park units.
- The NPS will restrict the use of artificial lighting in parks to those areas where security, basic human safety, and specific cultural resource requirements must be met.
- The NPS will use minimal-impact lighting techniques.
- The NPS will shield the use of artificial lighting, where necessary to prevent the disruption of the night sky, natural cave processes, physiological processes of living organisms, and similar natural processes.
- The NPS will not use artificial lighting in areas where the presence of the artificial lighting will disrupt a park's dark-dependent natural resource components.

Light pollution is the introduction of artificial light (directly or indirectly) into the natural environment. Light pollution exists in two forms:

1. Sky glow (also known as artificial sky glow, light domes, or fugitive light) – the brightening of the night sky from human-caused light scattered in the atmosphere.
2. Glare – the direct shining of light, most often caused by outdoor electrical lighting, but also includes minor sources, such as headlights, aircrafts, and satellites.

Light scattered through the atmosphere brightens the night sky, causing stars and faint objects to be rendered invisible due to the reduced contrast. Light pollution also prevents the human eye from fully dark-adapting and reaching its maximum sensitivity. Ecological impacts from light pollution can include altered circadian rhythms and predator/prey relationships, impaired reproductive cycles, and attraction or repelling of certain organisms. Light pollution is typically the most acute in urban environments; however, in remote or otherwise dark environments, the eye adapts to the ambient light level, and its sensitivity increases. This results in visual impacts from light pollution being perceived at long distances (NPS 2013b).

According to the NPS, the TRNP–North Unit and TRNP–South Unit are locations where the night sky can be viewed. On clear nights, the Milky Way galaxy, planets, stars, and many constellations are visible. In the TRNP (North and South units), observers can drive to viewing areas on top of plateaus for a relatively unimpaired view of the night

sky. Since they are more than approximately 30 miles from the nearest large city, very little light interference affects night sky viewing. Light pollution that affects the night sky in the TRNP includes sky glow and glare from nearby oil and gas developments and the towns of Sentinel Butte, Grassy Butte, Medora, Belfield, and Watford City (NPS Undated c). The southern boundary of the TRNP–North Unit is located approximately 18 miles from Alternative A; 26 miles from Alternative K, Option 1 (Preferred Alternative); 27 miles from Alternative K, Option 2; and 29 miles from Alternative K, Option 3. The northern boundary of the TRNP–South Unit is located approximately 20 miles from Alternative A; 11 miles from Alternative K, Option 1 (Preferred Alternative); 10 miles from Alternative K, Option 2; and 7 miles from Alternative K, Option 3.

5.17.4. What happens if the Little Missouri River crossing is not constructed?

Under Alternative L (no-build), no impacts on visual resources or lightscapes would be expected. The Little Missouri River Crossing Traffic Operations Memorandum indicates that most of the roadways within the study area carried less than 150 vehicles per day in 2014 (approximately 50 percent were heavy trucks). An annual baseline traffic growth rate of 2.5 percent is expected under Alternative L (no-build condition), which is consistent with typical NDDOT projections for rural infrastructure within oil and gas producing areas of North Dakota.

Fugitive dust emissions from vehicles, and light pollution from the headlights of vehicles, using the existing roadways within the study area and traveling approximately 70 miles to the nearest bridge would continue. However, the fugitive dust emissions are not anticipated to alter the viewshed or diminish the integrity of the view from nearby areas, the TRNP–Elkhorn Ranch Unit, or the National Historic District. Further, the light pollution is not anticipated to alter the natural lightscapes of the TRNP–North Unit or TRNP–South Unit or result in visual impacts on natural night skies.

5.17.5. What happens if the Little Missouri River crossing is constructed?

5.17.5.1. Alternative A

Impacts on the seasonal residence located within approximately 0.1 miles of the new roadway and bridge would be expected. This seasonal residence could likely be within the viewshed of Alternative A. However, context-sensitive solutions would be applied to the final bridge design: the bridge would be low-profile and constructed to blend with the surrounding environment to the maximum extent practicable. The new roadway would be constructed similar to existing roadways in the study area. The new roadway and bridge may diminish the integrity of the view from this seasonal residence, depending on the location and perspective of the viewer, due to its proximity.

No direct impacts on the viewshed of the Elkhorn Ranchlands, TRNP–Elkhorn Ranch Unit, or National Historic District would be expected. Results of the viewshed analyses indicate that the new roadway and bridge under Alternative A would not be able to be seen from the Elkhorn Ranchlands, TRNP–Elkhorn Ranch Unit, Elkhorn Ranch Headquarters, or National Historic District. Further, Alternative A would not alter the viewshed or diminish the integrity of the view from the Elkhorn Ranchlands, TRNP–Elkhorn Ranch Unit, Elkhorn Ranch Headquarters, or National Historic District.

Alternative A is not expected to generate new traffic. An additional 1 percent would be added to the 2.5-percent annual baseline traffic growth rate to account for the redistribution of local trips that may be attracted to the new bridge. Therefore, under Alternative A, a total annual traffic growth rate of 3.5 percent would be expected for roads associated with the alternative and adjacent roadways. There would be a slight increase in fugitive dust emissions from vehicles using roadways within the study area. However, since Alternative A is located more than 2 miles from the Elkhorn Ranchlands, TRNP–Elkhorn Ranch Unit, and National Historic District and the traffic increase would be negligible, potential visual impacts from fugitive dust emissions would be minor. Overall, fugitive dust emissions during and upon completion of construction are not anticipated to alter the viewshed or diminish the integrity of the view from nearby areas, the Elkhorn Ranchlands, the TRNP–Elkhorn Ranch Unit, or the National Historic District.

Very minimal light pollution from the headlights of vehicles using the roadways within the study area would be expected. Since the traffic increase would be negligible, potential light pollution is not anticipated to alter the natural lightscapes of the seasonal residence, TRNP–North Unit, or TRNP–South Unit or result in visual impacts on natural night skies.

Construction activities would generate particulate matter emissions as fugitive dust from ground-disturbing activities. Fugitive dust emissions from construction activities would be greatest during initial site-preparation activities and would vary from day to day, depending on the construction phase, level of activity, and prevailing wind and weather conditions. All fugitive dust emissions from construction activities would be localized and temporary in nature.

Visual impacts are inherently difficult to define because of the subjectivity involved. Visual impacts deal more broadly with the extent that a project contrasts with the existing environment and whether the jurisdictional agency considers this contrast objectionable. The significance of potential impacts on visual resources is based on the level of visual sensitivity in the area. Visual sensitivity is defined as the degree of public interest in a visual resource and concern over adverse changes in the quality of that resource. In general, an impact on a visual resource is adverse if implementation of a project were to result in substantial alteration to an existing sensitive visual setting.

5.17.5.2. Alternative K (All Options)

Impacts on farmsteads located within approximately 0.6 miles of the new roadway and bridge under Alternative K, Option 1 (Preferred Alternative); 0.4 miles of the new roadway and bridge under Alternative K, Option 2; and 0.4 miles of the new roadway and bridge under Alternative K, Option 3 would be expected. These farmsteads could likely be within the viewshed of the alternatives. However, context-sensitive solutions would be applied to the final bridge design: the bridge would be low-profile and constructed to blend with the surrounding environment to the maximum extent practicable. The new roadway would be constructed similar to the existing roadways in the study area. The new roadway and bridge are not anticipated to diminish the integrity of the view from any of the farmsteads.

No direct impacts on the viewshed of the TRNP–Elkhorn Ranch Unit or National Historic District would be expected. Results of the viewshed analyses indicate that the roadways and bridges under Alternative K (all options) would not be able to be seen from the Elkhorn Ranchlands, TRNP–Elkhorn Ranch Unit, Elkhorn Ranch Headquarters, or National Historic District. Further, Alternative K (all options) would not alter the viewshed or diminish the integrity of the view from the Elkhorn Ranchlands, TRNP–Elkhorn Ranch Unit, Elkhorn Ranch Headquarters, or National Historic District.

Impacts from fugitive dust emissions and light pollution associated with Alternative K (all options) would be the same as those described for Alternative A.

5.17.6. What mitigation measures and BMPs would be implemented?

For all of the alternatives, the alignment would follow an existing roadway as closely as possible to minimize new roadway construction. In addition, context-sensitive solutions would be applied to the final bridge design: the bridge would be low-profile and constructed to blend with the surrounding environment to the maximum extent practicable.

Prior to construction activities, the contractor would be required to develop a SWPPP, which would include dust control measures during construction. Upon completion of construction activities, Billings County would implement dust-control, such as applying water, calcium chloride, and/or magnesium chloride to the roadway, as necessary and when feasible to prevent traffic hazards, damages, and nuisances to adjacent property owners. In addition, the county uses clay in their surface aggregate to help control dust.

5.18. Energy

5.18.1. What energy resources and uses exist in the study area?

The study area occurs within the Bakken Formation oil play in western North Dakota. Energy infrastructure within the study area includes oil and gas development and power lines. The following entities have known oil and gas infrastructure (e.g., pipelines) within the project areas: Andeavor Logistics, ONEOK Rockies Midstream, BTA Oil Producers, and Belle Fourche Pipeline Company. In addition, the following entities have known electricity infrastructure (e.g., overhead or underground lines) within the project areas: Roughrider Electric and Golden West Electric Cooperative.

A principal factor in energy use is vehicle fuel consumption, which is affected by total miles traveled, the number of stops and starts, sudden acceleration or deceleration, congestion, and grade steepness. Energy use within the study area includes vehicle fuel consumption and consumption by residences and businesses of electricity, natural gas, or other fuel used for heat and power.

5.18.2. What happens if the Little Missouri River crossing is not constructed?

Under Alternative L (no-build), no impacts on oil and gas or electricity infrastructure would be expected, and there would be no short-term consumption of energy due to construction activities. However, Alternative L (no-build) would not address the demand for an improved roadway network capable of addressing the social and economic needs of the region, which include operation and maintenance of oil and gas development.

5.18.3. What happens if the Little Missouri River crossing is constructed?

5.18.3.1. Alternative A

Alternative A would address the demand for an improved roadway network capable of addressing the social and economic needs of the region, which include operation and maintenance of oil and gas development.

Impacts on oil and gas and electricity infrastructure would occur where relocations would be required to accommodate roadway construction. **'Table 19, Summary of Energy Infrastructure Impacts for Alternative A'** provides a summary of the anticipated worst-case scenario impacts from Alternative A (i.e., all known energy infrastructure within 250 feet of the roadway that may, but would not necessarily, be impacted by the alternative). Actual impacts on oil and gas and electricity infrastructure would be refined during final design in coordination with the necessary companies.

Construction activities would result in short-term consumption of energy due to on-road haul trucks transporting material, construction commuter vehicles, and operation of construction equipment. Additional energy from electricity utilities may be utilized for construction activities. Increases in electricity and energy resource demand would be temporary and are not anticipated to exceed existing capacity.

5.18.3.2. Alternative K (All Options)

Impacts on energy resources and uses from Alternative K (all options) would be similar to those described for Alternative A.

Please refer to **'Table 20, Summary of Energy Infrastructure Impacts for Alternative K (all options)'** for a summary of the anticipated worst-case scenario impacts on oil and gas and electricity infrastructure for Alternative K (all options).

Table 19, Summary of Energy Infrastructure Impacts for Alternative A

Energy Infrastructure	Impact (linear feet)
Oil and Gas Pipeline	3,090
Electrical Line	26,983
Total	**30,073**

Table 20, Summary of Energy Infrastructure Impacts for Alternative K (all options)

Energy Infrastructure	Impact (linear feet)		
	Alt. K, Option 1	Alt. K, Option 2	Alt. K, Option 3
Oil and Gas Pipeline	78,275	69,999	116,315
Electrical Line	18,597	18,597	21,003
Total	**96,873**	**88,596**	**137,318**

5.19. Utilities

5.19.1. What utilities are located in the project areas?

Utilities located within the study area consist of communication lines, power lines, and pipelines (e.g., natural gas, oil, and water). Some utility lines are authorized by special use permit on USFS managed lands include. Please refer to **'Table 21, Utilities within the Study Area'**.

5.19.2. What happens if the Little Missouri River crossing is not constructed?

Under Alternative L (no-build), no impacts on utilities would be expected.

Table 21, Utilities within the Study Area

Utility Type	Utility Company	Existing Special Use Permit on USFS-lands
Communication	Century Link (Qwest)	No
	Consolidated Telcom,	No
	Reservation Telephone Company	Yes
Electricity	Golden West Electric Cooperative	Yes
	McKenzie Electric Cooperative	No
	Roughrider Electric	Yes
Oil/Gas Pipeline	Andeavor Logistics (Tesoro High Plains Pipeline)	Yes
	ONEOK Rockies Midstream	Yes
	Belle Fourche Pipeline Company	Yes
	BTA Oil Producers	Yes
	Plains All American Pipeline (Plains Pipeline	No
	WBI Energy (Williston Basin	No
	Scout Energy Partners (Denbury Resources)	No
Water Pipeline	Southwest Water Authority	No

5.19.3. What happens if the Little Missouri River crossing is constructed?

5.19.3.1. Alternative A

All attempts were made to identify and disclose impacts associated with utility relocations resulting from construction and operation of the project; however, only utilities that are relocated back within the roadway ROW/easement are included in the proposed action for this project. Therefore, any utility relocations that occur outside of the roadway ROW/easements would be required to obtain individual state and federal approvals, as necessary.

Impacts on utilities would occur where relocations would be required to accommodate roadway construction. **'Table 22, Summary of Utility Impacts for Alternative A'** provides a summary of the anticipated worst-case scenario impacts from Alternative A (i.e., all known utilities within 250 feet of the roadway that may, but would not necessarily, be impacted by the alternative). Actual impacts on utilities would be refined during final design in coordination with the necessary companies.

Table 22, Summary of Utility Impacts for Alternative A

Utility	Impact (linear feet)		
	USFS Land	Private Land	Total
Andeavor Logistics	0	3,090	**3,090**
ONEOK Rockies Midstream	12,651	14,332	**26,983**
Total	**12,651**	**17,442**	**30,073**

Impacted utilities would typically be relocated back within the newly acquired roadway ROW/easement or in an easement acquired by the affected company adjacent to the ROW/easement. The affected companies would try to share an easement if they are compatible to be located within the same easement.

Permanent ground disturbance for overhead utilities is typically only associated with the footprint of the pole or concrete foundation, except where substations are necessary. Most temporary impacts within the utility easement are associated with equipment moving between structure locations.

Impacts associated with installation of below-ground electrical and communication lines are relatively minimal. Typically, a narrow area of temporary disturbance consisting of a 3- to 12-inch trench occurs from use of a plow or trencher. A slightly wider disturbance is likely from use of a backhoe excavator installing the line, digging the bell hole for drilling, installing above or below-ground appurtenances, or removing rock.

Impacts associated with installation of below-ground pipelines are largely dependent on the construction area and installation method. Typically, the entire construction area is temporarily disturbed through clearing of the topsoil; however, these impacts are temporary, as most of the disturbed area is reclaimed following construction. Permanent impacts from pipeline installation would occur from above or below-ground appurtenances or monitoring facilities.

5.19.3.2. Alternative K (All Options)

Impacts on utilities from Alternative K (all options) would be similar to those described for Alternative A.

Please refer to **'Table 23, Summary of Utility Impacts for Alternative K (all options)'** for a summary of the anticipated worst-case scenario impacts on utilities for Alternative K (all options).

5.19.4. What mitigation measures and BMPs would be implemented?

During the final design, permitting, and ROW/easement acquisition phases, coordination with the necessary utilities and companies regarding avoidance, minimization, and/or relocation of impacted utilities would be conducted. At that time, any applicable permits would be acquired, and temporary and/or permanent ROW/easements would be acquired as needed for the relocations.

5.20. What is a summary of all of the impacts from the alternatives?

'Table 24, Summary of Impacts' on page 121 provides a summary of all of the potential impacts from Alternative L (no-build), Alternative A, and Alternative K (all options).

5.21. What are the environmental commitments and considerations for the Preferred Alternative?

This section outlines environmental commitments (including some NDDOT Standard Specifications, as noted) that would be implemented as part of the Preferred Alternative (Alternative K, Option 1) to avoid, minimize, and compensate for environmental impacts resulting from the project. Please refer to **'Table 25, Environmental Commitments Summary' on page 125** for a listing of the environmental commitments.

Table 23, Summary of Utility Impacts for Alternative K (all options)

Utility	Impact (linear feet)		
	Public Land	Private Land	Total
Alternative K, Option 1			
BTA Oil Producers	9,210	5,941	**15,151**
Roughrider Electric	5,302	0	**5,302**
Belle Fourche Pipeline Company	12,497	4,809	**17,306**
Golden West Electric Cooperative	9,241	4,055	**13,295**
ONEOK Rockies Midstream	21,938	23,380	**45,818**
Total	**58,188**	**38,685**	**96,873**
Alternative K, Option 2			
BTA Oil Producers	9,210	5,941	**15,151**
Roughrider Electric	5,302	0	**5,302**
Belle Fourche Pipeline Company	12,497	4,809	**17,306**
Golden West Electric Cooperative	9,241	4,055	**13,295**
ONEOK Rockies Midstream	21,938	15,604	**37,542**
Total	**58,188**	**30,408**	**88,597**
Alternative K, Option 3			
BTA Oil Producers	9,210	5,941	**15,151**
Roughrider Electric	7,708	0	**7,708**
Belle Fourche Pipeline Company	20,303	14,809	**35,112**
Golden West Electric Cooperative	9,241	4,055	**13,295**
ONEOK Rockies Midstream	30,772	35,280	**66,052**
Total	**77,233**	**60,085**	**137,318**

5.22. What permits and approvals may be required for the project?

The following permits and approvals would be required for the project:

- NDPDES Permit from the NDDH
- Section 401 of the CWA Certification (unless waived) from the USACE
- Section 404 of the CWA Permit from the USACE
- Easement from the USFS
- Temporary Water Permit from the NDSWC
- Section 106 of the NHPA concurrence from the NDSHPO
- Section 7 of the ESA concurrence from the USFWS
- Section 4(f) of the Department of Transportation Act of 1966 (U.S.C. § 303) concurrence from the USFS

5.23. What is the relationship between short-term uses of the human environment and maintenance and enhancement of long-term productivity?

NEPA requires consideration of the relationship between short-term use of the environment and the impacts that such use could have on the maintenance and enhancement of long-term productivity of the affected environment. Impacts that narrow the range of beneficial uses of the environment are of particular concern. Such impacts include the possibility that choosing one alternative could reduce future flexibility to pursue other alternatives, or that choosing a certain use could eliminate the possibility of other uses in a project area. Short-term uses of the biophysical components of the human environment include direct impacts, usually related to construction activities, which occur over a period of less than 5 years. Long-term uses of the human environment include those impacts that occur over a period of more than 5 years, including permanent resource loss.

This EIS identifies potential short-term, direct impacts during construction activities associated with the alternatives. These short-term impacts would include temporary travel delays and increases in demand for local services and energy. In addition, temporary disturbance to vegetation, wildlife, farmlands, wetlands, Other Waters, and Section 4(f) properties would be expected. With implementation of mitigation measures and BMPs previously discussed in **Chapter 5**, these impacts would be minor.

Long-term productivity improvements would be expected upon completion of construction activities. The maintenance and enhancement

of long-term productivity of the environmental resources of an area are based on several different factors, including transportation systems. The project would improve transportation systems long-term by providing an efficient and reliable connection between the roadways on the east and west sides of the Little Missouri River and improve connectivity and system linkage between Billings County and Golden Valley County roadway networks. Local users would no longer be required to cross the river using fords or travel approximately 70 miles to the next nearest bridge. The project would be consistent with the goals, objectives, and policies listed in the Billings and Golden Valley County Comprehensive Plans. The long-term productivity improvements are anticipated to outweigh the potential short-term uses of the biophysical components of the human environment.

The need for transportation improvements is considered in the Billings and Golden Valley County Comprehensive Plans. These plans take into account the requirements for long-term productivity of the transportation system. Therefore, the project is consistent with local and county planning in the area. The contribution to the maintenance and enhancement of long-term productivity of the uses within the area is expected to outweigh the short-term impacts.

5.24. What irreversible decisions and irretrievable resources would be committed to building the alternatives?

NEPA requires an analysis of significant, irreversible effects resulting from implementation of a proposed action. An irreversible or irretrievable commitment of resources refers to impacts on, or losses to, resources that cannot be reversed or recovered, even after an activity has ended. Resources that are irreversibly or irretrievably committed to a project are those that are typically used on a long-term or

permanent basis; however, those used on a short-term basis that cannot be recovered (e.g., non-renewable resources, such as metal, wood, fuel, paper, and other natural resources) also are considered irretrievable. Human labor is also considered an irretrievable resource. All such resources are irretrievable in that they are used for a project, and thus, become unavailable for other purposes.

An impact that falls under the category of the irreversible or irretrievable commitment of resources is the destruction of natural resources that could limit the range of potential uses of that resource. Implementation of Alternative A; Alternative K, Option 1 (Preferred Alternative); Alternative K, Option 2; or Alternative K, Option 3 would result in an irreversible commitment of vehicles and equipment used during construction activities and human labor and other resources. Energy, water, fuel consumption, and demand for services would not increase significantly as a result of implementation of any of the alternatives. The consumption of energy resources during construction activities would not place a significant demand on their availability in the region. The commitment of these resources is undertaken in a regular and authorized manner and does not represent a significant impact.

Upon completion of construction, vehicles traveling locally throughout the study area would have local access across the river. They would no longer need to travel approximately 70 miles to the next nearest bridge or cross the river using unreliable and sometimes inaccessible fords. Overall, there would be less vehicle miles traveled, less energy resources consumed, and more efficient energy use by vehicles.

Table 24, Summary of Impacts

Resource Area	Alternative L (No-Build)	Alternative A	Alternative K, Option 1 (Preferred Alternative) [a]	Alternative K, Option 2	Alternative K, Option 3
Land Use	» No impacts on land uses, public lands, or DPG MAs. » Would not be consistent with goals listed in Billings County or Golden Valley County Comprehensive Plans.	» Approximately 174 acres of permanent easements would need to be acquired from the USFS.[b] » Approximately 73 acres of permanent ROW and approximately 4 acres of temporary easements would need to be acquired from private landowners.[b] » Would be in compliance with DPG Land and Resource Management Plan. » Would be consistent with Billings County and Golden Valley County Comprehensive Plans. » Temporary impacts during construction.	Impacts the same as Alternative A except the following: » Approximately 15 acres of permanent ROW would need to be acquired from the North Dakota Department of Trust.[b] » Approximately 88 acres of permanent easements would need to be acquired from the USFS.[b] » Approximately 62 acres of permanent ROW and approximately 13 acres of temporary easements would need to be acquired from private landowners.[b]	Impacts the same as Alternative A except the following: » Approximately 15 acres of permanent ROW would need to be acquired from the North Dakota Department of Trust.[b] » Approximately 94 acres of permanent easements would need to be acquired from the USFS.[b] » Approximately 55 acres of permanent ROW and approximately 1 acres of temporary easements would need to be acquired from private landowners.[b]	Impacts the same as Alternative A except the following: » Approximately 15 acres of permanent ROW would need to be acquired from the North Dakota Department of Trust.[b] » Approximately 125 acres of permanent easements would need to be acquired from the USFS.[b] » Approximately 61 acres of permanent ROW and approximately 11 acres of temporary easements would need to be acquired from private landowners.[b]
Prime and Unique Farmlands	» No impacts on prime or unique farmlands or farmlands of statewide importance.	» Permanent conversion of 16 acres of farmland of statewide importance. » Temporary impacts on farmlands of statewide importance during construction. » If Alternative A is later determined to be the Preferred Alternative, an NRCS-CPA-106 Form would be completed and coordination with the NRCS would occur.	Impacts the same as Alternative A except the following: » Permanent conversion of 119 acres of farmland of statewide importance equates to 0.002 percent of the farmland in Billings County (according to NRCS-CPA-106 Form) » Received a total score of 126 out of 260 on NRCS-CPA-106 Form.	Impacts the same as Alternative A except the following: » Permanent conversion of 48 acres of farmland of statewide importance. » If Alternative K, Option 2 is later determined to be the Preferred Alternative, an NRCS-CPA-106 Form would be completed and coordination with the NRCS would occur.	Impacts the same as Alternative A except the following: » Permanent conversion of 15 acres of farmland of statewide importance. » If Alternative K, Option 3 is later determined to be the Preferred Alternative, an NRCS-CPA-106 Form would be completed and coordination with the NRCS would occur.
Social	» Efficiency of the transportation system would not be improved. » No impacts on schools, churches, or businesses. » Local access to recreational and tourist facilities would not be improved. » Emergency vehicles would continue to experience delayed response times. » Local users would continue to use fords, which are unreliable because of seasonal conditions and inaccessible to many types of vehicles.	» Efficiency and reliability of the transportation system would be improved. » Beneficial impacts on schools, churches, or businesses. » Local access to recreational and tourist facilities would be improved. » Emergency response times would be improved. » Temporary impacts on travel patterns, recreational areas, emergency vehicles, and residents during construction.	Impacts the same as Alternative A.	Impacts the same as Alternative A.	Impacts the same as Alternative A.
Economics	» No temporary increase in construction employment opportunities or subsequent increase in payroll taxes, sales receipts, or indirect purchases of goods and services. » Farmers, ranchers, and oil and gas developers would continue to experience higher costs. Local access to recreational facilities would not be improved.	» Net economic benefit due to temporary increase in construction employment and subsequent increase in payroll taxes, sales receipts, and indirect purchases of goods and services. » Farmers, ranchers, and oil and gas developers could manage resources more efficiently, lowering costs. Local access to recreational facilities would be improved. » Negligible economic impact on farmers and ranchers due to land use conversion.	Impacts the same as Alternative A.	Impacts the same as Alternative A.	Impacts the same as Alternative A.
Environmental Justice	» No impacts on environmental justice or low-income populations.	» No minority or low-income populations would be disproportionately affected.	Impacts the same as Alternative A.	Impacts the same as Alternative A.	Impacts the same as Alternative A.
Pedestrians and Bicyclists	» No impacts on pedestrians or bicyclists.	» Temporary impacts during construction: temporary access provided to the Maah Daah Hey Trail, fugitive dust, and noise.	Impacts similar to, but less than, Alternative A, as less of the Maah Daah Hey Trail would be impacted.	Impacts similar to, but less than, Alternative A, as less of the Maah Daah Hey Trail would be impacted.	Impacts similar to, but less than, Alternative A, as less of the Maah Daah Hey Trail would be impacted.

Notes:

a. To evaluate potential impacts from Alternative K, Option 1 (Preferred Alternative), reasonable engineering design was applied to the expanded area to determine an alignment through the expanded area that would have the greatest potential for impacts. However, the alignment ultimately constructed within the expanded area would likely result in less impacts than identified in this EIS.

b. For the roadway easements, the estimated acreages are for the full width of the ROW/easement along the entire corridor, including both public and private lands. Billings County currently has a 150-foot-wide USDA Public Road Easement, which is centered on the existing roadway. For the project, the USFS would issue a new easement, through the FHWA, to replace the existing USDA Public Road Easement that is already in place. The actual acquisition of ROW or easements for these areas would be reduced by the amount of ROW or easement that currently exists; this determination would be made during the final design of the project.

Resource Area	Alternative L (No-Build)	Alternative A	Alternative K, Option 1 (Preferred Alternative) [a]	Alternative K, Option 2	Alternative K, Option 3
Air Quality	» No impacts on regional air quality. » Fugitive dust and GHG emissions from local traffic traveling 70 miles to the nearest bridge would continue. » Local traffic would continue to contribute toward United States and North Dakota GHG inventories.	» Fugitive dust and GHG emissions from local traffic using existing roadway; however, overall less vehicle miles traveled and less associated emissions due to local crossing over the river. » Temporary impacts during construction: criteria pollutants from construction equipment, fugitive dust, emissions associated with fossil fuel combustion.	» Impacts similar to, but less than, Alternative A, as the lengths of the alignment and bridge are less than Alternative A. » Alternative K, Option 1 (Preferred Alternative) has the shortest alignment, and shorter bridge than Alternative K, Option 2.	» Impacts similar to, but less than, Alternative A, as the lengths of the alignment and bridge are less than Alternative A. » Alternative K, Option 2 has a longer alignment than Alternative K, Option 1 (Preferred Alternative) and a shorter than Alternative K, Option 3.	» Impacts similar to, but less than, Alternative A, as the lengths of the alignment and bridge are less than Alternative A. » Alternative K, Option 3 has the longest alignment of all of the Alternative K options.
Noise	» No change from the current noise environment, and no additional impacts, beyond what is currently being experienced. » No noise receptors impacted.	» Noise receptors for DPG MA 4.22 and seasonal residence impacted. » Traffic noise not likely to travel to TRNP–Elkhorn Ranch Unit, Elkhorn Ranchlands, or National Historic District. » Temporary increased noise during construction.	Impacts the same as Alternative A except the following: » No noise receptors impacted.	Impacts the same as Alternative A except the following: » Noise receptors for DPG MA 4.22 impacted.	Impacts the same as Alternative A except the following: » Noise receptors for DPG MA 4.22.
Water Resources	» Minor impacts from local traffic continuing to cross river at fords.	» No impacts on groundwater. » Clear roadway width through the bridge would be a maximum of 36 feet. » Total width of the bridge would be a maximum of 38 to 40 feet. » Bridge would be 850 feet long, with five to seven spans and two to four piers. » One crossing over Buckhorn Creek would be installed. » Portions of riverine floodplains and riparian corridors would be eliminated due to the Buckhorn Creek crossing and piers associated with the new bridge. » Temporary impacts on stream velocities, flow patterns, and river morphology due to new piers for bridge. » Neutral impact, as less vehicles would use fords and disturb the channel. » Would not impede the 'free flowing' nature of the river. » During construction, temporary impacts on river flow volumes, riverine floodplains, and riparian corridors, as well as increases in sedimentation and erosion.	Impacts the same as Alternative A except the following: » Bridge would be 600 feet long, with three to five spans and one to three piers. » One crossing over Roosevelt Creek would be replaced.	Impacts the same as Alternative A except the following: » Bridge would be 800 feet long, with five to seven spans and two to four piers. » One crossing over Roosevelt Creek would be replaced.	Impacts the same as Alternative A except the following: » Bridge would be 600 feet long, with three to five spans and one to three piers. » One crossing over Roosevelt Creek would be replaced. » One crossing over Crooked Creek would be replaced.
Water Quality	» Minor impacts from local traffic continuing to cross river at fords.	» River would experience less overall sedimentation and disturbance. » Application of salt on the bridge would have neutral effect. » Temporary impacts during construction due to increased sedimentation, soil erosion/deposition, and turbidity, as well as potential spill or leak from construction vehicles.	» Impacts similar to, but less than, Alternative A, as the lengths of the alignment and bridge are less than Alternative A. » Alternative K, Option 1 (Preferred Alternative) has the shortest alignment, and shorter bridge than Alternative K, Option 2.	» Impacts similar to, but less than, Alternative A, as the lengths of the alignment and bridge are less than Alternative A. » Alternative K, Option 2 has a longer alignment than Alternative K, Option 1 (Preferred Alternative) and a shorter than Alternative K, Option 3.	» Impacts similar to, but less than, Alternative A, as the lengths of the alignment and bridge are less than Alternative A. » Alternative K, Option 3 has the longest alignment of all of the Alternative K options.
Wetlands and Other Waters	» No impacts on wetlands. » Minor impacts from local traffic continuing to cross river at fords.	» Permanent impacts on 0.37 acres of wetlands and 0.06 acres (1,834 linear feet) of Other Waters. » Temporary impacts from the placement of temporary structures or fill during construction.	Impacts the same as Alternative A except the following: » Permanent impacts on 1.65 acres of wetlands and 0.14 acres (1,873 linear feet) of Other Waters.	Impacts the same as Alternative A except the following: » Permanent impacts on 0.26 acres of wetlands and 0.10 acres (756 linear feet) of Other Waters.	Impacts the same as Alternative A except the following: » Permanent impacts on 0.49 acres of wetlands and approximately 0.39 acre (2,899 linear feet) of Other Waters.

Notes:

a. *To evaluate potential impacts from Alternative K, Option 1 (Preferred Alternative), reasonable engineering design was applied to the expanded area to determine an alignment through the expanded area that would have the greatest potential for impacts. However, the alignment ultimately constructed within the expanded area would likely result in less impacts than identified in this EIS.*

b. *For the roadway easements, the estimated acreages are for the full width of the ROW/easement along the entire corridor, including both public and private lands. Billings County currently has a 150-foot-wide USDA Public Road Easement, which is centered on the existing roadway. For the project, the USFS would issue a new easement, through the FHWA, to replace the existing USDA Public Road Easement that is already in place. The actual acquisition of ROW or easements for these areas would be reduced by the amount of ROW or easement that currently exists; this determination would be made during the final design of the project.*

Resource Area	Alternative L (No-Build)	Alternative A	Alternative K, Option 1 (Preferred Alternative) [a]	Alternative K, Option 2	Alternative K, Option 3
Vegetation	» Vegetation communities would remain similar to current conditions. » Noxious weeds and invasive species would continue to persist at their current rates. » No impacts beyond what is currently being experienced.	» Would not contribute to a substantial increase in noxious weed occurrences. » Trees within construction limits would be impacted. » *May impact* alkali sacaton and *will impact* Missouri pincushion cactus. Potential additional utility impacts on sensitive species. » *No effect* on ESA-listed species. » Temporary impacts during construction from removal of vegetation, disturbance of soil structure, and increase in potential for erosion and sedimentation.	» Impacts similar to, but less than, Alternative A, as the length of the alignment is less than Alternative A. » *May impact* alkali sacaton and Missouri pincushion cactus and will impact Hooker's Townsendia. Potential additional utility impacts on sensitive species.	Impacts the same as Alternative K, Option 1 (Preferred Alternative).	Impacts the same as Alternative K, Option 1 (Preferred Alternative).
Wildlife	» No impacts on migratory birds; general wildlife species; raptors; threatened, endangered, proposed, or candidate species; USFS-designated sensitive wildlife species; Management Indicator Species; or North Dakota State wildlife species of concern.	» *No impact* on raptors. » *No affect* on gray wolf or black-footed ferret and may effect whooping crane and northern long-eared bat. » *May impact* bighorn sheep, loggerhead shrike, long-billed curlew, northern redbelly dace, Ottoe skipper, regal fritillary, tawny crescent, and sharp-tailed grouse. » *No impact* on Cooper's hawk. » Temporary impacts on migratory birds and general wildlife species during construction from noise and visual disturbance.	» *May impact* golden eagle and prairie falcon. » *No affect* on gray wolf or black-footed ferret and *may effect* whooping crane and northern long-eared bat. » *May impact* bighorn sheep, loggerhead shrike, long-billed curlew, northern redbelly dace, Ottoe skipper, regal fritillary, Sprague's pipit, tawny crescent, and sharp-tailed grouse. » *No impact* on Cooper's hawk. » Temporary impacts on migratory birds and general wildlife species same as Alternative A.	» *May impact* golden eagle. » *No affect* on gray wolf or black-footed ferret and *may effect* whooping crane and northern long-eared bat. » *May impact* bighorn sheep, loggerhead shrike, long-billed curlew, northern redbelly dace, Ottoe skipper, regal fritillary, tawny crescent, and sharp-tailed grouse. » *No impact* on Cooper's hawk or Sprague's pipit. » Temporary impacts on migratory birds and general wildlife species same as Alternative A.	» *May impact* golden eagle. » *No affect* on gray wolf or black-footed ferret and *may effect* whooping crane and northern long-eared bat. » *May impact* bighorn sheep, loggerhead shrike, long-billed curlew, northern redbelly dace, Ottoe skipper, regal fritillary, Sprague's pipit, tawny crescent, and sharp-tailed grouse. » *No impact* on Cooper's hawk. » Temporary impacts on migratory birds and general wildlife species same as Alternative A.
Historic and Archaeological Preservation/ Cultural Resources	» No impacts on historic and archaeological preservation or cultural resources.	» If Alternative A is later determined to be the Preferred Alternative, *unevaluated* sites that would be impacted would be further evaluated and an effect determination would be coordinated with NDSHPO. » Potential, temporary indirect impacts on the National Historic District during construction activities would include fugitive dust emissions from ground-disturbing activities. » Potential indirect impacts on the National Historic District upon completion of construction activities would include fugitive dust emissions from vehicles traveling on the roadway.	Impacts the same as Alternative A except the following: » All sites identified within the Alternative K Option 1 project area have been evaluated and determined to be *Not Eligible*, and NDSHPO concurred with *No Historic Properties Affected* determination.	Impacts the same as Alternative A except the following: » If Alternative K, Option 2 is later determined to be the Preferred Alternative, an effect determination would be coordinated with NDSHPO.	Impacts the same as Alternative A except the following: » If Alternative K, Option 3 is later determined to be the Preferred Alternative, an effect determination would be coordinated with NDSHPO.
Hazardous Waste	» No hazardous waste-related impacts.	» No hazardous waste-related impacts.	» Impacts the same as Alternative A.	» Impacts the same as Alternative A.	» Impacts the same as Alternative A.
Visual	» No impacts on visual resources.	» Would not alter the viewshed or diminish the integrity of the view from seasonal residence. » No direct impacts on viewshed of the Elkhorn Ranchlands, TRNP—Elkhorn Ranch Unit, or National Historic District. » Temporary impacts on viewshed of TRNP—Elkhorn Ranch Unit and National Historic District from fugitive dust during construction.	Impacts the same as Alternative A except the following: » Would not alter the viewshed or diminish the integrity of the view from farmsteads.	» Impacts the same as Alternative K, Option 1 (Preferred Alternative).	» Impacts the same as Alternative K, Option 1 (Preferred Alternative).
Energy	» Oil and gas developers would continue to have higher costs due to the inefficient transport of oil to the market. » There would continue to be more vehicle miles traveled, more energy resources consumed, and less efficient energy use by vehicles. » No impacts energy infrastructure.	» Existing energy infrastructure would be moved and realigned, where necessary. » Permanent impacts on up to 30,073 linear feet of energy infrastructure. » Temporary increase in demand for electricity and energy resources during construction.	Impacts the same as Alternative A except the following: » Permanent impacts on up to 96,873 linear feet of energy infrastructure.	Impacts the same as Alternative A except the following: » Permanent impacts on 88,597 linear feet of energy infrastructure.	Impacts the same as Alternative A except the following: » Permanent impacts on up to 137,318 linear feet of energy infrastructure.

Notes:

a. *To evaluate potential impacts from Alternative K, Option 1 (Preferred Alternative), reasonable engineering design was applied to the expanded area to determine an alignment through the expanded area that would have the greatest potential for impacts. However, the alignment ultimately constructed within the expanded area would likely result in less impacts than identified in this EIS.*

b. *For the roadway easements, the estimated acreages are for the full width of the ROW/easement along the entire corridor, including both public and private lands. Billings County currently has a 150-foot-wide USDA Public Road Easement, which is centered on the existing roadway. For the project, the USFS would issue a new easement, through the FHWA, to replace the existing USDA Public Road Easement that is already in place. The actual acquisition of ROW or easements for these areas would be reduced by the amount of ROW or easement that currently exists; this determination would be made during the final design of the project.*

Resource Area	Alternative L (No-Build)	Alternative A	Alternative K, Option 1 (Preferred Alternative) [a]	Alternative K, Option 2	Alternative K, Option 3
Utilities	» No impacts on utilities.	» Existing utility lines would be moved and realigned, where necessary. » Permanent impacts on up to 30,073 linear feet of utility lines (including energy infrastructure).	Impacts the same as Alternative A except the following: » Permanent impacts on up to 96,873 linear feet of utility lines (including energy infrastructure).	Impacts the same as Alternative A except the following: » Permanent impacts on up to 88,597 linear feet of utility lines (including energy infrastructure).	Impacts the same as Alternative A except the following: » Permanent impacts on up to 137,318 linear feet of utility lines (including energy infrastructure).
Section 4(f) Properties	» No impacts on Section 4(f).	» Permanent incorporation (i.e., easement) of DPG MA 4.22. » Permanent incorporation (i.e., easement) of DPG MAs 3.51A and 3.51B. » Temporary occupancy exception (i.e., no use) for Maah Daah Hey Trail.Either temporary or permanent use for the relocation of the Maah Daah Hey Trail. » If *Eligible* archaeological sites are impacted, the sites would likely be permanently impacted.	» Temporary occupancy exception (i.e., no use) for Maah Daah Hey Trail.	» Permanent incorporation (i.e., easement) of DPG MA 4.22. » Temporary occupancy exception (i.e., no use) for Maah Daah Hey Trail.	» Permanent incorporation (i.e., easement) of DPG MA 4.22. » Temporary occupancy exception (i.e., no use) for Maah Daah Hey Trail.

Notes:

a. To evaluate potential impacts from Alternative K, Option 1 (Preferred Alternative), reasonable engineering design was applied to the expanded area to determine an alignment through the expanded area that would have the greatest potential for impacts. However, the alignment ultimately constructed within the expanded area would likely result in less impacts than identified in this EIS.

b. For the roadway easements, the estimated acreages are for the full width of the ROW/easement along the entire corridor, including both public and private lands. Billings County currently has a 150-foot-wide USDA Public Road Easement, which is centered on the existing roadway. For the project, the USFS would issue a new easement, through the FHWA, to replace the existing USDA Public Road Easement that is already in place. The actual acquisition of ROW or easements for these areas would be reduced by the amount of ROW or easement that currently exists; this determination would be made during the final design of the project.

Table 25, Environmental Commitments Summary

NO.	COMMITMENT	TIMING OF IMPLEMENTATION	ENVIRONMENTAL IMPACT CATEGORY
1	The contractor would be required to obtain an NDPDES permit and develop a SWPPP. The SWPPP would outline phasing for erosion- and sediment-controls, stabilization measures, pollution-prevention measures, and prohibited discharges. The SWPPP would also include dust-control measures and BMPs to minimize erosion, sedimentation, and stormwater runoff (e.g., fiber rolls, straw waddles, erosion mats, silt fencing, turbidity barriers, mulching, filter fabric fencing, sediment traps and ponds, surface water interceptor swales, ditches). The SWPPP would require that secure and contained refueling areas are located away from surface waters, maintenance and monitoring measures are implemented to reduce the potential for spills and leaks, and the amount of stockpiled material is minimized and stored away from surface waters. In addition, waste material would be disposed of in accordance with state and federal laws and in a manner that avoids impacts on the Little Missouri River channel.	Prior to construction	All resource categories, except Economics, Environmental Justice, Noise, and Energy
2	Areas that are reclaimed would be vegetated in accordance with USFS Seeding Rate Guidelines (i.e., 37-28A Seed Mixture). Grasses in this seed mixture include cool-season, warm-season, and alternate warm-season grasses and forbs.	Completion of construction	Land Use, Prime and Unique Farmlands, Wildlife, Vegetation
3	If waste sites are necessary, the contractor would be responsible for identifying appropriate locations to dispose of waste material, and would do so according to the NDDOT material source process. A commitment in the plans would require that the contractor avoid critical habitat, sensitive areas, and woody draws. In addition, coordination with NDDOT, USFWS, USACE, and NDGFD prior to final site selection would be required. If haul routes on county roads would be utilized, the necessary permit(s) would be acquired.	Throughout construction	Land Use
4	Notice of temporary construction activities would be provided to recreationists using the Maah Daah Hey Trail; appropriate safety mechanisms (e.g., fencing, signs) would be provided, as necessary; and the current trail route would be maintained through the construction work zone.	Throughout construction	Pedestrians and Bicyclists
5	Riprap (i.e., loose field or quarry stone used to form a foundation) would be added at each abutment (i.e., bridge end) and pier to reduce stream channel erosion.	Throughout construction	Water Resources
6	River flow would be maintained during construction by the installation of temporary culverts or by leaving part of the channel open.	Throughout construction	Water Resources
7	Temporarily impacted wetlands would be restored to pre-construction conditions following project completion.	Completion of construction	Wetlands and Other Waters
8	Impacts on wetlands would be mitigated onsite, adjacent to the project, or at an NDDOT-approved mitigation site or bank, as necessary. During final design, a Section 404 permit application (and mitigation plan, if necessary) would be provided to the USACE for their consideration of impacts on wetlands and Other Waters under USACE jurisdiction. For naturally occurring wetlands outside of USACE jurisdiction requiring mitigation under EO 11990, impacts would be mitigated onsite, offsite, or an approved wetland site or bank. Mitigation would be accomplished in a manner consistent with FHWA's program-wide goal of 'net gain' of wetlands through enhancement, creation, and preservation.	Prior to, or concurrent with, construction	Wetlands and Other Waters
9	To minimize the risk of degrading habitat by spreading aquatic nuisance species, the contractor would conduct equipment inspections and cleaning prior to placing any equipment within waters of the state (i.e., the Little Missouri River), in accordance with NDCC Chapter 20.1-17.	Completion of construction	Vegetation
10	Three sensitive plant species (i.e., alkali sacaton, Hooker's townsendia, and Missouri pincushion cactus) are located within the project areas of Alternative K, Option 1 (Preferred Alternative). Two populations of alkali sacaton are located within the proposed construction limits of Alternative K, Option 1 (Preferred Alternative). Known sensitive plant locations near the alignment would be avoided to the maximum extent practicable. All other known sensitive plant species populations near the alignment would be flagged in order to avoid adverse impacts. Upon availability of necessary utility relocations, additional coordination with USFS would occur to assess impacts on sensitive plant species.	Prior to and throughout construction	Vegetation
11	Training materials (e.g., presentation, poster, pamphlet) would be provided to the contractor to aid in threatened and endangered species identification.	Prior to construction	Wildlife
12	If the contractor encounters threatened or endangered species anywhere the contractor performs the work, the contractor shall immediately suspend the work and notify the project engineer.	Throughout construction	Wildlife
13	To minimize the effects of construction disturbance on the whooping crane, in the event a whooping crane is identified within 1 mile of the project, all construction activities would cease and an avoidance area would be established. Coordination with USFWS, FHWA, USFS, and NDDOT would occur immediately and work would not resume within the avoidance area until the bird(s) have left the area.	Throughout construction	Wildlife
14	Tree removal would not occur from June 1 through July 31 to avoid impacting potential maturity roost trees during the northern long-eared bat pup season.	Throughout construction	Wildlife

Key: NDDOT = North Dakota Department of Transportation; FHWA = Federal Highway Administration; USACE = US Army Corps of Engineers; NDPDES = North Dakota Pollutant Discharge Elimination System; NDDH = North Dakota Department of Health; SWPPP = Storm Water Pollution Prevention Plan; USFWS = US Fish and Wildlife Service; NDCC = North Dakota Century Code; NDGFD = North Dakota Game and Fish Department; BMP = best management practice; EO = Executive Order; SP = Special Provision; MBTA = Migratory Bird Treaty Act; NDSHPO = North Dakota State Historic Preservation Office; SFN = State Form Number; ACBM = asbestos-containing building material

*Note: *This is consistent with the NDDOT Standard Specifications for Road and Bridge Construction.*

NO.	COMMITMENT	TIMING OF IMPLEMENTATION	ENVIRONMENTAL IMPACT CATEGORY
15	The number of trees impacted would be assessed during construction and any necessary mitigation would be determined in coordination with the NDDOT, NDGFD, and USFS.	Throughout construction	Vegetation, Wildlife
16	In an effort to avoid impacts on raptors during the breeding and nesting season, a qualified biologist would conduct a pre-construction raptor survey within five days prior to the initiation of construction activities and tree removal to check the status of existing and historical nests and search for new nests. If any active nests are found, appropriate measures, such as timing and avoidance buffers, would be implemented to minimize and avoid potential impacts on any identified raptor nests. Active nests would be avoided during the breeding and nesting period in accordance with DPG Land and Resource Management Plan guidelines if it is determined that construction activities are likely to adversely affect raptor reproductive success or degrade winter roost quality. The guidelines may be modified for raptor species other than those listed in the DPG Land and Resource Management Plan, as well as in coordination with the USFS to account for the type, source, frequency and duration of disruption and extent screening of topography and vegetation. The NDDOT would coordinate with the USFWS prior to the continuation of construction activities to determine any measures necessary to minimize harm to bald and/or golden eagles.	Prior to and throughout construction	Wildlife
17	To minimize impacts on sensitive native fish species, instream riverine water flow would be maintained at baseline depth during construction.	Throughout construction	Wildlife
18	The NDDOT Utility Engineer or consultant would request that utility companies install line markers (bird diverters) at a 1:1 ratio (per linear foot) on overhead utility lines to be raised, lowered, and/or moved to reduce the risk of flight collisions for birds, including the whooping crane.	Throughout construction	Wildlife
19	To minimize impacts on migratory birds, the NDDOT Standard SP for the MBTA (i.e., SP 0004(14)) would be included in the plan set for the contractor to implement. If construction occurs during the migratory bird nesting and breeding season in North Dakota (i.e., between February 1 and July 15), construction areas would be mowed and/or grubbed prior to the nesting and breeding season. If mowing and/or grubbing is not completed prior to the nesting and breeding season, a qualified biologist would conduct pre-construction surveys for migratory birds and their nests within the construction areas. If active nests are identified, the NDDOT would coordinate with the USFWS prior to construction to determine any measures necessary to minimize harm.	Prior to construction	Wildlife
20	If cultural resources are discovered during construction or operation, procedures and requirements outlined in the Little Missouri River Crossing Cultural Resource Discovery Plan (2017) would be followed: work would immediately be stopped, the affected site secured, and the NDDOT (Jeani Borchert, 701-328-4378) and NDSHPO be notified. Work would not resume until written authorization to proceed was received from the NDDOT.	Throughout construction	Historic and Archaeological Preservation/Cultural Resources
21	All project workers would be prohibited from collecting artifacts or disturbing cultural resources in any area under any circumstances.	Throughout construction	Historic and Archaeological Preservation/ Cultural Resources
22	Prior to removal/demolition, the Roosevelt Creek and Crooked Creek crossings would be inspected for asbestos. The contractor would submit a SFN 17987 Asbestos Notification of Demolition and Renovation form to the NDDH at least 10 days prior to removing/demolishing the crossings. Any ACBMs removed as part of removal/demolition of the crossings would be disposed of in accordance with local, state, and federal regulations.	Prior to Roosevelt Creek crossing removal/demolition	Hazardous Waste
23*	If the contractor encounters abnormal conditions (e.g., presence of barrels, obnoxious odors, excessively hot earth, smoke) during construction that indicate the presence of hazardous materials or toxic wastes anywhere the contractor performs work, the contractor would immediately suspend the work and notify the project engineer. The contractor would continue construction in other areas of the project, but would not resume work in the area of the abnormal condition, unless directed to by the project engineer.	Throughout construction	Hazardous Waste
24	The bridge would be designed to be low-profile and blend with the surrounding environment to the maximum extent possible.	Final design	Visual
25	All construction equipment would be pressure washed and free of noxious weeds and plant propagules (i.e., seeds and vegetative parts that may sprout) prior to entrance onto the project site. This would include equipment and vehicles intended for off-road as well as on-road use, whether they are owned, leased, or borrowed by the contractor or any subcontractor. Cleaning of vehicles and equipment would occur off-site.	Prior to construction	Vegetation

Key: NDDOT = North Dakota Department of Transportation; FHWA = Federal Highway Administration; USACE = US Army Corps of Engineers; NDPDES = North Dakota Pollutant Discharge Elimination System; NDDH = North Dakota Department of Health; SWPPP = Storm Water Pollution Prevention Plan; USFWS = US Fish and Wildlife Service; NDCC = North Dakota Century Code; NDGFD = North Dakota Game and Fish Department; BMP = best management practice; EO = Executive Order; SP = Special Provision; MBTA = Migratory Bird Treaty Act; NDSHPO = North Dakota State Historic Preservation Office; SFN = State Form Number; ACBM = asbestos-containing building material

*Note: *This is consistent with the NDDOT Standard Specifications for Road and Bridge Construction.*

Chapter 6. Section 4(f)

This chapter provides an overview of the Section 4(f) process and an analysis of Section 4(f) properties in accordance with guidance and regulations established in Section 4(f) of the Department of Transportation Act.

6.1. What is Section 4(f)?

Section 4(f) refers to the original section within the US Department of Transportation (USDOT) Act of 1966, which established the requirement for consideration of park and recreation lands, wildlife and waterfowl refuges, and historic sites in transportation project development. The law, now codified in 49 U.S.C. § 303 and 23 U.S.C. § 138, is implemented by the FHWA and Federal Transit Administration through 23 CFR § 774. Section 4(f) applies to projects that receive funding from, or require approval by, the USDOT. Section 4(f) properties include significant publicly owned public parks, recreation areas, and wildlife or waterfowl refuges, or any publicly- or privately-owned historic site listed or *Eligible* for listing on the NRHP. Section 4(f) stipulates that the FHWA and other USDOT agencies cannot approve the use of land from publicly owned parks, recreational areas, wildlife and waterfowl refuges, or public and private historical sites unless the following conditions apply:

- There is no feasible and prudent avoidance alternative to the use of the land, and the action includes all possible planning to minimize harm to the property resulting from such use, or
- The FHWA determines that the use of the property will have a *de minimis* impact. (FHWA Undated a).

6.1.1. What are Section 4(f) properties?

In accordance with the FHWA Section 4(f) policy paper, the following resources must be analyzed for Section 4(f) applicability:

- Parks and recreational areas of national, state, or local significance that are both publicly-owned and open to the public.
- Publicly-owned wildlife and waterfowl refuges of national, state, or local significance that are open to the public to the extent that public access does not interfere with the primary purpose of the refugee.
- Historic sites of national, state, or local significance in public or private ownership regardless of whether they are open to the public (23 U.S.C. § 138 (a) and 49 U.S.C. § 303 (a)) (Section 4(f) Policy Paper–FHWA).

Properties that fall under these categories are not automatically subject to Section 4(f). Rather, additional considerations must be given in some instances to determine significance and/or intended use of the property before Section 4(f) applicability can be established.

6.1.2. What are Section 4(f) uses?

There are three forms of use under Section 4(f): permanent, temporary occupancy, and constructive.

1. Permanent use is when a Section 4(f) property is permanently incorporated into a transportation facility.
2. Temporary occupancy results when a Section 4(f) property, in whole or part, is required for project construction-related activities. The property is not permanently incorporated into a transportation facility but the activity is considered to be adverse in terms of the preservation purpose of Section 4(f). Temporary occupancy may or may not constitute a Section 4(f) use. If the following five criteria are satisfied (23 CFR 774.13(d)), the temporary occupancy is not considered to be a use and an exception for approval from the FHWA for the temporary occupancy applies:
   - » Duration must be temporary, i.e. less than the time needed for construction of the project, and there should be no change in ownership of the land.
   - » Scope of the work must be minor, i.e. both the nature and the magnitude of the changes to the Section 4(f) property are minimal;
   - » There are no anticipated permanent adverse physical impacts, nor will there be interference with the protected activities, features, or attributes of the property, on either a temporary or permanent basis.
   - » The land being used must be fully restored, i.e. the property must be returned to a condition which is at least as good as that which existed prior to the project.
   - » There must be documented agreement of the official(s) with jurisdiction over the Section 4(f) resource regarding the above conditions.
3. Constructive use involves no actual physical use of the Section 4(f) property via permanent incorporation of land or a temporary occupancy of land into a transportation facility. A constructive use occurs when the proximity impacts of a proposed project adjacent to, or nearby, a Section 4(f) property results in substantial impairment to the property's activities, features, or attributes that qualify the property for protection under Section 4(f).

6.1.3. What are the approval options for Section 4(f) uses?

Depending on the use of the Section 4(f) property, three methods are available to FHWA to approve the use:

1. A *de minimis* impact determination,
2. Programmatic Section 4(f) Evaluation, or
3. Individual Section 4(f) Evaluation.

The following policies, regulations, and procedures are included in this chapter:

- *US Department of Transportation Act of 1966*, as amended (49 United States Code § 303 and 23 United States Code § 138)
- Parks, Recreation Areas, Wildlife and Waterfowl Refuges, and Historic Sites (Section 4(f)) 23 Code of Federal Regulations § 774)
- Section 4(f) Policy Paper

The documents referenced in this chapter are as follows:

- The USFS Section 4(f) Temporary Occupancy Concurrence is provided in **Appendix I**

A *de minimis* impact is one where, taking into account avoidance, minimization, mitigation and enhancement measures, the proposed action results in no adverse effect on the activities, features, or attributes qualifying a Section 4(f) property for protection under Section 4(f). Prior to making a de minimis impact determination, both agency coordination and public involvement are required as described in 23 CFR 774.5(b). If the anticipated use of a Section 4(f) property is determined to be greater than a de minimis impact, use of the project must be approved using either a programmatic or individual Section 4(f) evaluation.

Unless a *de minimis* impact determination is made, Section 4(f) specifies that the FHWA shall not approve any project that requires the use of Section 4(f) properties, unless (1) there is no feasible or prudent alternative to the use of such land, and (2) such program or project includes all possible planning to minimize harm resulting from the use. These findings would be documented in either a programmatic or individual Section 4(f) evaluation.

A programmatic Section 4(f) evaluation may be relied upon only if the specific conditions in that programmatic evaluation are met. A programmatic Section 4(f) evaluation must support that the specific programmatic criteria have been met under 23 CFR 774.3(d)(1). An individual Section 4(f) evaluation documents the evaluation of the proposed use of Section 4(f) properties in the project area of all alternatives. An individual Section 4(f) evaluation must be completed when approving a project that requires the use of a Section 4(f) property if the use results in a greater than *de minimis* impact and a programmatic Section 4(f) evaluation cannot be applied to the situation as noted in 23 CFR 774.3.

Similar to the exception for Section 4(f) approval when a temporary occupancy is not considered to be a Section 4(f) use (see **section 6.1.1**), an exception for Section 4(f) approval exists for certain archaeological sites that are on or *Eligible* for listing on the NRHP if the following two criteria are satisfied (23 CFR 774.13(d)):

1. The FHWA concludes that the archeological resource is important chiefly because of what can be learned by data

recovery and has minimal value for preservation in-place; and
2. The official(s) with jurisdiction over the Section 4(f) resource have been consulted and have not objected to the FHWA's finding above.

6.2. What is the proposed action?

The project would construct a new crossing over the Little Missouri River in between the Long X Bridge and I-94 bridges to provide users with a safe, efficient, and reliable local connection between the roadways on the east and west sides of the Little Missouri River within Billings County. The project would improve local connectivity and system linkage between Billings and Golden Valley counties.

6.2.1. What is the purpose and need for the project?

The purpose of the project is to provide for the safe and efficient movement of people and commerce. Specifically, the purpose of the project is to conduct the following:

- Improve the transport of goods and services within the study area.
- Provide the public with a safe, efficient, and reliable connection:
  - » between the roadways on the east and west sides of the Little Missouri River within Billings County (internal linkage)
  - » that also improves the connectivity and system linkage between the Billings County and Golden Valley County roadway networks
  - » with the added benefit of providing an additional connection between North Dakota Highway 16 (ND-16) and US Highway 85 within the study area
- Construct a new river crossing over the Little Missouri River in a location that utilizes the existing transportation network, upgrading existing roadways, and/or creating new roadways to best meet roadway and structure design standards.
- Accommodate a variety of vehicles, ranging from a two-wheel- drive passenger vehicle to agricultural, commercial, and industrial vehicles and equipment.

6.2.2. What are the alternatives for the project?

Two build alternatives (Alternatives A and K) and the no-build alternative (Alternative L) were carried forward for detailed analysis in this EIS. Alternative K has three options: Alternative K, Option 1; Alternative K, Option 2; and Alternative K, Option 3. Alternative K, Option 1 is noted as the recommended Preferred Alternative in this EIS. The final selection of the Preferred Alternative will be made after comments to this EIS have been fully considered. The final Preferred Alternative will be noted in the Final EIS. The following further discusses each of the alternatives carried forward:

Alternative A would connect Belle Lake Road with Magpie Creek Road on the north end of Billings County. The route under Alternative A would be approximately 11 miles long, of which 10.1 miles would closely follow the existing roadway alignment and 0.9 miles would be new roadway construction. Alternative A would include construction of a bridge, approximately 850 feet long with five to seven spans, resulting in two to four piers located within the banks of the Little Missouri River. The final number of spans and piers would be determined during the final design phase and would be dependent on detailed hydraulic and geotechnical studies.

Alternative K (all options) would connect Belle Lake Road with East River Road. The western 4.9 miles is shared among all three options.

- Alternative K, Option 1 (Preferred Alternative) would be approximately 8.3 miles long, of which 6.2 miles would closely follow the existing roadway alignment and 2.1 miles would be new roadway construction. Since the new roadway under Alternative K, Option 1 (Preferred Alternative) lies primarily on privately- owned land and it would run in between a feed lot and agricultural land, it was necessary for the lead agencies to consider and evaluate a larger area for this alternative. This larger expanded area would facilitate future landowner negotiations to minimize impacts on agricultural operations. It is approximately 671.9 acres and located in portions of Sections 22, 23, 27, and 34, Township 143 North, Range 102 West. Alternative K, Option 1 (Preferred Alternative) would include construction of a bridge, approximately 600 feet long with three to five spans, resulting in one to three piers located within the banks of the Little Missouri River. The final number of spans and piers would be determined during the final design phase and would be dependent on detailed hydraulic and geotechnical studies.
- Alternative K, Option 2 would be approximately 8.4 miles long, of which 5.8 miles would closely follow the existing roadway alignment and 2.6 miles would be new roadway construction. Alternative K, Option 2 would include construction of a bridge, approximately 800 feet long with five to seven spans, resulting in two to four piers located within the banks of the Little Missouri River. The final number of spans and piers would be determined during the final design phase and would be dependent on detailed hydraulic and geotechnical studies.
- Alternative K, Option 3 would be approximately 9.9 miles long, of which 7.9 miles would closely follow the existing roadway alignment and 2 miles would be new roadway construction. Alternative K, Option 3 would include construction of a bridge, approximately 600 feet long with three to five spans, resulting in one to three piers located within the banks of the Little Missouri River. The final number of spans and piers would be determined during the final design phase and would be dependent on detailed hydraulic and geotechnical studies.

Under Alternative L (no-build), construction of a new bridge across the Little Missouri River and associated roadway improvements would not occur. Routine maintenance of existing roadways within the study area would continue.

6.3. What Section 4(f) properties were identified for the proposed action?

There are several potential Section 4(f) properties located within the overall study area for the project. However, this analysis focuses only on those Section 4(f) properties subject to use by Alternative A and Alternative K (all options). Please refer to **'Figure 84, Section 4(f) Properties Associated with Alternative A'** and **'Figure 85, Section 4(f) Properties Associated with Alternative K (All Options)' on page 131** for an overview of the Section 4(f) resources subject to use under the alternatives. These properties are described in the following subsections against the criteria for Section 4(f) properties presented in **section 6.1.1 on page 129**.

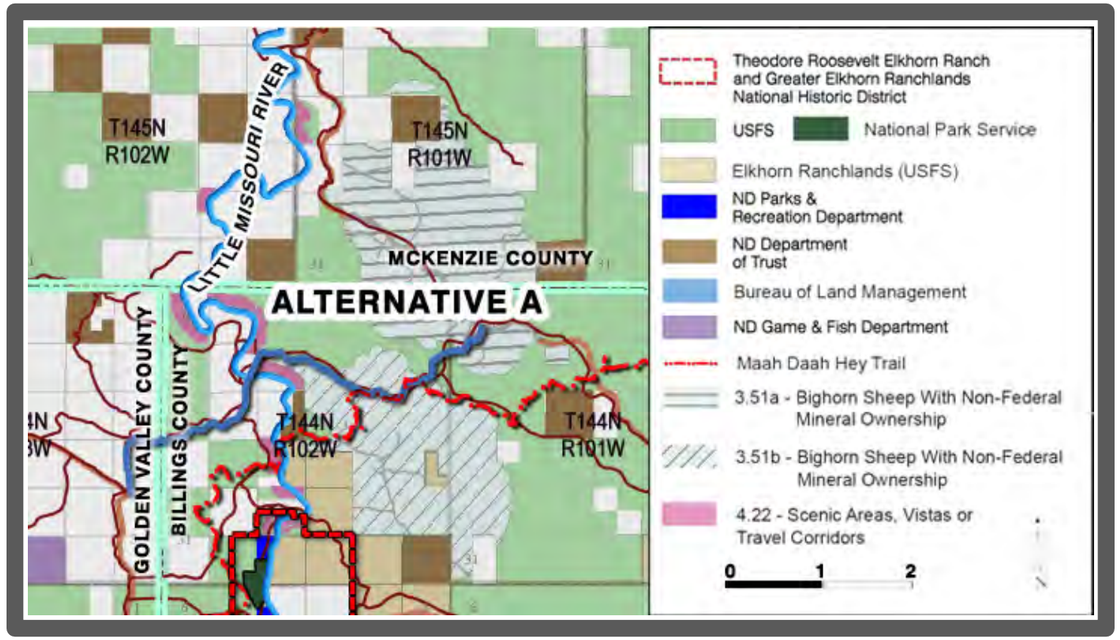


Figure 84, Section 4(f) Properties Associated with Alternative A

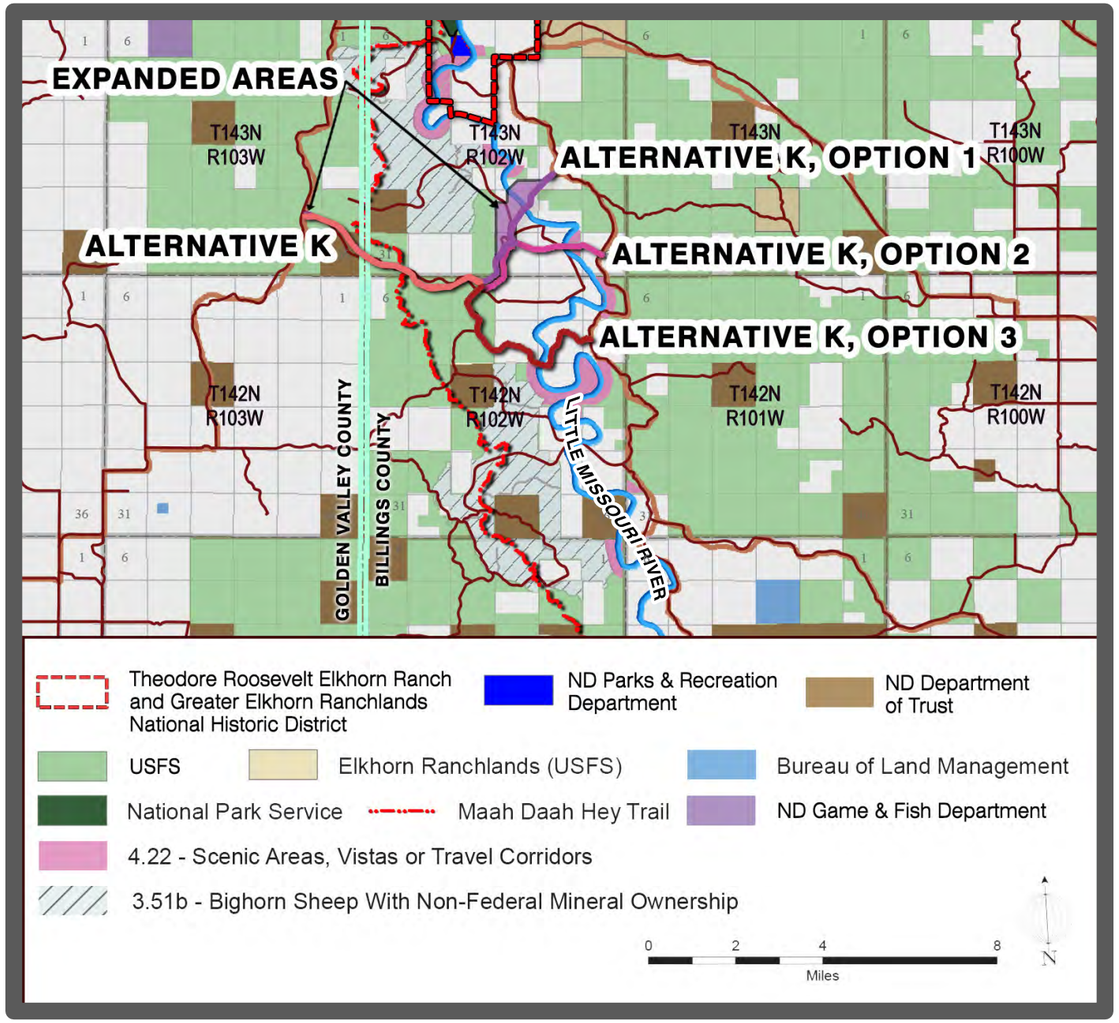


Figure 85, Section 4(f) Properties Associated with Alternative K (All Options)

6.3.1. Maah Daah Hey Trail

The Maah Daah Hey Trail is approximately 140 miles long and runs through the center of the study area from the USFS CCC Campground (approximately 20 miles south of Watford City) near the TRNP—North Unit, through the TRNP—South Unit, ending at the USFS Burning Coal Vein Campground south of Medora. The trail is primarily used for mountain biking, horseback riding, hiking, and backpacking (NPS 2016, NDPRD Undated a). Alternative A crosses the Maah Daah Hey Trail in one location and parallels a portion of the trail, and Alternative K (all options) crosses the Maah Daah Hey Trail in one location. The Maah Daah Hey Trail is under the jurisdiction of the USFS. The trail is utilized for recreational purposes and is open to the public; therefore, it is considered a Section 4(f) property.

Maah Daah Hey Trail

6.3.2. DPG MAs

All USFS property is publicly-owned and open to the public; however, Section 4(f) only applies to DPG MAs that are primarily used for recreation, public park, or wildlife and waterfowl refuge purposes. To assess the applicability of each MA near Alternative A and Alternative K (all options), the USFS, FHWA, and NDDOT determined the primary use of each MA, using the Land and Resource Management Plan for the DPG Northern Region (USFS 2001B) and ROD for DPG Final EIS and Land and Resource Management Plan (USFS 2002).

6.3.2.1. DPG MAs 3.51A and 3.51B

DPG MAs 3.51A and 3.51B—Bighorn Sheep Habitat with Non-Federal Mineral Ownership are managed to provide quality forage, cover, escape terrain, and solitude for bighorn sheep. However, for DPG MA 3.51A, the areas also provide for the possible development of the federal mineral ownership if the non-federal minerals are developed and the federal minerals can be developed without significant impacts on bighorn sheep. In addition, DPG MA 3.51A is managed to provide lambing areas. DPG MA 3.51B also provides for the development of the federal and non-federal mineral ownership and are leased with controlled surface-use and timing stipulations intended to minimize impacts on bighorn sheep and protect their habitat (USFS 2001B, USFS 2002). There are areas designated as MA 3.51B north of Alternative K (all options) and south of Alternative K, Option 3, and the existing roadway under Alternative A crosses through portions of MA 3.51A and MA 3.51B. The USFS has jurisdiction over DPG MAs 3.51A and 3.51B. The primary designations for these areas are refuge and they are open to the public; therefore, they are considered Section 4(f) properties.

6.3.2.2. DPG MA 3.65

DPG MA 3.65—Rangelands with Diverse Natural-Appearing Landscapes are managed with emphasis on maintaining or restoring a diversity of desired plants and animals and ecological processes and functions. This MA also provides a mix of other rangeland values and uses with limits on facilities to maintain a natural-appearing landscape. These areas have relatively few livestock grazing developments, such as fences and water tanks, resulting in a mosaic of livestock grazing patterns and diverse vegetation composition and structure (USFS 2001B). The intended purpose of DPG MA 3.65 is not for recreation, wildlife or waterfowl refuge, or preservation of a historic site; therefore, it is not considered to be a Section 4(f) property.

6.3.2.3. DPG MA 4.22

DPG MA 4.22—Scenic Areas, Vistas, or Travel Corridors (River and Travel Corridors) is managed to protect or preserve the scenic values and recreation uses along the Little Missouri River Corridor and Grand River Scenic Travel Route. The Little Missouri River Corridor is defined as National Grasslands contained within a 0.25-mile-wide zone on each side of the river. The Grand River Scenic Travel Route is an 11-mile-long (driving) route through a central portion of the Grand River National Grassland (located in South Dakota). Generally, the Little Missouri River Corridor areas are a natural-appearing landscape, but modifications on a small scale that blend with the area's natural features are acceptable. Existing facilities, such as power lines and roads, may be obvious to the casual observer, but scenic vistas are emphasized. Transportation corridors may be present, including interstate highways. Vegetation management activities are visually subordinate to the surrounding landscape (USFS 2001B). The new roadways

under Alternative A; Alternative K, Option 2; and Alternative K, Option 3 would cross through portions of MA 4.22. There are areas designated as MA 4.22 north and south of the project area for Alternative K, Option 1 (Preferred Alternative). The USFS has jurisdiction over DPG MA 4.22. These areas have recreational use designation and are open to the public; therefore, it is considered a Section 4(f) property.

6.3.2.4. DPG MA 6.1

DPG MA 6.1—Rangeland with Broad Resource Emphasis primarily consists of rangeland ecosystems managed to meet a variety of ecological conditions and human needs. These lands often display high levels of development, commodity uses, and activity; density of facilities; and evidence of vegetative manipulation. In addition, this MA displays low to high levels of livestock grazing developments (e.g., fences and water developments), oil and gas facilities, and roads (USFS 2001B). The intended purpose of DPG MA 6.1 is not for recreation, wildlife or waterfowl refuge, or preservation of a historic site; therefore, it is not considered to be a Section 4(f) property.

6.3.3. Elkhorn Ranchlands

The Elkhorn Ranchlands comprise 5,200 acres near the northern end of the Medora Ranger District of the LMNG, in the center of the study area. In 2007, the Elkhorn Ranchlands were acquired by the USFS, in part to restore the viewshed as seen from Theodore Roosevelt's Elkhorn Ranch site. The Elkhorn Ranchlands support multiple uses including recreational activities (e.g., driving for pleasure, sight-seeing) (USFS 2015). The Elkhorn Ranchlands are utilized for recreational purposes and are open to the public; therefore, they are considered a Section 4(f) property.

6.3.4. USFS Roadway Easements

Billings County has existing easements with the USFS for roadways. The intended use of these easements is for the occupation and operation of a transportation corridor. The intended purpose of the easements is not for recreation, wildlife or waterfowl refuge, or preservation of a historic site; therefore, they are not considered to be Section 4(f) properties.

6.3.5. TRNP—Elkhorn Ranch Unit

TRNP—Elkhorn Ranch Unit (approximately 218 acres) is located in the center of the study area; however, the TRNP—Elkhorn Ranch Unit is excluded from the study area. The TRNP—Elkhorn Ranch Unit was excluded from the study area in effort to avoid direct impacts on the area by not considering any alternatives that traverse through it. The exclusion does not preclude analyzing any indirect or cumulative effects on the TRNP—Elkhorn Ranch Unit. The TRNP preserves land that profoundly affected President Theodore Roosevelt and is a beacon for nature lovers and outdoor enthusiasts. Numerous recreational activities are provided, including camping, hiking, picnicking, horseback riding, water sports, and backcountry camping. (NPS UNDATED A, NPS 2016). The TRNP—Elkhorn Ranch Unit is utilized for recreational purposes and is open to the public; therefore, it is considered a Section 4(f) property.

Elkhorn Ranchlands

TRNP—Elkhorn Ranch Unit

6.3.6. Archaeological Sites

Section 4(f) applies to archaeological sites that are on or *Eligible* for listing on the NRHP and that warrant preservation in-place, including sites discovered during construction. These sites are not required to be open to the public to be considered a Section 4(f) property. Alternative A has the potential to impact one site that has been determined *Eligible* and four sites that have not been evaluated for eligibility for listing on the NRHP. It has not been determined whether preservation in-place is warranted for these sites. No archaeological sites that are *Eligible* for listing on the NRHP and warrant preservation in-place would be impacted by Alternative K (all options).

6.3.7. Theodore Roosevelt Elkhorn Ranch and Greater Elkhorn Ranchlands National Historic District

In 2012, the Theodore Roosevelt Elkhorn Ranch and Greater Elkhorn Ranchlands were added to the NRHP as a National Historic District. The National Historic District comprises 4,402 acres of land (managed and/or owned by the USFS, the NPS, and private parties) in the center of the study area. The National Historic District is listed on the NRHP under Criterion A (i.e., associated with a significant event) and Criterion B (i.e., associated with a significant person) (USFS 2015; USFS 2012). The Theodore Roosevelt Elkhorn Ranch and Greater Elkhorn Ranchlands National Historic District is a historic site of significance that warrants preservation in place; therefore, it is considered a Section 4(f) property.

6.4. What Section 4(f) properties would not be subject to use?

The TRNP—Elkhorn Ranch Unit, Elkhorn Ranchlands, and Theodore Roosevelt Elkhorn Ranch and Greater Elkhorn Ranchlands National Historic District would not be directly impacted by the alternatives. Visual and noise assessments were conducted for the alternatives to determine whether constructive use of these properties could occur. The results of these assessments are summarized below. Please refer to **Chapter 5** for more information about noise and visual impacts.

In addition to conducting a traffic noise analysis for locations immediately adjacent to the alternatives, a supplemental SPreAD analysis was conducted to determine how noise would spatially propagate through the TRNP—Elkhorn Ranch Unit, Elkhorn Ranchlands, and Theodore Roosevelt Elkhorn Ranch and Greater Elkhorn Ranchlands National Historic District. The SPreAD analysis was conducted for Alternative A and Alternative K, Option 1 (Preferred Alternative), as these alternatives are nearest to the aforementioned areas. SPreAD analyzes noise propagation patterns from a given noise source point, at a given sound level, and determines the extent of influence from the initial sound level, to the point at which the sound level falls below ambient sound levels. Findings of the SPreAD analysis suggest that the roadway alignments under Alternative A and Alternative K, Option 1 (Preferred Alternative) would not affect noise levels outside of 500 feet from the edge of the roadway. As such, traffic noise on the alignments would not likely travel to the TRNP—Elkhorn Ranch Unit, Elkhorn Ranchlands, or Theodore Roosevelt Elkhorn Ranch and Greater Elkhorn Ranchlands National Historic District. Under Alternative A, traffic noise could be very slightly heard from the far north reaches of the Elkhorn Ranchlands; however, the predicted noise levels at that location are consistent with ambient noise in rural areas. Therefore, traffic noise is not anticipated to result in a substantial impairment to the activities, features, or attributes that qualify the TRNP—Elkhorn Ranch Unit, Elkhorn Ranchlands, and Theodore Roosevelt Elkhorn Ranch and Greater Elkhorn Ranchlands National Historic District for protection under Section 4(f).

Through coordination with the National Trust for Historic Preservation, NPS, and NDSHPO, the Elkhorn Ranchlands, TRNP—Elkhorn Ranch Unit, and Theodore Roosevelt Elkhorn Ranch and Greater Elkhorn Ranchlands National Historic District were identified as visual resources of concern for the project. The primary concerns of the National Trust for Historic Preservation included visual impacts and

Theodore Roosevelt Elkhorn Ranch Cabin Site

impacts from fugitive dust emissions on these areas. The visual assessment was conducted for Alternative A and Alternative K, Option 1 (Preferred Alternative), as these alternatives are nearest to the aforementioned areas. The viewshed analyses were conducted from the vantage point of an observer to determine if an observer would be within visual range of the roadways and bridges while situated at the Elkhorn Ranchlands, TRNP—Elkhorn Ranch Unit, and National Historic District. Upon completion of the viewshed analyses, it was determined that the new roadways and bridges under Alternative A and Alternative K (all options) would not be able to be seen from any of these areas. Further, Alternative A and Alternative K (all options) would not alter the viewshed or diminish the integrity of the view from these areas. The results of the viewshed analyses were presented to the NPS, USFS, USACE, NDSHPO, ACHP, and National Trust for Historic Preservation, and NPS. The ACHP verbally agreed with the results of the viewshed analyses. Therefore, visual impacts are not anticipated to result in a substantial impairment to the activities, features, or attributes that qualify the TRNP—Elkhorn Ranch Unit, Elkhorn Ranchlands, and Theodore Roosevelt Elkhorn Ranch and Greater Elkhorn Ranchlands National Historic District for protection under Section 4(f).

6.5. What Section 4(f) uses would occur and what approval options would be appropriate?

The alternatives are anticipated to result in the Section 4(f) uses and approval options described in the following subsections, which are summarized in **'Table 26, Section 4(f) Summary'**.

6.5.1. Alternative L

Under Alternative L, there would be no use of the Maah Daah Hey Trail; DPG MAs 3.51A, 3.51B, or 4.22; or archaeological sites.

6.5.2. Alternative A

Alternative A would result in the use of at least four Section 4(f) resources, and may result in the use of additional Section 4(f) resources, depending on nature of the archaeological sites.

Maah Daah Hey Trail. With Alternative A, portions of the existing roadway (i.e., Magpie Creek Road) either run parallel to the trail, or the trail is located on the roadway in Sections 11, 12, 13, and 14, Township 144 North, Range 102 West. The Maah Daah Hey Trail also crosses Magpie Creek Road in the SW¼ of Section 12. In coordination with the USFS, the USFS preferred that the Maah Daah Hey Trail be relocated off of the roadway. Two options were discussed: (1) benching the inslope or (2) rerouting the trail altogether. A temporary occupancy exception may be appropriate for the trail crossing the roadway and a permanent use may result from rerouting the trail. For a permanent use, either a *de minimis* impact determination, a Programmatic Evaluation, or an Individual Evaluation would need to be completed. If Alternative K, Option 1 is not selected as the Preferred Alternative, and Alternative A is selected, the approval option would need to be selected, and coordination with the USFS would need to be completed.

DPG MAs 3.51A and 3.51B. The easement for Magpie Road that runs through DPG MAs 3.51A and 3.51B is approximately 150 feet wide. The intended use of these easements is for the occupation and operation of a transportation corridor. Its intended use is not for recreation, wildlife or waterfowl refuge, or preservation of a historic site. Therefore, the land and function within these existing easements would not be considered a Section 4(f) property.

For Alternative A, improvements to the existing roadway would cause further encroachment on portions of DPG MAs 3.51A and 3.51B. Additional easement would be needed from USFS, resulting in a permanent use. If Alternative K, Option 1 is not selected as the Preferred Alternative, and Alternative A is selected, the approval option (*de minimis*, Programmatic Evaluation, or an Individual Evaluation) would need to be selected, and coordination with the USFS would need to be completed.

DPG MA 4.22. Alternative A would require the acquisition of an easement of a small portion of DPG MA 4.22, resulting in a permanent use. This additional acreage is needed for the new bridge that would be constructed to connect the roadways. If Alternative K, Option 1 is not selected as the Preferred Alternative, and Alternative A is selected, the approval option (*de minimis*, Programmatic Evaluation, or an Individual Evaluation) would need to be selected, and coordination with the USFS would need to be completed.

Archaeological Sites. Sites 32BI234, 32GV299, 32GV300, and 32BI1127 are *unevaluated* for eligibility for listing on the NRHP. If Alternative K, Option 1 is not selected as the Preferred Alternative, and Alternative A is selected, these sites would require further evaluation. If any of these sites would be disturbed by Alternative A, and are determined *Eligible* for listing on the NRHP and warranted for preservation in-place, the potential use (permanent, temporary, or constructive)

Table 26, Section 4(f) Summary

Property	Official with Jurisdiction	Use of Section 4(f) Property	Approval Option
Alternative L			
No Section 4(f) properties subject to use.			
Alternative A			
Maah Daah Hey Trail	USFS	Potential for permanent use; portions of existing roadway run parallel and in some cases the road is the Maah Daah Hey Trail in Sections 11, 12, 13, and 14 in Township 144 North, Range 102 West; Maah Daah Hey Trail crosses Magpie Creek Road; in coordination with the USFS, the trail would need to be re-routed off the roadway.	*De minimis* or Programmatic Evaluation
DPG MA 4.22—Scenic Areas, Vistas, or Travel Corridors (River and Travel Corridors)	USFS	Permanent Use; additional easement	*De minimis*/Programmatic or Individual Evaluation
DPG MA 3.51A—Bighorn Sheep Habitat with Non-Federal Mineral Ownership	USFS	Permanent Use; additional easement	*De minimis*/Programmatic or Individual Evaluation
DPG MA 3.51B—Bighorn Sheep Habitat with Non-Federal Mineral Ownership	USFS	Permanent Use; additional easement	*De minimis*/Programmatic or Individual Evaluation
Archaeological Sites	NDSHPO	Potential use (permanent, temporary, or constructive) of site 32BI272 (*Eligible* for listing on the NRHP) and sites 32BI234, 32GV299, 32GV300, and 32BI1127 (eligibility for listing on the NRHP *unevaluated*). Further evaluation of eligibility for listing on the NRHP, determination of whether preservation in-place is warranted, and assessment of Section 4(f) use would occur if Alternative K, Option 1 is not selected as the Preferred Alternative, and Alternative A is selected.	Potential *De minimis* / Programmatic or Individual Evaluation / Exception—archaeological sites. To be determined upon further evaluation of eligibility, preservation in-place, and Section 4(f) use if Alternative K, Option 1 is not selected as the Preferred Alternative, and Alternative A is selected.
Alternative K, Option 1			
Maah Daah Hey Trail	USFS	No use	Exception—temporary occupancy
Alternative K, Option 2 and Alternative K, Option 3			
Maah Daah Hey Trail	USFS	No use	Exception—temporary occupancy
DPG MA 4.22—Scenic Areas, Vistas, or Travel Corridors	USFS	Permanent use; additional easement	*De minimis*/Programmatic or Individual Evaluation

Sources: NPS 2016, NDPRD Undated a, USFS 2001b, USFS 2002

and approval option (*de minimis*, Programmatic Evaluation, or an Individual Evaluation) under Section 4(f) would be determined and further coordinated at that time. The methodology for further evaluation shall be determined through consultation with the NDSHPO, with an Evaluation Plan being created and approved by the FHWA, NDDOT, and NDSHPO.

Site 32BI272 is *Eligible* for listing on the NRHP. If Alternative K, Option 1 is not selected as the Preferred Alternative, and Alternative A is selected, this site would require further evaluation. If this site would be disturbed by Alternative A and is determined to be warranted for preservation in-place, the potential use (permanent, temporary, or constructive) and approval option (*de minimis*, Programmatic Evaluation, or an Individual Evaluation) under Section 4(f) would be determined and further coordinated at that time.

If any sites disturbed by Alternative A are determined to be *Eligible* for listing on the NRHP and do not warrant preservation in-place, the exception for Section 4(f) approval pertaining to archaeological sites may be applied if the conditions outlined in 23 CFR 774.13(b) can be met (see **section 6.1.2 on page 129**).

6.5.3. Alternative K, Option 1 (Preferred Alternative)

Alternative K, Option 1 would avoid the use of Section 4(f) properties.

Maah Daah Hey Trail. The Maah Daah Hey Trail currently crosses Forest Service Road 722, and with this alternative the crossing would be maintained. The crossing would be temporarily occupied during construction; however, no portions of the trail would be permanently impacted by being incorporated into the roadway. Notice of temporary construction activities would be provided to recreationists using the trail; appropriate safety mechanisms (e.g., fencing, signs) would be provided, as necessary; and the current trail route would be maintained through the construction work zone. During final design, a traffic-control plan would be prepared and used during construction to allow continuous use of the Maah Daah Hey Trail, and coordination would take place with the USFS regarding the traffic-control plan and construction schedule for the Maah Daah Hey Trail.

To apply the exception for temporary occupancy to the trail, the conditions outlined in 23 CFR 774.13(d) must be met (see **section 6.1.1 on page 129**). Alternative K, Option 1 would meet all conditions of the temporary occupancy exception, as there would be minor impacts on the trail, the trail crossing would be affected temporarily during construction activities, there would be no permanent adverse physical impacts and access for recreationalists would be maintained, the trail would be restored following construction activities, and the USFS has concurred with these conditions for Section 4(f) for Alternative K, Option 1 (Preferred Alternative). Please refer to **'Appendix I. Section 4(f) Temporary Occupancy Concurrence'**.

DPG MAs 3.51A and 3.51B. Alternative K, Option 1 would avoid use of these DPG MAs.

DPG MA 4.22. Alternative K, Option 1 would avoid use of this DPG MA.

Archaeological Sites. Alternative K, Option 1 would avoid use of sites that are *Eligible* or *unevaluated* for listing on the NRHP.

6.5.4. Alternative K, Option 2 and Alternative K, Option 3

Alternative K, Option 2 and Alternative K, Option 3 would result in the use of one Section 4(f) resource.

Maah Daah Hey Trail. For Alternative K, Option 2 and Alternative K, Option 3, the Maah Daah Hey Trail crossing would be temporarily occupied during construction as described for Alternative K, Option 1. If Alternative K, Option 1 is not selected as the Preferred Alternative, and Alternative K, Option 2 or Alternative K, Option 3 is selected, coordination with the USFS would need to be completed to apply the exception for temporary occupancy to the trail.

DPG MAs 3.51A and 3.51B. Alternative K, Option 2 and Alternative K, Option 3 would avoid use of these DPG MAs.

DPG MA 4.22. Alternative K, Option 2 and Alternative K, Option 3 would encroach upon portions of areas designated as DPG MA 4.22. Additional easement would be needed from USFS, resulting in a permanent use. The primary feature of DPG MA 4.22 is the scenic view of the Little Missouri River, and the bridge crossing was designed to minimize visual impact. If Alternative K, Option 1 is not selected as the Preferred Alternative and Alternative K, Option 2 or Alternative K, Option 3 is selected, the approval option (*de minimis*; Programmatic Evaluation; or an Individual Evaluation) would need to be selected, and coordination with the USFS would need to be completed.

Archaeological Sites. Alternative K, Option 2 and Alternative K, Option 3 would avoid use of sites that are *Eligible* or *unevaluated* for listing on the NRHP.

6.6. What Section 4(f) coordination efforts have been made?

The officials with jurisdiction for the Section 4(f) properties associated with the alternatives are as follows:

- Maah Daah Hey Trail: USFS
- DPG MAs 3.51a, 3.51b, and 4.22: USFS
- Elkhorn Ranchlands: USFS
- USFS Roadway Easements: USFS and Billings County
- TRNP – Elkhorn Ranch Unit: NPS
- Archaeological sites: NDSHPO
- Theodore Roosevelt Elkhorn Ranch and Greater Elkhorn Ranchlands National Historic District: NDSHPO, USFS, NPS, and private parties

The NDDOT and FHWA have coordinated with the USFS (cooperating agency), NPS (participating agency), NDSHPO (participating agency), TCC (participating agency), ACHP, and the National Trust for Historic Preservation both individually and as a group throughout the environmental review process. These coordination efforts have included:

- Three rounds of solicitation of views notification letters with 30-day comment periods, plus several additional notifications and correspondences with the NDSHPO
- One agency scoping meeting with, 30-day comment period
- Two agency alternatives workshops, with 30-day comment periods
- Project newsletters
- Several other agency meetings and correspondences on an as-needed basis

Several opportunities for public involvement have occurred since the project began. The purpose of public involvement is to help the public understand the project; define the project's purpose and need; develop alternatives; and gather comments about the project and EIS, including Section 4(f), prior to decision-making. Public coordination efforts for the project are as follows:

- Two public scoping meetings, with a 30-day comment period
- Two public alternatives workshops, with 30-day comment periods
- Two public hearings, with a 45-day public comment period
- Project newsletters

For further information regarding coordination efforts for the project, please refer to **'Chapter 8. Public Involvement & Outreach'**.

Chapter 7. Cumulative Effects

This chapter examines the potential impacts on environmental, socioeconomic, and human-made resources that would result from the incremental impacts of the alternatives in addition to other past, present, and reasonably foreseeable future actions. This analysis assesses the potential for an overlap of impacts with respect to project schedules or affected areas. This chapter presents a qualitative analysis of the cumulative effects, based on impacts anticipated for the alternatives.

7.1. What are cumulative effects, and why do we study them?

Federal regulations implementing NEPA (CEQ 40 CFR 1500–1508) require that the cumulative effects of a proposed action be assessed. A cumulative effect could be additive (i.e., the net adverse, cumulative effects are strengthened by the sum of individual effects), countervailing (i.e., the net adverse, cumulative effect is less as a result of the interaction between beneficial and adverse individual effects), or synergistic (i.e., the net adverse, cumulative effect is greater than the sum of the individual effects). Cumulative effects could result from individually minor, but collectively significant actions that take place over time.

Accordingly, a cumulative effects analysis identifies and defines the scope of other actions and their interrelationship with the alternatives if there is an overlap in space and time. Cumulative effects are most likely to occur when there is an overlapping geographic location and a coincidental or sequential timing of events. Because the environmental analysis required under NEPA is forward-looking, the aggregate effect of past actions is analyzed to the extent relevant and useful in analyzing whether the reasonably foreseeable effects of a proposed action could have a continuing, additive, and significant relationship to those effects.

7.2. How were cumulative effects evaluated for this project?

The resources considered in this cumulative effects analysis were determined by analyzing the following criteria (AASHTO 2016):

1. What types of environmental resources are present in the vicinity of the project?
2. Which resources are most prevalent, sensitive, and/or threatened by other actions?
3. Which resources are likely to be most substantially affected by the project (taking into account both direct and indirect effects of the project)?

For each resource considered in this cumulative effects analysis, the following steps were taken to analyze cumulative effects (AASHTO 2016):

1. Describe resource conditions and trends,
2. Summarize the direct and indirect impacts of the proposed action on that resource,
3. Describe other actions and their effects on the resource,
4. Estimate the combined effects of the proposed action and other actions on the resource, and
5. Consider minimization and mitigation for those effects.

7.3. What resources were considered for this cumulative effects analysis?

The Little Missouri River Crossing study area is located in western North Dakota, where the Little Missouri River flows through the LMNG across a diverse landscape characterized by grasslands, cultivated fields, badlands, buttes, and plateaus accented by wooded draws. The landscape supports a diversity of vegetation, wildlife, and land uses including grazing, agriculture, recreation, and energy development. Numerous public comments were received in regard to potential impacts on the scenic quality and serenity of the Badlands, TRNP (particularly the Elkhorn Ranch Unit), Elkhorn Ranchlands, and Theodore Roosevelt Elkhorn Ranch and Greater Elkhorn Ranchlands National Historic District. Based on the project setting and public comments, the cumulative effects analysis considers the following resources:

- Land Use
- Social
- Noise
- Water Resources, Water Quality, and Wetlands and Other Waters
- Vegetation
- Wildlife
- Historic and Archaeological Preservation/Cultural Resources
- Visual

Cumulative effects are defined as the impact on the environment, which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions (40 CFR 1508.7).

The temporal span of this cumulative effects analysis begins when past projects and actions began modifying the respective resource, and ends in 2040, the year for which forecasted traffic data is available (i.e., accounting for the typical 20- to 30-year design life of roadways). The spatial areas of consideration for potential cumulative effects to the respective resources were defined by considering the extent of the resource and the area that the project in combination with other past, present, and reasonably foreseeable future projects and actions might affect the resource. Resource conditions and trends were considered within the context of the state, with a focus on western North Dakota. Cumulative effects were analyzed at the spatial intersection of the oil and gas industry in western North Dakota, LMNG, Badlands landscape along the Little Missouri River, and project study area.

7.4. What other past, present, and reasonably foreseeable future projects and actions were considered for potential cumulative effects?

7.4.1. Oil and Gas Developments

The first oil boom in western North Dakota began in the early 1950s and peaked in the 1960s. The second oil boom began in the 1970s and peaked in the 1980s. The third oil boom began in the early 2000s. From 2009 to 2015, annual crude oil production in North Dakota increased approximately 442.2 percent (from 79.7 to 432.3 million barrels) (NDDMR 2015).

The price per barrel of oil began falling in 2015 due to a worldwide surplus in the crude oil supply. From 2013 to 2014, there was an approximate 21 percent annual increase in oil production, but from 2014 to 2015, there was only an approximate 8.9 percent annual increase in oil production. By 2015 to 2016, there was an approximate 12 percent annual decrease in oil production. Oil production has leveled off into 2017. Between January and October 2017,[1] there was a total of approximately 322.3 million barrels of oil produced, which is approximately 1 percent more than what was produced between January and October in 2016 (approximately 320.0 million barrels) (NDDMR 2015, NDDMR 2016, NDDMR 2018). Although recent trends in the oil and gas industry have significantly reduced new well development, United States crude oil production is forecasted to average 9.9 million barrels per day in 2018, which is approximately 10 percent higher than crude oil production in 2016 (8.9 million barrels per day) (EIA 2017A).

Oil and gas production involves several components, including oil and gas well pads (with access roads and utilities), pipelines, oil refineries, natural gas processing plants, saltwater disposal wells, and treatment facilities. Known past, present, and reasonably foreseeable oil and gas developments are as follows:

- As of February 12, 2018, there were 31,121 oil and gas wells located on single- or multi-well pads in North Dakota. Of these, 631 wells are located within 5 miles of the alternatives and 103 are located within 0.5 miles of the alternatives. These values include abandoned, producing and drilling wells, and wells that are permitted to be drilled in the future (NDDMR 2018).
- As of June 30, 2017, there were 17 crude oil, nine natural gas, four refined oil and gas product, and one carbon dioxide transmission pipelines operating in North Dakota. Of these, two crude oil pipelines intersect the alternatives. Since June 30, 2017, Public Service Commission siting applications have been filed for nine pipeline projects in western North Dakota. In addition, there are currently numerous oil and gas gathering pipelines connecting well pads to transmission lines, for which existing and proposed locations are generally confidential. Nearly all active wells in the vicinity of the alternatives currently utilize trucks to transport crude oil rather than gathering pipelines (Public Service Commission 2018, North Dakota Pipeline Authority 2017).
- There are currently two operating oil refineries in North Dakota. Of these, the closest refinery to the alternatives is located approximately 36 miles southeast of the alternatives in Dickinson. Pending the acquisition of required state permits, construction a third refinery located approximately 23 miles south-southeast of the alternatives near Belfield is expected to begin in 2018 and become operational in 2019 (McGurty 2017).
- As of June 30, 2017, there were 28 natural gas plants operating in North Dakota. Of these, the closest plant is located approximately 10 miles south of the alternatives (North Dakota Pipeline Authority 2017). Since June 30, 2017, Public Service Commission (2018) siting applications have been filed for a plant expansion in Dunn County and a new plant in McKenzie County.
- As of February 12, 2018, there were a total of 790 saltwater disposal wells in North Dakota. Of these, 20 are located within 5 miles of the alternatives and 6 are located within 0.5 miles of the alternatives. These values include abandoned, drilling wells, and wells that are permitted to be drilled in the future (NDDMR 2018).
- As of February 15, 2018, there were 72 mobile and stationary oil and gas waste treatment facilities in North Dakota. Of these, none are located within 5 miles of the alternatives. These values include abandoned, active, and treatment facilities that are permitted for the future (Kirby 2018).

1 Annual statistics for oil and gas production in 2017 are not yet available from the North Dakota Industrial Commission, Department of Mineral Resources, Oil and Gas Division. Therefore, the available monthly statistics from January to October are used.

7.4.2. Theodore Roosevelt Elkhorn Ranch and Greater Elkhorn Ranchlands National Historic District

In 2007, the Elkhorn Ranchlands were acquired by the USFS, in part to protect the viewshed as seen from Theodore Roosevelt's Elkhorn Ranch site, while allowing multiple-uses. In 2012, much of the Elkhorn Ranchlands, along with land owned and/or managed by the NPS, and some private parties within the boundaries of the District, was formally listed on the NRHP as the Theodore Roosevelt Elkhorn Ranch and Greater Elkhorn Ranchlands National Historic District.[2] The intention of the National Historic District is to preserve the integrity of the viewshed that Theodore Roosevelt would have seen from the Elkhorn Ranch Headquarters (USFS 2012). Pursuant to 36 CFR 60, there are no restrictions for private landowners regarding what they may do with historic properties they own, providing there is no federal component to the project. For projects with federal involvement, the ACHP must be afforded opportunity to comment on the project.

In 2015, the USFS completed an EA (USFS 2015) for Elkhorn Minerals LLC to develop a gravel pit according to surface mineral rights on National Forest System lands within the Theodore Roosevelt Elkhorn Ranch and Greater Elkhorn Ranchlands National Historic District. Development of the gravel pit began in December 2015 (Mehta 2016). The gravel pit encompasses approximately 24.6 acres of land, including a 19.4-acre mined area and 5.2-acre buffer surrounding the mined area (USFS 2015). It was determined, in consultation with the ACHP, that the gravel pit may have an adverse effect on the National Historic District; a Memorandum of Agreement was developed to mitigate these effects.

7.4.3. Little Missouri National Grasslands

The Little Missouri National Grasslands (LMNG) is one of four National Grasslands that make up the Dakota Prairie Grasslands (DPG) (USFS Undated b). The DPG was established in 1998 when it was split from the Custer National Forest. The DPG Land and Resource Management Plan provides guidance for all resource management activities on the DPG (e.g., noxious weed control); identifies management standards and guidelines; and describes resource management practices, levels of resource use and protection, and the availability and suitability of lands for resource management (USFS 2001b). The LMNG makes up much of the DPG, spanning over 1 million acres in western North Dakota. The grassland is divided into two ranger districts: Medora and McKenzie. Recreational opportunities on the LMNG include hiking, camping, horseback riding, photography, canoeing, wildlife viewing, fishing, and hunting (USFS Undated c). In addition to recreation, the other human uses of the LMNG include oil and gas development and livestock grazing.

As of March 7, 2018, there were 11 recent USFS projects that have been analyzed under NEPA pertaining to the LMNG in addition to many more archived projects that have been analyzed (USFS Undated d). Of the recent projects, three pertain to the Little Missouri River Crossing study area:

- In 2016, the USFS replaced Chapter 4 of the DPG Land and Resource Management Plan, which brought the Plan's monitoring program into compliance with the 2012 National Forest System Land Management Planning Rule (36 CFR 219.12) (O'Donnell 2016). Monitoring allows USFS to conduct adaptive management, make informed decisions, and assess the effectiveness of the Plan (USFS 2016).
- In 2017, the USFS approved a proposal to install two range water pipelines in Pasture 7 totaling approximately 3.4 miles to serve two grazing allotments (Veres 2018).
- In 2018, the USFS approved a proposal to reroute a portion of the Maah Daah Hey Trail by constructing 2,970 feet of new trail and abandoning an existing segment of the trail that was damaged by a landslide (Veres 2017).

As of March 7, 2018, there were eight future USFS projects that are being analyzed under NEPA pertaining to the LMNG (USFS Undated d). Of these, three projects pertain to the Little Missouri River Crossing study area:

- The Dakota Prairie Grasslands Plan Oil and Gas Development Supplemental EIS would reevaluate the oil and gas development pattern on the DPG as a supplement to the 2001 Northern Great Plains Management Plans Revision Final EIS. The project would reconsider impacts of oil and gas activities on the DPG to determine if changes to the DPG Land and Resources Management Plan are adequate to mitigate the effects of future oil and gas development (Neitzke 2015).
- The Little Missouri National Grassland Prairie Dog Management Project would implement the DPG Land and Resources Management Plan direction to manage the black-tailed prairie dog. Management would include monitoring prairie dog colonies entirely within USFS-managed lands, directing colonies approaching the edge of USFS-managed lands way from private lands, and/or working with landowners to find solutions (e.g., easement, elimination, relocation) for colonies that are encroaching onto private lands and/or causing harm to infrastructure or safety (Boehm 2015).
- The Pastures 3 and 5 Vegetation Management Project would continue to authorize livestock grazing as a management tool across 32 grazing allotments to maintain or improve vegetation conditions in accordance with the DPG Land and Resources Management Plan (Michalek 2016).

7.4.4. Recreation/Tourism

The precursor to the North Dakota Department of Commerce Tourism Division, the Tourism Promotion Bureau, was established in 1965 to promote tourism in the state (SHSND Undated c). According to the North Dakota Tourism Annual Report (2016) produced by the NDTD, tourism has shown consistent growth since 1990 and is North Dakota's third-largest industry with nonresident visitors spending $3.1 billion in 2015. A total of 21.9 million people visited North Dakota in 2015, and all 53 counties experienced visitor spending increases. Tourism makes up 13.2 percent of gross state product, and generates 5.8 percent of state and local taxes. From 2015 to 2016, the number of tourists visiting state parks increased 4 percent, tourists visiting national parks increased 30 percent, tourists visiting major attractions increased 1 percent, and tourists visiting visitor centers decreased 9 percent (NDTD 2016).

Major tourist and recreation areas within and near the Little Missouri River Crossing study area include the TRNP (North, South, and Elkhorn Ranch units), Elkhorn Ranchlands, Theodore Roosevelt Elkhorn Ranch and Greater Elkhorn Ranchlands National Historic District, LMNG, Little Missouri River (State Scenic River), Maah Daah Hey Trail, and town of Medora. While the study area has a relatively low population, these recreation/tourist sites draw birdwatchers, campers, hunters, hikers, history enthusiasts, canoeists, equestrians, and mountain bikers from around the world to the area. This influx of people can create additional demands on area resources and the local entities that maintain them.

7.4.5. Agriculture

In 1925, there were approximately 2,908 farms and ranches (with the majority averaging 260 to 1,000 acres each) in Billings, Golden Valley, and McKenzie counties (USDA 1927). However, during the Great Depression in the 1930s, many farms and ranches were abandoned. Land purchases made by the United States government under the Land Utilization Program also contributed to the abandonment of farms and ranches during that time (Cunfer 2001). Between 1945 and 1972 North Dakota farmers and farms went through notable changes including diversification, electrification, mechanization, and organization. Improved and new machinery allowed farmers to be more efficient and produce more on larger farms (Tweton Undated). Record prices for American grain in the early 1970s led many farmers to expand their operations and others to go deeply in debt to enter the agricultural arena (SHSND Undated a).

Over the years, the number of farms and ranches in Billings, Golden Valley, and McKenzie counties has decreased, while the size of the farms and ranches has increased. According to the Census, Billings County contained 197 farms (approximately 722,275 acres), Golden Valley County contained 251 farms (approximately 562,453 acres), and McKenzie County contained 574 farms (approximately 1,064,191 acres) in 2012 (USDA 2012). Crops produced at these farms varied from small grains to native grass; much of which was used for cattle grazing. In addition to grazing on private land, a large amount of grazing occurs on federal lands.

7.4.6. Roadway Construction, Maintenance, and Reclamation

While the Little Missouri River Crossing study area is bounded by US Highway 85 to the east and ND-16 to the west, there are no paved roadways in the vicinity of the alternatives. A proposed project to widen US Highway 85 from two to four lanes is currently being analyzed under NEPA. There are numerous rural, unpaved gravel/graded roads, primitive roadways, and trails in the vicinity of the alternatives that require on-going maintenance (e.g., grading, reconstruction). Many of the rural graded roadways are rural residential roadways or are associated with oil and gas developments and small gravel mining operations. Others are federal aid routes (e.g., County Major Collector [CMC], Forest Highway), including Blacktail Road (Forest Highway 2), Belle Lake Road (Forest Highway 12, CMC 401), Franks Creek Road (CMC 418), and County Road 50 (CMC 2750), which are regularly maintained to provide mobility within the county from local to arterial roadways. Billings County often develops small gravel pits to be used for county roadway projects that remain open for only short periods of time. After gravel mining operations are complete, the pit and associated access roads are reclaimed. Access roads for oil and gas developments are also reclaimed upon completion of oil production; however, oil production is not anticipated to be completed in the near future.

7.5. What cumulative effects are anticipated?

7.5.1. Land Use

Land use in North Dakota began with Native American hunters around 10,000 Before Common Era (BCE), with use by agricultural and hunter-gatherer civilizations since 2000 BCE. In the late 19th century,

2 The National Trust for Historic Preservation has proposed National Monument status for the Theodore Roosevelt Elkhorn Ranch and Greater Elkhorn Ranchlands National Historic District (Pahl 2015).

Scandinavian, German, and English immigrant farmers and ranchers began settling in North Dakota. Farming transformed from primarily wheat that pioneers produced on small farms or bonanza farms to larger farms producing sugar beets, sunflowers, and other row crops. Ranching also took hold, primarily in the Badlands and Little Missouri River Valley of western North Dakota. In the mid-20th century, coal mining and oil production became important land uses in North Dakota in the western portion of the state (NDTD Undated).

Recent land use trends in North Dakota include an increase in developed areas and pastureland, and a decrease in cropland. From 1982 to 2012, Federal land area in North Dakota increased 3.4 percent, water area increased by 17.8 percent, developed area increased by 11.6 percent, rural area decreased by 1 percent. In the same time period, cropland in North Dakota decreased by 9.2 percent, pasture land increased by 30.6 percent, and rangeland decreased by 6.6 percent (USDA 2015).

The objectives of future land use in Billings County include promoting the agricultural economy, conserving natural resources, and promoting sustainable oil and gas industry growth (Billings County 1998). The objectives of future land use in Golden Valley County include wise use and protection of agricultural land, orderly and desirable energy development, and avoiding conflicting land uses (Golden Valley County 2010). The objectives of future land use in McKenzie County include facilitating "efficient, orderly, and flexible" growth; and protecting natural resources (McKenzie County 2016). Land use objectives for areas of Billings, Golden Valley, and McKenzie counties under the jurisdiction of the USFS include ensuring sustainable ecosystems and allowing multiple benefits to people (e.g., recreation, grazing, mineral and energy development) (USFS 2001 b).

The alternatives would result in permanent and temporary conversion of land into a transportation corridor (primarily grasslands). Past, present, and reasonably foreseeable projects and actions (e.g., oil and gas developments, gravel pit, agriculture, roadway projects) would also result in land use conversion. Therefore, a minor adverse cumulative effect is anticipated. Any project resulting in land use changes, including the Little Missouri River Crossing project, would typically undergo landowner negotiations to arrive at an amicable land transfer, including adherence to applicable public lands policies.

Because the alternatives are anticipated serve existing local traffic and are not anticipated to generate new traffic, the alternatives are not anticipated to induce development. Therefore, cumulative effects on development are not anticipated.

Because the alternatives would be in accordance with Land and Resource Management Plan MA guidelines, and Billings and Golden Valley counties comprehensive plans, cumulative effects on land use planning are not anticipated.

7.5.2. Social

The first communities in North Dakota were founded by Native Americans. Upon the creation of Dakota Territory in 1861 and statehood in 1889, formal government and community services, such as justice of the peace, road and school districts, were established. Many pioneer communities, including Belfield (established 1883), Watford City (established 1914) and Medora (established 1883), were founded along railroads that could transport agricultural and ranching products. Modern technology, such as electricity, telephones, and gas-powered vehicles arrived in North Dakota during World War I. During the 1920s, the Great Depression, and World War II, farm commodity prices fell and many people moved from rural areas to cities. President Franklin Roosevelt established the Civilian Conservation Corps in 1933 in an effort to spur economic recovery, whereby public lands improvement projects in western North Dakota, including trails, campsites, visitor centers, dams, and roads, improved tourism opportunities. After World War II, the coal and oil industries took hold, the Missouri River was dammed for electricity and irrigation, and urban population centers arose (SHSND Undated b).

Western North Dakota has experienced oil boom/bust cycles that communities have endured, and is currently navigating a recent downturn of oil prices that has created a sense of uncertainty regarding western North Dakota's future. However, the scope and magnitude of the current boom have far exceeded the past events, leading to a high level of development and population growth. As such, oilfield activity is not anticipated to the return to pre-2009 activity levels in the near future. With the rapid increase in oil and gas development during the latest oil boom, the regional population, community development, traffic, land use separation, and wildlife habitat fragmentation also dramatically increased. In addition to the oil and gas industry, agriculture, ranching, and tourism in western North Dakota are anticipated to continue into the future.

Travel patterns in North Dakota began with Native American hunters following bison herds and later trading. Most transportation was overland by foot, with some use of canoes and other vessels, until horses became widespread by the late 1700s. Bison trails later gave way to cattle trails and unimproved stagecoach roads. Europeans brought larger boats to the Missouri River system, culminating with the short-lived steamboat. By 1913, most towns in North Dakota were within 50 miles of a railway, which transformed transportation patterns by allowing the efficient movement of goods and people. By 1925, there was an extensive, largely unpaved roadway network in North Dakota. In the same year, the Joint Board on Interstate Highways designated and numbered transcontinental highways, including US Highway 85 and US Highway 10 (now I-94). With the completion of Interstate highways in North Dakota, the NDDOT shifted from a 'new construction' to a 'maintenance' philosophy. Apart from several unimproved fords, there are two bridges that provide crossings over the Little Missouri River near the study area: the Long X Bridge along US Highway 85 and the I-94 bridges near Medora. As described in this EIS, Billings County plans to add an additional river crossing within the project study area in the future.

The alternatives would result in a more efficient and reliable transportation system with improved local accessibility. Past, present, and reasonably foreseeable projects and actions (e.g., roadway projects) would also result in improvements on the transportation system and accessibility. Therefore, a beneficial cumulative effect on accessibility is anticipated for travelers, including residents, school busses, recreationalists, businesses, and emergency services.

The alternatives are not anticipated to generate traffic, but would result in a small increase of traffic on roads associated with the selected alternative and adjacent roadways as a result of redistribution of local trips that may be attracted to the new bridge. Past, present, and reasonably foreseeable projects and actions (e.g., oil and gas developments, gravel pit, recreation/tourism, agriculture, roadway projects) would have the potential to generate traffic and/or redistribute local trips on a temporary or permanent basis. Therefore, a minor cumulative effect on travel patterns is anticipated. No minimization or mitigation measures for the cumulative effect are anticipated.

The alternatives would result in an improved transportation system and the alleviation of some of the safety concerns associated with vehicles cross the river using unimproved fords. Past, present, and reasonably foreseeable projects and actions (e.g., roadway projects) would also result in an improved transportation system. Therefore, a beneficial cumulative effect is anticipated.

The alternatives would result in temporary social impacts during construction activities consisting of speed limit reductions, recreationists encountering work zones, and noise and fugitive dust emissions. Past, present, and reasonably foreseeable projects and actions (e.g., oil and gas development, gravel pit, roadway maintenance) would also result in temporary social impacts during construction activities. Therefore, a minor adverse cumulative effect is anticipated. Most projects, including the Little Missouri River Crossing project, would maintain access for recreationists and would be required to obtain an NDPDES permit (or would opt to obtain a permit voluntarily, as with many oil and gas projects) in accordance with the CWA, which necessitates development of BMPs to minimize fugitive dust.

7.5.3. Noise

Prior to human arrival, sounds were limited to natural occurrences, such as blowing wind, flowing water, and animal vocalizations. In western North Dakota, naturally occurring median ambient noise levels are approximately 30 to 35 A-weighted decibels (dBA). Human activity, such as traffic, aircraft, and agricultural and industrial (e.g., oil and gas) operations, has increased median ambient noise levels to approximately 45 dBA across large swaths and up to 50 dBA in populated areas; however, the study area remains relatively unaffected by noise generated by human activity (NPS Undated d). It is anticipated that ambient noise levels in western North Dakota may continue to increase and/or the area impacted by noise will increase into the future in proportion to the amount of oil and gas development.

Alternative A would result in traffic noise impacts on DPG MA 4.22 and a seasonal residence due to the introduction of a new roadway and associated traffic where none currently exists. Traffic noise under Alternative A has the potential to propagate to the far north reaches of the Elkhorn Ranchlands. Alternative K, Option 2 and Alternative K, Option 3 would result in traffic noise impacts on DPG MA 4.22 due to the introduction of a new roadway and associated traffic where none currently exists. Past, present, and reasonably foreseeable projects and actions (e.g., oil and gas developments, gravel pit, recreation/tourism, agriculture) would also result in noise impacts. Therefore, a minor adverse cumulative effect is anticipated. No minimization or mitigation measures for the cumulative effect are anticipated.

The alternatives would result in temporary noise impacts during construction activities due to operation of machinery. Past, present, and reasonably foreseeable projects and actions (e.g., oil and gas development, gravel pit, roadway maintenance) would also result in temporary noise impacts during construction activities. Therefore, a minor adverse cumulative effect is anticipated. No minimization or mitigation measures for the cumulative effect are anticipated.

7.5.4. Water Resources, Water Quality, and Wetlands and Other Waters

Much of western North Dakota is in the Missouri River Basin, whereby several drainages, creeks, and rivers flow into the Missouri River or its tributaries (e.g., Little Missouri River). Implementation of irrigation, wells, drains, levees, and dams and reservoirs have altered natural water systems across North Dakota. Current surface water quality in

the state varies depending on weather, land use, ground water, and erosion. Groundwater quality also varies but meets standards in all communities that utilize groundwater for municipal purposes. Most water used in the state is used for irrigation (54 percent), followed by industrial (including fracking oil and gas wells) (21 percent), municipal (20 percent), and rural (4 percent) uses. By 1980, 45 percent of the pre-settlement wetland area in North Dakota was drained, with much of this loss occurring in the eastern portion of the state where there is a higher density of wetlands. From 1982 to 2012, wetland area in the state on non-federal land decreased by 3.0 percent and other aquatic habitat area increased by 18.0 percent (USDA 2015, NDSWC 2014, University of Nebraska–Lincoln Undated, USGS 1996). It is anticipated that alterations of water systems, variable water quality, and the slow loss of wetlands will continue into the future.

Because the alternatives are not anticipated to impact groundwater wells or groundwater, cumulative effects on groundwater wells and groundwater are not anticipated.

Because the alternatives would be in accordance with the Little Missouri State Scenic River Act, cumulative effects on the free-flowing natural condition of the Little Missouri River are not anticipated.

The alternatives are anticipated to lessen the amount of river channel disturbance and sedimentation caused by vehicles using unimproved fords to cross the Little Missouri River. Past, present, and reasonably foreseeable projects and actions (e.g., oil and gas haul trucks, tourist traffic, agricultural traffic) that use unimproved fords to cross the river would contribute to disturbance and sedimentation of the river. The alternatives would mitigate the effects of channel disturbance and sedimentation caused by future projects and actions that would utilize unimproved fords to cross the river by providing a bridge crossing. Therefore, a beneficial cumulative effect is anticipated.

The alternatives would eliminate small portions of riverine floodplains and riparian corridors due the construction of a new bridge and replacement of one or two other crossings. Past, present, and reasonably foreseeable projects and actions (e.g., access road construction, roadway maintenance) would also eliminate small portions of riverine floodplains and riparian corridors. Therefore, a minor adverse cumulative effect is anticipated. Any stream crossing project, including the Little Missouri River Crossing project, would be required to comply with NDAC 89-14-01, which outlines design flood frequency, floodplain regulations and regulatory floodway requirements, and allowable headwater.

The alternatives would result in temporary and permanent impacts on wetlands and Other Waters as a result of placement of fill material utilized for roadway and bridge construction. Past, present, and reasonably foreseeable projects and actions (e.g., oil and gas developments, gravel pit, water pipeline, roadway projects) would also result in placement of fill material within wetlands and Other Waters. Therefore, a minor adverse cumulative effect is anticipated. Any projects with federal involvement, including the Little Missouri River Crossing project, are required to avoid impacting wetlands to the extent practicable in accordance with EO 11990. Any projects impacting wetlands or Other Waters under the jurisdiction of the USACE are required to avoid, minimize, and mitigate for impacts on jurisdictional waters in accordance with Section 404 of the CWA.

The alternatives would result in temporary impacts on water resources during construction activities consisting of increases in sedimentation of surface waters; impairment of the ecological function of the riverine corridors; and modification of stream velocities, flow patterns, and river morphology. Past, present, and reasonably foreseeable projects and actions (e.g., oil and gas development, gravel pit, roadway maintenance) would also result in temporary impacts on water resources during construction activities. Therefore, a minor adverse cumulative effect is anticipated. Most projects, including the Little Missouri River Crossing project, would restore areas temporarily disturbed during construction activities and would be required to obtain an NDPDES permit (or would opt to obtain a permit voluntarily, as with many oil and gas projects) in accordance with the CWA, which necessitates development of a SWPPP and BMPs to minimize erosion, sedimentation, and stormwater runoff.

7.5.5. Vegetation

Historically, tallgrass prairie dominated much of the Great Plains; however, native tallgrass prairie has been largely plowed and is currently limited to the Red River valley in North Dakota. Much of North Dakota is currently dominated by mixed-grass prairie, with shortgrass prairie dominating in the far west. Agricultural and other introduced species have replaced much of the native prairie vegetation in the state, whereby 39.1 million acres of land are farmed. Since 2008, noxious weeds have been reported in 1.36 to 2.88 million acres across North Dakota. Forest vegetation in western North Dakota includes riparian areas and the pine/juniper forests of the Badlands (NDGFD 2016, USDA 2018, North Dakota Department of Agriculture 2017). It is anticipated that vegetation across North Dakota will remain relatively consistent into the future.

The alternatives would result in permanent and temporary removal of vegetation, which can indirectly lead to erosion and sedimentation, as a result of new roadway area and construction activities. Past, present, and reasonably foreseeable projects and actions (e.g., oil and gas developments, gravel pit, water pipeline, roadway projects) would also result in vegetation removal and potential erosion and sedimentation. Therefore, a minor adverse cumulative effect is anticipated. Most projects, including the Little Missouri River Crossing project, would restore areas temporarily disturbed during construction activities. Restoration seed mixes and tree replanting for impacts occurring on federally managed lands would be in accordance with applicable resource agency direction. Most projects, including the Little Missouri River Crossing project, would be required to obtain an NDPDES permit (or would opt to obtain a permit voluntarily, as with many oil and gas projects) in accordance with the CWA, which necessitates development of a SWPPP and BMPs to minimize erosion, sedimentation, and stormwater runoff.

The alternatives may result in the introduction of noxious weeds and/or invasive species as a result of construction activities and/or transport into new roadway areas. Past, present, and reasonably foreseeable projects and actions (e.g., oil and gas developments, gravel pit, water pipeline, recreation, agriculture, roadway projects) may also result in the introduction of noxious weeds and/or invasive species. Therefore, a minor adverse cumulative effect is anticipated. All projects and actions, including the Little Missouri River Crossing project, are required to control the spread of noxious weeds and aquatic invasive species in accordance with NDCC Chapters 4.1-47-02 and 20.1-17, respectively. Typically, projects occurring on federally managed lands, including the Little Missouri River Crossing project, include equipment cleaning and inspection prior to use on federally managed lands to prevent the introduction and spread of noxious and invasive species.

The alternatives would impact one or two known populations of a sensitive species (one population of Missouri pincushion cactus under Alternative A or two populations of Hooker's townsendia under Alternative K [all options]), and may impact known and/or unknown populations of 12 additional species as a result of construction activities. Past, present, and reasonably foreseeable projects and actions (e.g., oil and gas developments, gravel pit, water pipeline, agriculture, roadway projects) may also result in impacts on sensitive species. Therefore, a minor adverse cumulative effect is anticipated. Any projects occurring on USFS-managed lands are required to coordinate with the USFS to avoid, minimize, and obtain approval for impacts on USFS-designated sensitive plant species.

7.5.6. Wildlife

Native Americans began hunting big game in North Dakota thousands of years ago. By the mid-1800's, many game species populations had declined due to unrestricted hunting by European settlers. Elk and moose were extirpated; bison, pronghorn, and mule deer populations were nearly decimated; and whitetail deer populations suffered major losses (SHSND Undated b). Efforts to conserve game and fish began shortly thereafter (SHSND Undated c), which led to the establishment of hunting seasons, limits, and rules that allowed for the recovery of many game species. Currently, the USFWS, USFS, and NDGFD are leading efforts to manage and recover several species and their habitats, including threatened and endangered species, migratory birds and raptors, USFS-designated sensitive species and Management Indicator Species, species of conservation priority, and species targeted for hunting, trapping, or fishing. While harvesting of wildlife is well-regulated, it is anticipated that wildlife habitat loss, degradation, and fragmentation caused by to human development and activity will persist into the future.

The alternatives would result in minor temporary and permanent habitat loss and degradation due to new roadway area, traffic, and construction activities, which may disturb and/or displace wildlife. These impacts pertain to:

- Migratory birds and general wildlife species under Alternative A and Alternative K (all options);
- Two raptor species (golden eagle and prairie falcon) given special consideration in the DPG Land and Resource Management Plan under Alternative K (all options);
- Two threatened or endangered species (whooping crane and northern long-eared bat) under Alternative A and Alternative K (all options);
- Eight USFS-designated sensitive species (bighorn sheep, loggerhead shrike, long-billed curlew, northern redbelly dace, Ottoe skipper, regal fritillary, tawny crescent, and sharp-tailed grouse) under Alternative A and Alternative K (all options), and an additional sensitive species (Sprague's pipit) under Alternative K, Option 1 (Preferred Alternative) and Alternative K, Option 3; and
- One USFS-designated Management Indicator Species (sharp-tailed grouse) under Alternative A and Alternative K (all options).

Past, present, and reasonably foreseeable projects and actions (e.g., oil and gas developments, gravel pit, water pipeline, recreation, agriculture, roadway projects) would also result in habitat loss and degradation, which may disturb and/or displace wildlife listed above. Therefore, a minor adverse cumulative effect is anticipated. Any projects occurring on USFS-managed lands, including the Little Missouri River Crossing project, are required to coordinate with the USFS to avoid, minimize, and obtain approval for impacts on raptor species given special consideration in the DPG Land and Resource Management Plan, threatened or endangered species, USFS-designated species, USFS-designated Management Indicator Species, and wildlife species

of concern. Any project, including the Little Missouri River Crossing project, are required to coordinate with the USFWS if threatened or endangered species, or migratory birds would be adversely affected. Other mitigation measures applicable to cumulative effects on wildlife habitat include:

- Any projects and actions with federal involvement, including the Little Missouri River Crossing project, are required to avoid impacting wetlands to the extent practicable in accordance with EO 11990.
- Any projects and actions impacting wetlands or Other Waters under the jurisdiction of the USACE, including the Little Missouri River Crossing project, are required to avoid, minimize, and mitigate for impacts on jurisdictional waters in accordance with Section 404 of the CWA.
- Most projects and actions, including the Little Missouri River Crossing project, would restore areas temporarily disturbed during construction activities. Restoration seed mixes for impacts occurring on federally managed lands would be in accordance with applicable resource agency direction.
- Most projects and actions, including the Little Missouri River Crossing project, would be required to obtain an NDPDES permit (or would opt to obtain a permit voluntarily, as with many oil and gas projects) in accordance with the CWA, which necessitates development of a SWPPP and BMPs to minimize erosion, sedimentation, and stormwater runoff.
- All projects and actions, including the Little Missouri River Crossing project, are required to control the spread of noxious weeds and aquatic invasive species in accordance with NDCC Chapters 4.1-47-02 and 20.1-17, respectively.
- Typically, projects and actions occurring on federally managed lands, including the Little Missouri River Crossing project, include equipment cleaning and inspection prior to use on federally managed lands to prevent the introduction and spread of noxious and invasive species.
- Any projects and actions occurring on USFS-managed lands, including the Little Missouri River Crossing project, are required to coordinate with the USFS to avoid, minimize, and obtain approval for impacts on USFS-designated sensitive plant species.

Because Alternative A is not anticipated to impact raptor species given special consideration in the DPG Land and Resource Management Plan, cumulative effects on these species are not anticipated under Alternative A.

Because the alternatives are not anticipated to impact wildlife species of concern, cumulative effects on these species are not anticipated.

7.5.7. Historic and Archaeological Preservation/Cultural Resources

Archaeological evidence indicates that big game hunting Native Americans were present in North Dakota approximately 10,000 years ago, with hunter-gatherer and agricultural settlements beginning around 2000 Before Common Era. European explorers and fur traders reached North Dakota in the mid-1700's. With the arrival of settlers and an increase in military interventions in the mid 1800's, traditional Native American ways of life were lost by the end of the century. Settlers established railroads, towns, homesteads, and other developments. Theodore Roosevelt came to western North Dakota in 1883 to ranch, where he established the Elkhorn Ranch as the center of his ranching operation. The Great Depression of the 1930's forced many farmers to abandon their farms for cities or other states. Recovery after World War II saw development of dams and reservoirs, oil and coal mining, and communication and transportation systems (Remele Undated, Theodore Roosevelt Medora Foundation 2013). Evidence of North Dakota's human history is scattered across the landscape. The State Historical Society of North Dakota, various Tribal Historic Preservation Offices, and the ACHP, are responsible for identifying, recording, and preserving prehistoric cultural resources, and historic structures and sites across the state.

Alternative A would directly impact one site that is *Eligible* for listing on the NRHP and up to four sites that are currently *unevaluated* (i.e., potentially *Eligible*) for listing on the NRHP. Past, present, and reasonably foreseeable projects and actions (e.g., oil and gas developments, gravel pit, water pipeline, roadway projects) would also impact *Eligible* sites. Therefore, a minor adverse cumulative effect is anticipated. Any projects with federal involvement, including the Little Missouri River Crossing project, are required to coordinate with the NDSHPO, Tribal Historic Preservation Office(s), and/or ACHP, as appropriate, to avoid, minimize, and/or mitigate impacts on sites *Eligible* for listing on the NRHP.

Because Alternative K (all options) is not anticipated directly impact any sites that are *Eligible* for listing on the NRHP, cumulative effects on sites that are *Eligible* for listing on the NRHP are not anticipated under Alternative K (all options).

The alternatives would not result in direct impacts on the Theodore Roosevelt Elkhorn Ranch and Greater Elkhorn Ranchlands National Historic District. The alternatives would not be visible from the National Historic District, including the Elkhorn Ranchlands, TRNP—Elkhorn Ranch Unit, or Elkhorn Ranch Headquarters, and the alternatives would not alter the viewshed or diminish the integrity of the view from the National Historic District. The alternatives may result in negligible or minor indirect impacts to the National Historic District as a result of fugitive dust emissions from construction activities and/or vehicles travelling along the roadway; however, due to the distance between the National Historic District and the alternatives, fugitive dust emissions are not anticipated to alter the viewshed or diminish the integrity of the view from the National Historic District. Because the alternatives are not anticipated to directly or indirectly alter the viewshed or diminish the integrity of the view from the National Historic District, including the Elkhorn Ranchlands, TRNP—Elkhorn Ranch Unit, or Elkhorn Ranch Headquarters, cumulative effects on the National Historic District are not anticipated.

7.5.8. Visual

Naturally occurring visual resources that contribute to the visual character of western North Dakota include rolling hills, grasslands, buttes, Badlands, wooded draws, drainages and rivers, and wildlife. Since their arrival, humans have introduced cultural visual resources and altered the visual character with features such as buildings, railroads, roadways, bridges, fences, utilities, and industrial developments. The impacts that changes to visual resources have on the visual quality of a particular viewshed depend on the existing visual character of the viewshed and the perspective of the viewer. Visual quality associated with USFS- and NPS-managed lands in the Badlands is afforded protection against changes in visual character. While it is anticipated that human development and activities will continue to slowly alter visual resources in western North Dakota, the overall visual quality of the rural setting is anticipated to persist into the future.

The alternatives would be visible from the vantage points of a seasonal residence under Alternative A or one of two farmsteads under Alternative K (all options). Past, present, and reasonably foreseeable projects and actions (e.g., oil and gas developments, roadway projects) may also be visible from these vantage points. Therefore, a minor adverse cumulative effect may occur. Typically, projects occurring on federally managed lands, particularly those associated with visual resources of concern, including the Little Missouri River Crossing project, include context-sensitive design solutions to blend infrastructure into the surrounding environment.

Because the alternatives are attributed to very minimal light pollution from headlights, cumulative effects on natural nightscapes and natural night skies are not anticipated.

The alternatives would not be visible from the National Historic District, including the Elkhorn Ranchlands, TRNP—Elkhorn Ranch Unit, or Elkhorn Ranch Headquarters, and the alternatives would not alter the viewshed or diminish the integrity of the view from the National Historic District. The alternatives may result in negligible or minor indirect impacts to the National Historic District as a result of fugitive dust emissions from construction activities and/or vehicles travelling along the roadway; however, due to the distance between the National Historic District and the alternatives, fugitive dust emissions are not anticipated to alter the viewshed or diminish the integrity of the view from the National Historic District. Because the alternatives are not anticipated to directly or indirectly alter the viewshed or diminish the integrity of the view from the National Historic District, including the Elkhorn Ranchlands, TRNP—Elkhorn Ranch Unit, or Elkhorn Ranch Headquarters, cumulative effects on visual resources of concern are not anticipated.

The alternatives would result in temporary visual impacts along the alternatives during construction activities consisting of fugitive dust emissions. Past, present, and reasonably foreseeable projects and actions (e.g., oil and gas development, gravel pit, roadway maintenance) would also result in temporary visual impacts during construction activities. Therefore, a minor adverse cumulative effect is anticipated. Most projects, including the Little Missouri River Crossing project, would be required to obtain an NDPDES permit (or would opt to obtain a permit voluntarily, as with many oil and gas projects) in accordance with the CWA, which necessitates development of BMPs to minimize fugitive dust.

Chapter 8. Public Involvement & Outreach

This chapter includes a detailed description of the public involvement and outreach efforts conducted for the project, including early project scoping, alternatives workshops, and public hearings. This chapter also includes a description of the lead, cooperating, and participating agencies, as well as other consulting agencies and public interest groups.

8.1. Why is there public involvement and agency coordination?

SAFETEA-LU includes guidance on linking planning and NEPA such that transportation decision-making considers environmental, community, and economic goals early in the project planning stage, throughout project development and design, and ultimately for construction. This process encourages greater public involvement and agency coordination on a broader, ecosystem-level perspective rather than on an individual basis.

Public involvement and agency coordination begin in the planning phase and end after construction. It is intended to assist in understanding the transportation facility and the proposed project, as well as any potential social, economic, and environmental effects that could be caused by the proposed project. It is also a tool to encourage input and provides the decision-makers valuable information to be considered in the process.

FHWA invites public participation throughout the EIS process. Consideration of the views and information of all interested parties promotes open communication and enables effective decision-making. All federal, state, and local agencies; special interest groups, committees, and associations; and members of the public with interest in the project are encouraged to participate in the decision-making process.

8.2. Lead, Cooperating, and Participating Agencies

8.2.1. What is the role of the lead agencies?

The role of the lead agencies (i.e., FHWA, NDDOT, and Billings County) includes identifying the cooperating and participating agencies through formal invitations; developing the Coordination Plan; and collaborating with the cooperating and participating agencies in development of the project's purpose and need, methodologies for the alternatives analysis, and range of reasonable alternatives. The lead agencies will also provide final approval of the project's purpose and need, methodologies for the alternatives analysis, range of reasonable alternatives, and the Preferred Alternative. FHWA will provide final approval of the Draft EIS, Final EIS, and ROD.

Billings County is also the project sponsor and is funding the environmental process and preliminary engineering. Funding for construction of the new bridge and associated roadway improvements may be provided from the federal and/or state government and Billings County. Major county routes are eligible for federal funding of eligible costs, typically up to 80 percent, with the remaining 20 percent of funding coming from the county. Federal funds have not been specifically designated towards the project at this time. Non-federal aid routes are funded by the county and/or state. These funding sources reflect user taxes collected and dedicated to these types of projects. No new taxes are proposed as a result of the project.

8.2.2. What is the role of the cooperating agencies?

The cooperating agencies (i.e., USACE–North Dakota Regulatory Office and USFS–DPG) participate in the NEPA process at numerous points throughout project development and may adopt the lead agencies' EIS without recirculating the document. The role of the cooperating agencies includes the following:

- Participating in the scoping process, development of the project's purpose and need, refinement of the methodologies for the alternatives analysis, and the determination of the range of reasonable alternatives and level of design detail for the Preferred Alternative.
- Reviewing the Draft EIS.
- Adopting the Final EIS without recirculating the document, if appropriate.
- Developing information and preparing a portion of the EIS for which the agency has special expertise, if appropriate.

8.2.3. What is the role of the participating agencies?

The participating agencies for the project are as follows:

- NPS – TRNP
- North Dakota Department of Emergency Services (Department of Homeland Security)
- NDDH
- NDGFD
- NDPRD
- NDSHPO
- NDSWC
- TCC
- US Department of Agriculture – NRCS
- USEPA – Region 8
- USFWS – North Dakota Field Office.

The participating agencies do not provide any project approvals; however, they participate in the NEPA process at several points throughout project development. The role of the participating agencies includes the following:

- Participating in the scoping process, development of the project's purpose and need, refinement of the methodologies for the alternatives analysis, and the determination of the range of reasonable alternatives and level of design detail for the Preferred Alternative.
- Reviewing the Draft EIS.
- Identifying issues of concern regarding potential impacts on environmental, socioeconomic, and human-made resources.
- Participating in the issue-resolution process.
- Providing input on unresolved issues.

When project milestones are reached, meeting(s) may be held with the participating agencies (lead and cooperating agencies are also encouraged to attend) to fulfill the requirements of Section 6002 of SAFETEA-LU. Additionally, participating agencies are invited to attend all public workshop(s) and public hearing(s).

8.2.4. What is the TCC, and how is coordination conducted with Tribes?

The Tribal Consultation Committee (TCC) is the mechanism by which the individual Tribes choose to consult. The Tribes, through the TCC, are considered consulting parties as defined in 54 U.S.C. 302706(b), which requires federal agencies to consult with any Tribe that attaches religious and cultural significance to properties that may be determined *Eligible* for inclusion on the NRHP. For this project, the NDDOT and FHWA are the lead agencies for the Section 106 process, with each of the cooperating agencies (i.e., USACE and USFS) having a greater role in the process to ensure that all of the Section 106 requirements are met. The NDDOT and FHWA established a Programmatic Agreement (November 2006, revised September 2014) regarding consultation for all NDDOT projects and programs with the following Tribes:

- Fort Peck Assiniboine and Sioux Tribes
- Turtle Mountain Band of Chippewa Indians
- Mandan, Hidatsa, and Arikara Nation
- Spirit Lake Sioux Nation
- Sisseton-Wahpeton Oyate
- Standing Rock Sioux Tribe
- Northern Cheyenne Nation
- Crow Nation
- Lower Sioux Indian Community
- Santee Sioux Nation
- Wahpekute Band of Dakotah
- Omaha Tribe of Nebraska[1]

Additionally, the Crow Creek Sioux Tribe, Rosebud Sioux Tribe, Oglala Sioux Tribe, Cheyenne River Sioux Tribe, Yankton Sioux Tribe, Flandreau Santee Sioux Tribe, and Gros Ventre and Assiniboine of the Fort Belknap Indian Community participated in the meetings, but are not signatories to the Programmatic Agreement. All of the aforementioned Tribes have expressed concern and have requested to be consulted on transportation projects in North Dakota.

The FHWA is the federal agency with statutory responsibilities for administering the Federal Aid Highway Program under Title 23 U.S.C. 101 *et seq*, and the NDDOT is the applicant for federal funds for highway construction projects in North Dakota. The NDDOT, on behalf of the FHWA, agrees to coordinate under a government-to-government relationship with federally recognized Tribal government officials or appointees with regard to federal responsibilities under Section 106 of the NHPA through the terms of the Programmatic Agreement. This does not replace the requirement for the FHWA to consult under EO 13175. Consultation under Section 106 of the NHPA by the NDDOT does not replace the FHWA's responsibilities with regard to government-to-government consultation. The FHWA participates in all TCC meetings on their own behalf. The NDDOT will consult with the Tribal Historic Preservation Officers or those designated by the Tribal government to manage or advise on matters pertaining to cultural resources.

The TCC, as initiated through the Programmatic Agreement, is made up of representatives appointed by each Tribe, as well as FHWA and NDDOT representatives. The TCC was formed by the Tribes, NDDOT, and FHWA to facilitate effective and culturally sensitive discussion of NDDOT and FHWA projects and processes related to cultural resources issues in transportation in North Dakota. It also streamlines the consultation process and expedites informed Tribal project review.

1 The Omaha Tribe of Nebraska signed the September 2014 Programmatic Agreement in support of the other Tribes, but did not intend to attend the TCC meetings regularly.

This consultation process is a vehicle through which the NDDOT, FHWA, and federally recognized Tribes consult with regard to Section 106 of the NHPA and achieve the following:

- Define identification needs
- Gather information relative to resources of importance to the Tribes
- Evaluate these resources, as needed
- Discuss effects and methods to avoid and minimize effects, and if needed, to resolve adverse effects
- Define post review concerns and construction monitoring needs
- Develop project discovery plans

Working through the TCC has allowed a clearer understanding of relevant issues and concerns, which results in more effective cultural resources management. The TCC meetings are typically held twice a year, in April and September. This project has been discussed at each TCC meeting (with all of the Tribes that attend the meetings) since April 2007 and will continue to be discussed at TCC meetings until the issuance of a ROD for the project.

8.3. Public and Agency Coordination Efforts

This section provides information on the public and agency involvement efforts required for the project: scoping letters (i.e., " solicitation of views"), scoping meetings, alternatives workshops, newsletters, and public hearings. Since the project began, information regarding the project has been provided on the project Website (http://www.billingscountynd.gov/klj/index.html).

The NDDOT commonly refers to scoping letters as solicitation of views.

8.3.1. Solicitation of Views

8.3.1.1. What is the purpose of the solicitation of views?

The solicitation of views process ensures that the scope of the project is made known to other jurisdictions and government agencies. It ensures that they have an opportunity to comment on the project's impacts on the human, natural, and physical environment.

The purpose of the solicitation of views for this project was to obtain information regarding the resources the entities manage and/or the properties the entities may own or have interest in that would be adjacent to the project. In addition, the notification letters (i.e., solicitation of views) requested information regarding future developments proposed by the entities that could be in the areas under consideration for the project.

8.3.1.2. How was the solicitation of views process conducted for the project?

The lead agencies provided early notification to, and solicited the view and comments of, several federal, state, and local agencies; special interest groups; committees; and associations on February 19 and May 14, 2007, and May 30, 2012. In addition, solicitation of views from the NDSHPO was conducted between June 3, 2012, and December 29, 2017. Copies of the letters are provided in **'Appendix B. Solicitation of Views Materials'**.

- February 19, 2007 – First round of notification letters included a brief description of the project and the 2006 study area.
- May 14, 2007 – Second round of notification letters mailed to interested parties in response to public and agency input. Notification letters included a brief description of the project and the revised (2008) study area.
- May 30, 2012 – Third round of notification letters mailed to interested parties in response to public and agency input. Notification letters included a brief description of the project and alternatives and revised (current) study area.
- June 3, 2012, to December 29, 2017 – Several notifications and correspondence mailed to the NDSHPO. Letters included initiation of consultation, consultation, text excavation plan, and discovery plan.

On February 20, 2007, the lead agencies also provided early notification to, and solicited the view and comments of, the Tribes. Copies of the notification letters are provided in **'Appendix G. Tribal Consultation Committee Materials'**.

8.3.2. Scoping Meetings

8.3.2.1. What is the purpose of the scoping process?

Public scoping is a requirement of NEPA of 1969, as amended (40 CFR 1501.7), and SAFETEA-LU (Section 6002), which requires that lead agencies establish a plan for coordinating public and agency participation and comment during the environmental review process. Scoping is a term used by the CEQ in their regulations implementing NEPA to define the early and open process for determining the extent or 'scope' of issues to be addressed in an EIS.

The purpose of the scoping process is to initiate early communication, inform the public and agencies about the project, help develop the project's purpose and need, and gather feedback regarding the overall project. The scoping process for the project included efforts to engage both members of the public (e.g., citizens, elected officials, and key stakeholders), as well as federal, state, and local agencies during the early stages of the EIS development.

The scoping process for the project was initiated with publication of the first NOI in the *Federal Register* on October 12, 2006. Please refer to **'Appendix A. Notices of Intent'**.

8.3.2.2. When were the scoping meetings?

One agency and two public scoping meetings were held for the project in 2007 and are summarized as follows. In addition, a 30-day comment period was held from March 5 to March 26, 2007.

Agency Scoping Meeting

- March 5, 2007, from 1:15 p.m. to 3:45 p.m. at the Best Western Doublewood Inn (1400 East Interchange Avenue) in Bismarck.
  - » Attendees: FHWA, NDDOT, Billings County, KLJ, USACE, USFS, NPS, USFWS, NDDH, NDGFD, NDPRD, NDSHPO, NDSWC.

Public Scoping Meetings

- March 5, 2007, from 5:00 p.m. to 7:00 p.m. at the Best Western Doublewood Inn (1400 East Interchange Avenue) in Bismarck, and March 12, 2007, from 5:00 p.m. to 7:00 p.m. at the North Dakota Cowboy Hall of Fame (250 Main Street) in Medora.
  - » Invitations to participate in the public scoping meetings were provided via newspaper advertisement, press release, and property owner notice, as appropriate. Newspaper advertisements were published on the project Website and in the *Billings County Pioneer* – March 1, 2007; *Dickinson Press* – February 18, 2007; and *Bismarck Tribune* – February 22, 2007.
  - » There were 48 attendees at the public scoping meeting in Bismarck and 82 attendees at the public scoping meeting in Medora.

The scoping meetings were held to achieve the following:

- Identify and discuss the roles of the lead, cooperating, and participating agencies.
- Describe the project and 2006 study area, including the current status and goals of the project.
- Provide a listing of the major milestones for the project and an overview of the EIS and SAFETEA-LU processes.
- Explain the purpose and need and preliminary project concerns, issues, and benefits.
- Provide information and directions for agency coordination and public input and involvement.

The public scoping meetings included open houses, at which members of the public could directly ask questions and discuss the project with the project team. In addition, map boards showing the project location and 2006 study area were displayed; information on the project, public scoping meetings, and public participation were provided; and written comment forms were made available. The meeting materials and newspaper affidavits are provided in **'Appendix C. 2007 Scoping Meeting Materials'**.

During the scoping meetings and 30-day comment period, several comments were received regarding the 2006 study area. Commenters stated that the southern boundary of the study area should be moved north, up to the northern border of the TRNP – South Unit, so that the TRNP – South Unit is no longer included in the study area. In response to these comments, the 2006 study area was revised accordingly.

8.3.3. Alternatives Workshops

8.3.3.1. What is the purpose of the alternatives workshops?

Alternatives workshops are conducted in accordance with SAFETEA-LU (Section 6002), which requires that lead agencies establish a plan for coordinating public and agency participation and comment during the environmental review process and provide early opportunities for public input on alternatives to be considered. The purpose of the alternatives workshops for this project was to inform agencies and the public about the project, including the purpose and need and current status of the project; discuss the alternatives methodology; describe potential alternatives being considered; and obtain input from agencies and the public.

8.3.3.2. When were the alternatives workshops?

Agency and public alternatives workshops were held for the project in 2008 and 2012 and are summarized as follows. In addition, two 30-day comment periods were held from July 17 to August 22, 2008, and June 5 to June 22, 2012.

Agency Alternatives Workshops

- July 22, 2008, from 1:30 p.m. to 3:30 p.m. at the Best Western Doublewood Inn (1400 East Interchange Avenue) in Bismarck.
  - » Attendees: FHWA, NDDOT, KLJ, USACE, USFS, NPS, USFWS, NDGFD, NDPRD, NDSHPO.
- May 23, 2012, from 1:30 p.m. to 3:30 p.m. at KLJ (4585 Coleman Street) in Bismarck.
  - » Attendees: FHWA, NDDOT, KLJ, USACE, USFS, NPS, USEPA, USFWS, NDDH, NDGFD, NDPRD, NDSHPO.

Public Alternatives Workshops

- July 17, 2008, from 5:00 p.m. to 7:00 p.m. at the North Dakota Cowboy Hall of Fame (250 Main Street) in Medora, and July 22, 2008, from 5:00 p.m. to 7:00 p.m. at the Best Western Double Inn (1400 East Interchange Avenue) in Bismarck.
  - » Invitations to participate in the public alternatives workshops were provided via newspaper advertisement, press release, and property owner notice, as appropriate. Newspaper advertisements were published on the project Website and in the *Billings County Pioneer* – July 3, 2008*; Dickinson Press* – July 2, 2008*;* and *Bismarck Tribune* – July 3, 2008.
  - » There were 41 attendees at the public alternatives workshop in Medora and 44 attendees at the public alternatives workshop in Bismarck.
- June 5, 2012, from 5:00 p.m. to 7:00 p.m. at the Kelly Inn (1800 North 12th Street) in Bismarck, and June 7, 2012, from 5:00 p.m. to 7:00 p.m. at the North Dakota Cowboy Hall of Fame (250 Main Street) in Medora.
  - » Invitations to participate in the public alternatives workshops were provided via newspaper advertisement, press release, and property owner notice, as appropriate. Newspaper advertisements were published on the project Website and in the *Billings County Pioneer* – May 17, 2012 and *Bismarck Tribune* – May 17, 2012.
  - » There were 49 attendees at the public alternatives workshop in Bismarck and 73 attendees at the public alternatives workshop in Medora.

The 2008 agency and public alternatives workshops were held to achieve the following:

- Describe the project and 2008 study area.
- Discuss the purpose and need, alternatives methodology, and range of reasonable alternatives under consideration.
- Identify the next steps in the EIS process.
- Provide information and directions for agency coordination and public input and involvement.

The 2008 public alternatives workshops included open houses, at which members of the public could directly ask questions and discuss the project with the project team. In addition, map boards showing the project location and 2008 study area were displayed; information on the project, public scoping meetings, alternatives workshops, and public participation was provided; and written comment forms were made available. The meeting materials and newspaper affidavits are provided in **'Appendix D. 2008 Alternatives Workshop Materials'**.

During the 2008 public alternatives workshops and 30-day comment period, several comments were received regarding the 2008 study area. Commenters stated that the northern boundary of the study area should be moved north, up to the southern border of the TRNP – North Unit (to include McKenzie County), so that there could be a wider range of reasonable alternatives considered. In response to these comments, the 2008 study area was revised accordingly. In addition, the TRNP – Elkhorn Ranch Unit was excluded from the study area.

Additional comments were received regarding the three build alternatives presented during the 2008 public alternatives workshops (i.e., Alternatives B, C, and D). Commenters opposed these three build alternatives due to their proximity to the TRNP – Elkhorn Ranch Unit and Elkhorn Ranchlands. In response to these comments, and due to other engineering issues, these alternatives were eliminated from further detailed analysis.

The 2012 agency and public alternatives workshops were held to achieve the following:

- Describe the project and current study area.
- Discuss the purpose and need, alternatives methodology, and alternatives under consideration.
- Identify the next steps in the EIS process.
- Provide information and directions for agency coordination and public input and involvement.

The public alternatives workshops included open houses, at which members of the public could directly ask questions and discuss the project with the project team. In addition, map boards showing the project location and current study area were displayed; information on the project, public scoping meetings, alternatives workshops, and public participation were provided; and written comment forms were made available. The meeting materials and newspaper affidavits are provided in **'Appendix E. 2012 Alternatives Workshop Materials'**.

Numerous comments received throughout the scoping, public alternatives workshop, and 30-day comment periods were in regard to potential impacts on the scenic quality and serenity of the Badlands, TRNP (particularly the Elkhorn Ranch Unit), Elkhorn Ranchlands, and Theodore Roosevelt Elkhorn Ranch and Greater Elkhorn Ranchlands National Historic District. Commenters stated that increased noise and fugitive dust from increased traffic through the area would adversely affect the viewshed, and historical and recreational aspects of the area. In response to these comments, a viewshed analysis was completed to determine potential impacts on the viewshed from the Elkhorn Ranchlands, TRNP – Elkhorn Ranch Unit, Elkhorn Ranch Headquarters, and National Historic District. A SPreAD analysis was also conducted to determine potential noise propagation from the roadway to the surrounding environment, particularly to the TRNP – Elkhorn Ranch Unit, Elkhorn Ranchlands, and National Historic District.

8.3.4. Newsletters

Newsletters have also been submitted to interested parties since the project began: in April 2008, July 2008, November 2008, May 2012, December 2014, March 2015, May 2015, and August 2015. The newsletters included general project information; project updates; and a brief explanation of, and upcoming steps in, the EIS process. Future public meetings were advertised and past meetings were summarized, along with revised study area maps and identified alternative routes. The newsletters also included comment deadlines and details on the location where interested parties could find more information on the project. Copies of the newsletters are provided in **'Appendix F. Newsletters'**.

8.3.5. Public Hearings

8.3.5.1. What is the purpose of the public hearings?

Public hearings are held to present and discuss the proposed project, the project's purpose and need, alternatives being considered for the project, and the potential social, economic, and environmental impacts from implementing the alternatives.

8.3.5.2. When is the public hearing?

The Notice of Availability (NOA) of the Draft EIS for review and comment will be published in the *Federal Register*. Following publication of the NOA, two public hearings will be held in Medora and Bismarck. In addition, a 45-day comment period will be held to allow agencies and the public to review and comment on the Draft EIS. All comments received during the Draft EIS comment period will be addressed in the Final EIS; however, not all comments will warrant a revision to the document.

8.3.6. Other Miscellaneous Meetings

In addition to the aforementioned public and agency meetings and workshops, a Little Missouri Scenic River Commission meeting was held for the project.

8.3.6.1. What was the purpose of the Little Missouri Scenic River Commission meeting?

The *Little Missouri State Scenic River Act* (NDCC 61-29) is administered by a Little Missouri Scenic River Commission composed of the director of the NDPRD, state health officer of the NDDH, and chief engineer of the NDSWC (or their designated representatives) and one member from each of the following counties: McKenzie, Billings, Slope, Golden Valley, Dunn, and Bowman. The county representatives appointed must be resident landowners who live adjacent to the Little Missouri River, with exception to the Golden Valley County representative.

The Little Missouri Scenic River Commission may advise local or other units of government to afford the protection adequate to maintain the scenic, historic, and recreational qualities of the Little Missouri River and its tributary systems (NDCC 61-29).

Numerous comments were received during the public and agency scoping meetings regarding the project's compliance with the *Little Missouri State Scenic River Act*. Therefore, KLJ requested a meeting with the Little Missouri Scenic River Commission to discuss the project and alternatives.

On August 29, 2007, the Little Missouri Scenic River Commission held a meeting in Dickinson. During the meeting, KLJ gave a presentation on the project that included a background on the river crossing; review of the existing crossings in the field, public and agency scoping meetings, and range of reasonable alternatives; and project status update.

The specific purpose of the meeting was to obtain guidance from the Little Missouri Scenic River Commission on whether or not the proposed bridge alternatives would comply with the Little Missouri State Scenic River Act. The bridge alternatives proposed at that time (in 2007) included: (1) concrete plank, (2) low-water crossing, (3) box culvert, and (4) bridge.

- Concrete Plank – KLJ noted during the meeting that this type of crossing would not meet the project's purpose and need. Commission members expressed concern as to the number

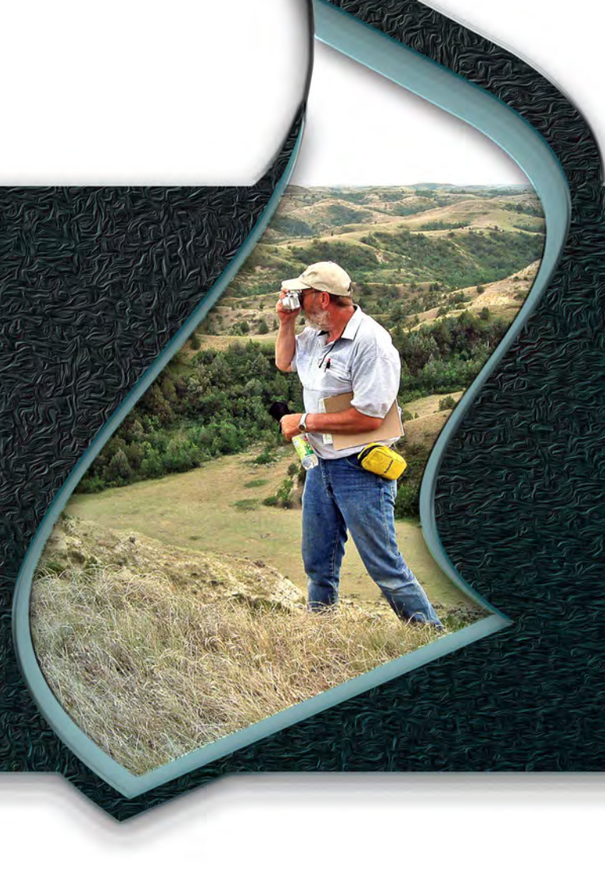
of vehicles that could get stuck attempting to cross the river on this type of crossing and whether or not the planks would move over time.

- Low-water Crossing– A permit from the Little Missouri Scenic River Commission would be required for this type of crossing. During the meeting, the Commission noted that the State Engineer would determine whether or not this structure would be an impoundment on the river. If the State Engineer determined that this structure was not in compliance with the *Little Missouri State Scenic River Act* from an impoundment standpoint, the Commission would not be able to issue a permit.
- Box Culvert – During the meeting, the Commission expressed concern regarding the ability to maintain this type of crossing from obstructions becoming lodged in the box culvert. KLJ noted that the NDPRD had concerns regarding canoeists having enough clearance to travel on the river without added obstruction.
- Bridge– It was noted during the meeting that this type of structure would provide a reliable, year-round crossing of the river, except in extreme precipitation events.

The Commission was in consensus that none of the proposed crossing alternatives presented during the meeting would be in violation of the *Little Missouri State Scenic River Act*.

After release of the Draft EIS to the public for review, the Little Missouri Scenic River Commission is planning to hold another meeting; whereby, the NDDOT will give another presentation on the project.

Chapter 9. Preparers and Contributors



In accordance with the regulations of the CEQ (40 CFR § 1502.6), the efforts of an interdisciplinary team comprising technicians and experts in various fields were required to accomplish this study. This chapter includes the names, titles, and roles of the principal individuals contributing information to this EIS.

9.1. Preparers and Contributors

This EIS was prepared by KLJ under a contractual agreement with Billings County. A list of individuals with the primary responsibility of contributing to this study, preparing the documentation, and providing technical reviews is contained **Table 27**. Please refer to **'Table 27, Preparers and Contributors'**.

Table 27, Preparers and Contributors

AFFILIATION	NAME	TITLE	PROJECT ROLE
Federal Highway Administration	Richard Duran	Environmental and Planning Specialist	NEPA Compliance
	Gary Goff	Transportation Engineer	Project Coordination and Document Review
	Sheri Lares (past)	Environmental Program Manager and Planning Specialist	Coordination, Document Review
	Keith Moore	Environmental Program Specialist	NEPA Compliance
	Mark Schrader (past)	Environmental Engineer	Project Coordination and Document Review
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North Dakota Department of Transportation	Jeani Borchert	Cultural Resources	Cultural Resources Coordination and Review, Tribal Coordination
	Robert Christensen	Cultural Resource Section Leader	Cultural Resources Coordination and Review
	Bryon Fuchs, PE	Technical Support	Project Coordination, Document Review
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	Paul Moch	Environmental Scientist	Document Review
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Billings County	Jim Arthaud	County Commissioner	Document Review

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AFFILIATION	NAME	TITLE	PROJECT ROLE
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	Becky Baker	Environmental Planner	EIS Author, Section 4(f), Noise Analysis
	Jamie Bents (past)	Environmental Planner	Noise Study and Report
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	Skip Skattum (past)	GIS Analyst	Impact Assessment, Exhibit Creation, Noise Study and Report
	Kayla Torgerson (past)	Environmental Planner	Impact Assessment, Agency Coordination
	Jen Turnbow	Project Manager	Project Development and Management, Agency and Public Involvement, EIS Author
	Darrell Vanderbusch (past)	Soil Scientist	Wetland Delineation
	Grady Wolf	Environmental Planner	Project Development

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Abbreviations & Acronyms

Symbols

$\mu g/m^3$ (micrograms per cubic meter) 56

A

AAQM (Ambient Air Quality Monitoring) 56
AASHTO (American Association of State Highway and Transportation Officials) 23
ACBMs (asbestos-containing building materials) 115
ACHP (Advisory Council on Historic Preservation) 19, 82
ACS (American Community Survey) 54
ADT (average daily traffic) 60
ALS (Advanced Life Support) 14
ATS (American Trauma Society) 14

B

BCE (Before Common Era) 138
BCRF (Billings County Rural Fire Protection District) 14
BGEPA (Bald and Golden Eagle Protection Act) 78
BLM (Bureau of Land Management) 14
BLS (Basic Life Support) 14
BMPs (best management practices) 40

C

CAA (Clean Air Act) 55
CCC (Civilian Conservation Corps) 16
CEQ (Council on Environmental Quality) 17
CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act) 114
CFR (Code of Federal Regulations) 17
CH_4 (methane) 57
CMC (County Major Collector) 138
CO_2 (carbon dioxide) 57
CO (carbon monoxide) 55
CWA (Clean Water Act) v, 66

D

dBA (A-weighted decibels) 59, 139
dB (decibels) 60
de minimis ("about minimal things"; lacking significance or importance; so minor as to merit disregard) 129
DHHS (US Department of Health and Human Services) 153
DPG (Dakota Prairie Grasslands) 9, 138

E

EA (Environmental Assessment) 9
e.g. (*exempli gratia*, "for example") 7
EIS (Environmental Impact Statement) III, iii, 3
EOs (Executive Orders) 3
E&P (exploration and production) 114
ESA (Endangered Species Act) vi, 75
et al. ("and others") 14
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