



Department of  
Commerce

National  
Telecommunications  
and Information  
Administration

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# Environmental Assessment

## Standing Rock Tribal Broadband Project: Black Horse Butte, Little Eagle SE, Morristown SE, and SW Solen Antenna Towers

**Corson County, South Dakota and Sioux County, North Dakota  
Standing Rock Indian Reservation**

Black Horse Butte: NE  $\frac{1}{4}$  SW  $\frac{1}{4}$ , Section 7, T20N, R23E, Corson County, SD  
Little Eagle SE: NW  $\frac{1}{4}$  SE  $\frac{1}{4}$ , Section 20, T19N, R27E, Corson County, SD  
Morristown E: N  $\frac{1}{2}$  NW  $\frac{1}{4}$  Section 28, T23N, R20E, Corson County, SD  
SW Solen: N  $\frac{1}{4}$ , Section 30, T133N, R81W, Sioux County, ND

### **Cooperating Agencies:**

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## 1.0 Executive Summary

The United States Department of Commerce, National Telecommunications and Information Administration Tribal Broadband Connectivity Program has awarded federal funding to Standing Rock Telecommunications Inc., to upgrade 15 existing tower sites to replace aging equipment and enable 4G/5G development, and to construct four new wireless towers to expand the range and strength of coverage throughout the service area on the Standing Rock Indian Reservation (Reservation).

The project will connect approximately 1,000 underserved tribal households with 50 megabytes per second (Mbps)/10 Mbps fixed wireless service. In addition, the construction of the four wireless towers will help to alleviate the current challenges faced by residents and first responders in accessing broadband services on the Reservation. Furthermore, the towers will serve as a valuable redundancy measure for Standing Rock Telecommunications, Inc.'s network by providing increased accessibility for potential fiber connectivity to enhance both the fixed wireless network and mobile broadband offerings in the area. In addition, the construction of the towers will alleviate congestion in tribal radio frequencies, preventing overuse and ensuring optimal performance. Ultimately, the construction of the four additional wireless towers will improve access to telehealth, remote learning, workforce development, e-commerce, and public safety for tribal members living on the Reservation.

An alternative to the Proposed Action was the No Action Alternative. Under the No Action Alternative, the four wireless towers would not be constructed, and residents of the Reservation would remain underserved in regard to wireless connectivity. The absence of the four new wireless towers would further the major challenges residents and first responders are currently experiencing with accessing broadband services in these remote locations. Of the two alternatives analyzed, the Proposed Action is found to best meet the purpose and need for action.

The significance of the Proposed Action has been analyzed based on the Council of Environmental Quality's regulations for implementing the National Environmental Policy Act context and criteria (Section 1508.27). As shown by the information and analysis presented herein, implementation of the Proposed Action would not significantly impact the overall quality of the human and natural environment. All beneficial and adverse impacts of the Proposed Action have been addressed to reach a conclusion of no significant impacts. Therefore, preparation of an environmental impact statement for this action is not necessary.

## 2.0 Purpose and Need

Standing Rock Telecommunications, Inc. was awarded grant funding under the United States (U.S.) Department of Commerce, National Telecommunications and Information Administration's (NTIA's) Tribal Broadband Connectivity Program, for a broadband infrastructure development project to be undertaken on the Standing Rock Indian Reservation (Reservation) in North and South Dakota (i.e., the Standing Rock Tribal Broadband Project). The purpose of the Standing Rock Tribal Broadband Project is to upgrade to 15 existing tower sites to replace aging equipment and enable 4G/5G development, and to construct four new wireless towers to expand the range and strength of coverage throughout the service area.

The need for the Standing Rock Tribal Broadband Project is to improve access to and use of broadband services among Standing Rock Sioux tribal members. The project would connect

approximately 1,000 underserved tribal households with 50 megabytes per second (Mbps)/10 Mbps fixed wireless service. In addition, the construction of the four wireless towers would help to alleviate the current challenges faced by residents and first responders in accessing broadband services on the Reservation. Furthermore, the towers would serve as a valuable redundancy measure for Standing Rock Telecommunications, Inc.'s network by providing increased accessibility for potential fiber connectivity to enhance both the fixed wireless network and mobile broadband offerings in the area. In addition, the construction of the towers would alleviate congestion in tribal radio frequencies, preventing overuse and ensuring optimal performance. Ultimately, the construction of the four additional wireless towers would improve access to telehealth, remote learning, workforce development, e-commerce, and public safety for tribal members living on the Reservation.

Under the National Environmental Policy Act (NEPA) of 1969, as amended, NTIA must review proposals for projects utilizing federal funding provided by the agency. Note, according to a January 2023 NTIA memorandum, the two main components of the Standing Rock Tribal Broadband Project have *independent utility*, and the proposed upgrades to the 15 existing tower sites can work as intended wholly separately from the proposed construction of the four new wireless towers, therefore the two components are to be analyzed separately for purposes of NEPA compliance (Pereira 2023). This environmental assessment (EA) will analyze the NTIA's potential approval of the proposed construction and maintenance of the four new wireless towers, including the direct, indirect, and cumulative impacts, in order for the NTIA to issue a determination of effect in compliance with NEPA. This NEPA review complies with the regulations of the Council on Environmental Quality (CEQ), 40 Code of Federal Regulations (CFR) parts 1500 through 1508.

### 3.0 Description of Proposed Action and Alternatives

#### 3.1. Introduction

This section provides information on the evaluation of the proposed construction and maintenance of the four new wireless towers on the Reservation. The development of the alternatives discussed below is directly related to the purpose and need for this EA.

#### 3.2. Proposed Action

Under the Proposed Action, four new wireless towers would be constructed to expand the range and strength of broadband coverage throughout the service area on the Reservation (see Figure 1, Vicinity Map). Generally, construction for each tower would include an approximately 100 foot by 100 foot "lease area" that would encompass a fenced 50 foot by 50 foot area where the tower would be located (i.e., "the compound"), an access road, a 20-30 foot by 100 foot gravel turnaround between the access road and lease area, and three fenced guy wire anchor points. A 30-foot utility easement would surround the access road, the three guy wire anchor points, and the areas running from the guy wire anchors to the lease area (see Figures 2a-2d, Site Plan; note Figures 2a-2d also offer an aerial view of each proposed site). Applicable utilities (e.g., electrical, broadband fiber, etc.) would be installed underground or aerially within the utility easement. The lease area, guy wire anchor points, access road, and associated utility easements would make up the "site" and all four sites would constitute the Project Area. Above-ground propane Generac Generators would be used as backup power systems. The towers would range in height from approximately 300-400 feet. Tower lighting would follow Federal Aviation Administration and Federal Communications Commission guidelines and LumenServe,

a tower lighting company, would maintain the tower lights, including keeping the lights in compliance with federal regulations. General construction for each site would take approximately 3 weeks; construction details applicable to all four sites are summarized below. In addition, specifics about each site, including site name, location, tower height, etc. are also described below.

### General Construction Details

Site preparation would generally include clearing trees, brush, and debris from each of the four sites. All waste materials, including but not limited to, stumps and debris would be removed from the Project Area and disposed of properly. For excavation and site grading, the contractor would excavate each site to the depth of approximately 6 feet (for the towers) and grades shown on the construction plans for that site. Standard industry practices for site preparation would be conducted including the use of excavators and trenchers. On-site materials or imported fill would be used for site grading. All finished surfaces would be graded to drain from the foundation, provide proper ditching and routing of surface water, and avoid ponding and erosion. Furthermore, all exposed soil would be properly reclaimed, reseeded with a native seed mix, and protected from erosion.

The 12-foot-wide access roads would only be graded, and no base material would be applied. The compound would be constructed using crushed aggregates, and/or other locally available and acceptable road base material.

A staging area would be used for the tower construction and be approximately 5 acres (within the tower footprint). All vegetation that was temporarily disturbed for the staging area would be properly reclaimed, revegetated by reseeded with a native seed mix, and protected from erosion. A concrete truck would be used to lay a concrete pad to serve as the tower foundation within the compound. A crane would be used to erect the tower, which would take approximately 3 days. Within 24 hours of the tower being erected, the compound would be fenced (permanently or temporarily) for security. The guy wire anchors would be installed at a minimum depth of 6 feet below the finished grade and the surrounding area would be fenced.

All utilities would be trenched along access roads within the 30-foot utility easement. Underground utilities at each tower site would be installed by either using a trencher, backhoe, or excavator. The excavation depth for the installation of the utilities would be less than 6 feet.

A communications hut would also be constructed consisting of a shelter with a concrete pad; the shelter would be approximately 10 feet by 12 feet.

The Project Area would be kept free from the accumulation of waste caused by the construction crews throughout the construction process. At the completion of the construction work, all waste and non-construction material would be removed; all four sites would be left clean and ready to use. In addition, a native seed mix would be planted, watered, and otherwise maintained at each site. All exposed areas of soil would be protected against washouts, minimize soil erosion, and stabilize slopes through the use of various mitigation measures (e.g., straw blankets, reseeded of vegetation, etc.; additional information on best management practices [BMPs] is further discussed below in Section 5.3, Geology and Soils). Final stabilization of revegetation would be considered achieved once 70% or more of the cover that was provided by vegetation native to local undisturbed areas is achieved, as defined by the USEPA 2022 Construction General Permit for Stormwater Discharges from Construction Activities (US EPA 2022). Following the 70% revegetation achievement, stormwater BMPs would be removed.

### Ongoing Maintenance

Generally, ongoing maintenance of the four new wireless towers would be completed on a three-year maintenance schedule. General maintenance could include checks on grounding, guy wire tension, and generator backup systems (i.e., propane); structural assessments; light replacement; and/or battery replacement. In addition, periodic maintenance (e.g., ensuring the power system is operational) would occur annually and mowing around the shelter and fencing (no herbicides) would occur as needed.

### Wireless Tower Site Specifics

#### *Black Horse Butte*

The Black Horse Butte site would be located approximately 15 miles south of McIntosh, SD, in the Northeast quarter (NE ¼) SW ¼, Section 7, Township 20 North (T20N), Range 23 East (R23E), Corson County, South Dakota (SD). The site, which includes the lease area, guy wire anchor points, access road, and associated utility easements, encompasses approximately 0.9-acre and would be located on allotted land. The approximate depth of excavation for the tower would be less than approximately 6 feet. The access road would run approximately 360-feet from SD State Highway 65 to the lease area. A culvert would be placed along the access road within the right-of-way for SD State Highway 65 to allow and facilitate the natural flow of drainage and existing topography, and a cattle guard would also be installed along the access road. The tower would be built to 304 feet, and the three guy wire anchors would be installed approximately 240 feet from the tower (see Figure 2a, Site Plan – Black Horse Butte).

#### *Little Eagle SE*

The Little Eagle SE site would be located approximately 6 miles southeast of Little Eagle, SD, in the NW ¼ SE ¼, Section 20, T19N, R27E, Corson County, SD. The site, which includes the lease area, guy wire anchor points, access road, and associated utility easements, encompasses approximately 1.5 acres and would be located on tribal trust land. The approximate depth of excavation for the tower would be less than approximately 6 feet. The access road would run approximately 155-feet and would be tied into an existing gravel drive that provides access to SD State Highway 63. The existing gravel drive would be improved as needed through gravel overlay. A cattle gate would be placed along the access road. The tower would be built to approximately 400 feet, and the three guy wire anchors would be installed approximately 320 feet from the tower (see Figure 2b, Site Plan – Little Eagle SE).

#### *Morristown E*

The Morristown E site would be located approximately 3 miles southeast of Morristown, SD, in the N ½ NW ¼ Section 28, T23N, R20E, Corson County, SD. The site, which includes the lease area, guy wire anchor points, access road, and associated utility easements, encompasses approximately 1 acre and would be located on allotted land. The approximate depth of excavation for the tower would be less than approximately 6 feet. The access road would run approximately 250-feet and would be tied into an existing gravel road (i.e., 223<sup>rd</sup> Avenue). The tower would be built to 304 feet, and the three guy wire anchors would be installed approximately 240 feet from the tower (see Figure 2c, Site Plan – Morristown E).

#### *SW Solen*

The SW Solen site would be located approximately 8 miles southwest of Solen, ND, in the N ¼, Section 30, T133N, R81W, Sioux County, North Dakota (ND). The site, which includes the lease area, guy wire anchor points, access road, and associated utility easements, encompasses



approximately 1.1 acres and would be located on tribal trust land. The approximate depth of excavation for the tower would be less than approximately 6 feet. The access road would run approximately 460-feet and would be tied into an existing gravel road (i.e., 76<sup>th</sup> Street SW). In addition, an approximately 300-foot long, 30-foot-wide utility easement would run west from the lease area to an existing overhead utility line located west of the site. An underground or aerial electrical utility conduit<sup>1</sup> is planned for that utility easement, which would be connected to the existing overhead utility line to provide power for the site. If the electrical utility requires an underground approach, then it will be laid with a trench and the potentially disturbed land is included in the approximate acreage noted above and is included in the planned ROW. The tower would be built to 304 feet, and the three guy wire anchors would be installed approximately 240 feet from the tower (see Figure 2d, Site Plan – SW Solen).

### 3.3. No Action Alternative

Under the No Action Alternative, the four wireless towers would not be constructed, and residents of the Reservation would remain underserved in regard to wireless connectivity. The absence of the four new wireless towers would further the major challenges residents and first responders are currently experiencing with accessing broadband services in these remote locations. Furthermore, the towers would serve as a valuable redundancy measure for Standing Rock Telecommunications, Inc.'s network and without the construction of the towers, the increased accessibility for potential fiber connectivity to enhance both the fixed wireless network and mobile broadband offerings in the area could not be realized. Lastly, the alleviation of congestion in local radio frequencies, which would prevent overuse and ensure optimal performance, would also not be realized. Under the No Action Alternative, there would be no changes to the status quo. Future use of the Project Area would be determined by the landowners.

### 3.4. Alternatives

Based on the purpose and need for the Standing Rock Tribal Broadband Project, a total of three alternatives were considered during the EA process:

1. Proposed Action Alternative: Construction and maintenance of four new wireless towers to expand the range and strength of broadband coverage throughout the service area on the Reservation.
2. Other Tower Locations: Other site locations on the Reservation would be used for the construction of the four wireless towers. This alternative presented issues with access and certain sites' abilities to best serve those areas in the utmost need.
3. No Action Alternative: The four wireless towers would not be constructed, and residents of the Reservation would remain underserved in regard to wireless connectivity.

While all three alternatives were considered, only the Proposed Action Alternative and the No Action Alternative are being carried forward for analysis in this EA. The "Other Tower Locations" alternative is further discussed below in Section 3.5, Alternatives Considered but Eliminated from Further Discussion.

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<sup>1</sup> Note that the original plan for this utility easement was utilizing an underground connection, however the project proponent has received additional information that the option to complete the connection via aerial may be possible.



### 3.5. Alternatives Considered but Eliminated from Further Discussion

One alternative, the Other Tower Locations alternative, was considered but eliminated from further discussion. Specifically, a total of four other locations on the Reservation were considered for siting the four wireless towers, in addition to the four locations presented under the Proposed Action. Determining potential tower sites required consideration of land ownership, Universal Mobile Telecommunications Service (UMTS) Received Signal Code Power (RSCP) predictions (i.e., the anticipated signal strength of an area), current land uses, ease of access, and the ability of the site to best serve those in the utmost need. Due mainly to access issues and/or the ability of a site to best serve those in utmost need, other potential tower locations were eliminated from further analysis.

For example, one particular site in the Other Tower Locations alternative that was considered but eliminated from further discussion, was due to the site being in an area that was defined as a “dead zone” for cellular mobility due to the terrain and deep isolation. Therefore, this site was eliminated because no provider would have had enough service to hold a call at that site. The other three sites in the Other Tower Locations alternative were eliminated due to no access to the sites and they were not in the area that was in a crucial need for coverage.

## 4.0 Description of the Affected Environment

The following section provides a detailed discussion on the various natural, cultural, and socioeconomic conditions in and around the Project Area as a whole and a finer scale look at each individual tower site. The discussion of the existing environment in this document is limited to the existing available information that directly relates to the location and the scope of the Proposed Action and alternatives analyzed.

### 4.1. Noise

Noise can be broken into two groups, ambient and anthropogenic. Ambient noise tends to be from natural sources such as wind and wildlife. Ambient noise levels in and around the general Project Area are primarily low and limited due to the rural nature of the Reservation (Standing Rock Sioux Tribe 2024). Additional detail of the ambient noise for each site are described below.

Anthropogenic noise sources are primarily the result of human activities. Anthropogenic noise sources have the highest potential to generate noise pollution and are further described below with the specification<sup>2</sup> noise levels for such equipment per Federal Highway Administration ([FHWA] 2017).

Anthropogenic potential noise from the construction of the four tower sites could include the following temporary noise:

- Mobile equipment (i.e., equipment that operates in a cyclic fashion in which a period of full power is followed by a period of reduced power), including earth moving equipment such as an excavator (85 decibels [dB]), a crane (85 dB), a trencher or other equipment greater than 5 horsepower (85 dB), haul or dump trucks (84 dB), a concrete mixer truck (85 dB), and passenger vehicles such as pickup trucks (55 dB).

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<sup>2</sup> The specification "Spec" limit for each piece of equipment expressed as an Lmax level in dBA "slow" at a reference distance of 50 foot from the loudest side of the equipment (FHWA 2017).

Anthropogenic potential noise from the operations of the four tower sites could include the following:

- Stationary equipment (i.e., equipment that generates noise from one general area), including a generator (81 dB per FHWA [ 2017]). Note that an above ground propane generator is anticipated to be used and is known to be the quietest and has an operational noise level of just 58 dBA (Reliable Power Systems 2024).
- Mobile equipment including passenger vehicles such as pickup trucks (55 dB).

No impact equipment (i.e., equipment that generates impulsive noise) is expected.

#### **Black Horse Butte**

The Black Horse Butte tower would be located in a rural area off of SD Highway (Hwy) 65 within what is now a cultivated field (Figure 1 and Figure 2a). There are no residential or commercial areas near or within a 1-mile radius of this tower. Possible sources of anthropogenic noise generation include agricultural activities in the immediate vicinity of the tower site and traffic along SD Hwy 65.

#### **Little Eagle SE**

The Little Eagle SE tower would also be located in a primarily rural area off of SD Hwy 63. However, it would be located within 1,000-feet of a residential building and agricultural operation. No other homes are located within 0.5-mile from the proposed tower location, although four homes are located a little more than 1 mile from the site (Figure 1 and Figure 2b). Cellular towers have been reported to generate measurable levels of noise, primarily from the air conditioner units and generators (Noise Engineers 2024).

#### **Morristown E**

The Morristown E tower would also be located in a primarily rural area just southeast of Morristown, SD (3-miles). This tower would also be located within 0.5-mile of a residence, railroad, and SD Hwy 12 (Figure 1 and Figure 2c).

#### **SW Solen**

The SW Solen tower would also be located within a primarily rural area. ND Hwy 6 is within 1-mile west of the tower site and three residences are located within 0.5-mile of the tower site (Figure 1 and Figure 2d).

### 4.2. Air Quality

The Clean Air Act (CAA) is a federal law that regulates air emissions from stationary and mobile sources. Current air quality conditions are described based upon any required attainment status for the National Ambient Air Quality Standards (NAAQS) identified under the CAA. Table 4-1 lists the NAAQS and their averaging time and form for meeting regulatory standards.

**Table 4-1 NAAQS**

Pollutant	Primary/Secondary	Averaging Time	Level	Form
Carbon Monoxide	Primary	8 hours	9 parts per million (ppm)	Not to be exceeded more than once per year
--	--	1 hour	35 ppm	--
Lead	Primary and Secondary	Rolling 3-month average	0.15 micrograms per cubic meter of air ( $\mu\text{g}/\text{m}^3$ )	Not to be exceeded
Nitrogen Dioxide	Primary	1 hour	100 parts per billion (ppb)	98 <sup>th</sup> percentile of 1-hour daily maximum concentrations, averaged over 3 years
--	Primary and Secondary	1 year	53 ppb	Annual mean
Ozone	Primary and Secondary	8 hours	0.070 ppm	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years
Particle Pollution (PM) <sub>2.5</sub>	Primary	1 year	9.0 $\mu\text{g}/\text{m}^3$	Annual mean, averaged over 3 years
--	Secondary	1 year	15.0 $\mu\text{g}/\text{m}^3$	Annual mean, averaged over 3 years
--	Primary and Secondary	24 hours	35 $\mu\text{g}/\text{m}^3$	98 <sup>th</sup> percentile, averaged over 3 years
PM <sub>10</sub>	Primary and Secondary	24 hours	150 $\mu\text{g}/\text{m}^3$	Not to be exceeded more than once per year on average over 3 years
Sulfur Dioxide	Primary	1 hour	75 ppb	99 <sup>th</sup> percentile of 1-hour daily maximum concentrations, averaged over 3 years
--	Secondary	3 hours	0.5 ppm	Not to be exceeded more than once per year

Source: United States Environmental Protection Agency (US EPA) 2024a

Formal emission inventories for the individual tower locations, including comprehensive air quality monitoring, have not been conducted. Additionally, emission inventories for the overall Project Area have also not been conducted. Both states of North Dakota and South Dakota operate ambient air monitoring networks of samplers that monitor for six commonly found air pollutants. These air pollutants are located all over the United States and generally include ozone, particulate matter, lead, carbon monoxide, nitrogen dioxide, and sulfur dioxide (US EPA

2023a). In general, the overall Project Area is rural in nature and located in an attainment area for all criteria pollutants (US EPA 2024b).

Historical air quality data for either state is not available; however, the State of South Dakota recently conducted a five-year air quality assessment, and the State of North Dakota conducts an annual air quality assessment. Based on the SD five-year review of air quality the State of South Dakota has generally good air quality with some exceptions at various monitoring sites (SD DENR 2020a). The nearest air quality monitoring site to the Reservation is the Aberdeen Site, which is located approximately 90 miles east of the Reservation. Although none of the monitoring sites are near the Project Area statewide air quality impacts occasionally happen. These impacts are associated with particulate matter (PM<sub>2.5</sub>), particulate matter (PM<sub>10</sub>), and high ozone. Furthermore, the US EPA uses an air quality index (AQI) for reporting air quality. The AQI is a color-coded chart that is divided into six categories with levels of concern ranging from “good” to “hazardous”. “Good” air quality is defined as air quality that is satisfactory and air pollution poses little or no risk (AirNow n.d.). The median AQI for the Aberdeen Site in 2023 was 23, which falls into the “good” air quality category (US EPA Air Data 2024).

The State of North Dakota faces similar air quality challenges as the State of South Dakota (ND DEQ 2022).

In accordance with Executive Order (EO) 13990, an evaluation of greenhouse gases and climate change potential is evaluated as part of this EA. The American Meteorological Society (AMS) refers to climate change as any systematic change in the long-term statistics of climate elements (such as temperature, pressure, or winds) sustained over several decades or longer. The AMS also indicates climate change may be due to natural external forcings, such as changes in solar emission or slow changes in the earth's orbital elements, natural internal processes of the climate system, or anthropogenic forcing. The climate system can be influenced by changes in the concentration of various greenhouse gases in the atmosphere that affect the earth's absorption of radiation (AMS 2012).

Based on highlights of climate change impacts in the U.S. from the U.S. National Climate Assessment, future climate change projections for the Great Plains include more violent storms and more frequent flooding. There is some variability in predictions for changes to total annual precipitation; however, expectations of more precipitation in the northern Great Plains have been seen. With changes in weather patterns, it is expected that drought and flood occurrences will also increase (Status of Tribes and Climate Change Working Group 2021).

Each individual tower would generate greenhouse gases directly associated with the equipment necessary to transport, erect, and maintain each tower site (e.g., excavator, a crane, a trencher or other equipment greater than 5 horsepower haul or dump trucks, a concrete mixer truck, and passenger vehicles such as pickup trucks). Additionally, each tower would be operated with electricity obtained from the local electrical grid.

#### **Black Horse Butte**

Based on the 2023 median AQI for the nearest air quality monitoring site to the Reservation, air quality is generally good (US EPA Air Data 2024). Greenhouse gas generation is expected during transport, construction, and operations of this tower.

### Little Eagle SE

Based on the 2023 median AQI for the nearest air quality monitoring site to the Reservation, air quality is generally good (US EPA Air Data 2024). Greenhouse gas generation is expected during transport, construction, and operations of this tower.

### Morristown E

Based on the 2023 median AQI for the nearest air quality monitoring site to the Reservation, air quality is generally good (US EPA Air Data 2024). Greenhouse gas generation is expected during transport, construction, and operations of this tower.

### SW Solen

Based on the 2023 median AQI for the nearest air quality monitoring site to the Reservation, air quality is generally good (US EPA Air Data 2024). Greenhouse gas generation is expected during transport, construction, and operations of this tower.

## 4.3. Geology and Soils

The Reservation, and thus the four project sites, is located on the southern edge of the Williston Basin, northeast of the Black Hills Uplift and in the Missouri River Badlands. Sedimentary rocks of the Tertiary and Cretaceous consisting of sandstone, siltstone, shale, claystone, underly the Reservation. Other surficial deposits include alluvium, colluvium, terrace deposits, outwash, and glacial till. Most surface deposits are sourced from Cretaceous marine shales and some Tertiary fluvial deposits. The area has been heavily dissected by erosion of the Missouri River and its tributaries resulting in rolling hills, flat valleys, and a badlands topography in the northern and central areas of the Reservation (BIA n.d.). The topography of the area was also highly influenced by glaciation.

Soil series were developed by the US Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) as part of a soil classification process for the US. Soil series are grouped into soil map units based on similarities. Each site's specific soil units and characteristics are described below. In addition, if a site has soil that is considered prime farmland, prime farmland if irrigated, and/or farmland of statewide importance that is also described below. These types of soils are regulated under the Farmland Protection Policy Act (FPPA), which is intended to minimize the impact federal programs have on the unnecessary and irreversible conversion of farmland to nonagricultural uses. Prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for those uses (7 CFR 657.5). Farmland of statewide importance is land in addition to prime and unique farmlands that is of statewide importance for the production of food, feed, fiber, forage, and oil seed crops (7 CFR 657.5). Coordination with NRCS for FPPA will be completed before construction; Farmland Conversion Impact Rating Forms are provided in Appendix C.

### Black Horse Butte

The topography surrounding the Black Horse Butte tower site is primarily flat. The site area lies within one major soil unit, Daglum-Rhoades complex, 0 to 6 percent (%) slope (Figure 3a). The Daglum series consists of deep and very deep, moderately well to well drained soils formed in a clay type alluvium on foot slopes and swales of terraced uplands (National Cooperative Soil Survey 2023). The Rhoades series has similar characteristics to the Daglum and is often found in associated complexes (National Cooperative Soil Survey 2000). This soil type has a medium

susceptibility to compaction, is drought vulnerable, is moderately well drained and is not prime farmland (NRCS 2023).

#### Little Eagle SE

The topography surrounding the Little Eagle SE tower site is primarily flat with a transition downslope via runoff channels and riverine to the northwest. The access road lies on two soil units and the tower site sits on one soil unit. The Reeder loam, 3 to 6% slopes is at the southern part of the site and the Cabba-Amor loams, 15 to 60% slopes underlies the tower site (Figure 3b). The Reeder series consists of moderately deep, well drained, moderately permeable soils. These soils are formed from weathered material originating from soft, calcareous sandstone, siltstone, or mudstone (National Cooperative Soil Survey 1998a). The Cabba series consists of shallow, well drained soils that formed from alluvium from semi consolidated, loamy sedimentary rock beds (National Cooperative Soil Survey 2018). The Amor series is similar to the Reeder and Cabba in that it is well drained and moderately deep. However, it is formed from weathered stratified soft sandstone, siltstone and mudstone (National Cooperative Soil Survey 1999a). All three series are closely related. The Reeder loam accounts for approximately 39% of the planned tower site and is also classified as farmland of statewide importance. The Cabba-Amor series accounts for 61% of the planned tower site and is not considered prime farmland. Both soil series are well-drained with a medium to high susceptibility rating for compaction (NRCS 2023). Both soil types are classified as drought vulnerable (NRCS 2023).

#### Morristown E

The topography surrounding the Morristown E tower site is primarily flat. The site area lies within one major soil unit, Stady loam, 0 to 2% slope (Figure 3c). This soil series is characterized by very deep, well-drained soils that are moderately deep to sand and gravel. These soils formed in loamy alluvium over sand and gravel from stream terraces (National Cooperative Soil Survey 2005). This soil type is rated as prime farmland if irrigated and it is well drained, with a medium compaction susceptibility, and drought vulnerable (NRCS 2023).

#### SW Solen

The topography surrounding the SW Solen tower site is primarily flat. The site lies within two major soils units, Vebar-Parshall fine sandy loams, 3 to 6% slopes and the Telfer-Parshall-Vebar complex, 6 to 15% slopes (Figure 3d). The Vebar soil series is classified as well drained, moderately deep, moderately rapid permeable soils that formed in residuum weathered from soft calcareous sandstone (National Cooperative Soil Survey 2001). The Parshall series is similar to the Vebar but is formed in alluvium (National Cooperative Soil Survey 1998b). The Telfer series consists of very deep, excessively drained, rapidly permeable soils that formed in wind and water deposited sands (National Cooperative Soil Survey 1999b). The Vebar-Parshall fine sandy loams accounts for 14% of the tower site and lies strictly under the access road. The Telfer-Parshall-Vebar complex accounts for 86% of the tower site and underlies the tower lease area (NRCS 2023). Both soil complexes are considered well drained and drought vulnerable. The Vebar-Parshall is classified as farmland of statewide importance and has a medium compaction susceptibility rating. The Telfer-Parshall-Vebar complex is not farmland of statewide importance and it has a low compaction susceptibility rating (NRCS 2023).

### 4.4. Water Resources

The Clean Water Act (CWA) was established in 1972 as the basic structure for regulating discharges of pollutants into the waters of the U.S. and for regulating surface water quality standards. Water resources are also regulated under EO 11988, *Floodplain Management*, as



amended by EO 13690 *Establishing a Federal Flood Risk Management Standard and Process for Further Soliciting and Considering Stakeholder Input*, and EO 11990 *Protection of Wetlands*. The purpose of EO 11988 is to avoid adverse impacts associated with the occupancy and modification of floodplains, including floodplain development wherever there is a practicable alternative. Similarly, the purpose of EO 11990 is to avoid adverse impacts associated with the destruction or modification of wetlands, including new construction in wetlands wherever there is a practicable alternative.

Water resources on the Reservation include surface water and groundwater. Groundwater can be broken into deep and shallow aquifer sources.

#### Surface Water (i.e., Lakes and Rivers)

No surface water resources, including lakes or rivers, exist within the Project Area. However, surface water resources are present in the vicinity of some of the tower sites. For example, a river and unnamed pond are located approximately 0.25-mile west of the Black Horse Butte site and another stream is located approximately 0.3-mile east of the tower site. The nearest surface water resource to the Little Eagle SE site is an unnamed stream located approximately 0.1-mile northwest. The Morristown Lake is located approximately 0.5-mile east of the Morristown E site in addition to a stream that is located approximately 0.2-mile northwest of the site. Finally, the nearest surface water resource to the SW Solen site is a stream located approximately 0.4-mile to the southeast. Figures 4a through 4d show the nearest surface water resources to each tower site.

#### Groundwater

Groundwater on the Reservation consists of surficial and bedrock aquifers. Shallow groundwater cannot be obtained in most areas of the Reservation, and where groundwater is found it is usually of poor quality (Howells 1982a). Surficial aquifers consist of sand and gravel and are discontinuous. They are not commonly mapped; however, major aquifers have been named and mapped. The primary bedrock aquifers that underly the Reservation include the Fox Hills Aquifer, Hell Creek Aquifer and the Fort Union Aquifer. These aquifers extend throughout South Dakota, North Dakota, Wyoming, and Montana.

The Fort Union Formation is found in the northwestern portion of the Reservation (i.e., Morristown E tower site). Due to the fine-grained lithology and low permeability of the Fort Union Formation, wells completed within the Fort Union typically have low yields (less than 10 gallons per minute [gpm]) (Howells 1982b). The Hell Creek Formation act as an aquifer in the central, northern, and southwestern areas of the Reservation (i.e. Black Horse Butte and SW Solen tower sites). The Hell Creek yields water supplies adequate for stock and domestic use where formation thicknesses are greater than 100 feet (Howells 1982c). The Fox Hills Formation acts as an aquifer in the northeastern portion of the Reservation adjacent to the Missouri River and in the central and southern areas of the Reservation (i.e., Little Eagle SE tower site). Yields from the Fox Hills Formation are adequate for stock and domestic use but tend to have high concentrations of dissolved solids (Howells 1982c).

#### *Black Horse Butte*

Shallow aquifer data are not available surrounding this tower site. However, the tower would not be located in a sole source aquifer zone (US EPA 2024c). Additionally, the nearest domestic wells are located over 1-mile away to the southeast and southwest. Depths drilled for each well are approximately 240-feet (ft) and 57-ft (SD 2024).



### *Little Eagle SE*

Shallow aquifer data are not available surrounding this tower site. However, the tower would not be located in a sole source aquifer zone (US EPA 2024d). Additionally, the nearest domestic water well is approximately 0.25-mile south of the tower site and has a depth drilled of 80-ft (SD 2024).

### *Morristown E*

Shallow aquifer data are not available surrounding this tower site. However, the tower would not be located in a sole source aquifer zone (US EPA 2024e). Additionally, the nearest domestic wells are located 1 mile away to the southeast, northeast, and northwest. Depths drilled for each well range from 200-ft to 280-ft (SD 2024).

### *SW Solen*

Shallow aquifer data are not available surrounding this tower site. However, the tower would not be located in a sole source aquifer zone (US EPA 2024f).

### Coastal Zone, Estuary and Inter-tidal Areas

The Project Area is located in two land-locked states and is therefore not located in any coastal zones, estuaries, or inter-tidal areas.

### Floodplains

EO 11988 requires federal agencies to avoid, to the extent possible, the long and short-term adverse impacts associated with the occupancy and modification of floodplains (Federal Emergency Management Agency [FEMA] 2024a). The four tower sites are not located within known mapped floodplains or floodways (FEMA 2024b, 2024c, 2024d, and 2024e). The flooding potential at each tower site has been identified as Zone X, the area is determined to be outside the 500-year floodplain (see Figures 5a-5d).

### Wild and Scenic Rivers

The Wild and Scenic Rivers Act of 1968 established the National Wild and Scenic Rivers System which is protective of free-flowing waterways with extraordinary natural, cultural, and recreational qualities. This includes more than 220 rivers and covers more than 13,400 miles of rivers and streams. No wild or scenic rivers are located within the Project Area. The State of North Dakota has no designated wild and scenic rivers of its approximate 54,373 miles of river (Rivers 2024a). In South Dakota, the Missouri River dominates the landscape as the largest and longest river in the state. Two segments of the Missouri River are designated National Wild and Scenic River Systems. This is from the Fort Randall Dam downstream to the Lewis and Clark Lake and from the Gavins Point Dam downstream to the Ponca State Park (Rivers 2024b). Both of these sections are across the state, south from the Reservation (approximately 200 miles from the Little Eagle SW site).

## 4.5. Biological Resources

This section discusses the current status of threatened and endangered, any critically listed or threatened/endangered habitat, wetland habitats, vegetation, migratory birds, and any commonly encountered wildlife that may occur within the Project Area.

### Threatened and Endangered Species

The Endangered Species Act of 1973 prohibits any action that may directly or indirectly endanger the critical habitat of species of fish, wildlife, or plant that is in danger of extinction. It

also forbids the “taking” (i.e., killing, harming, harassing) of any species listed as endangered or threatened. Based on the United States Fish and Wildlife Service (USFWS) Information, Planning, and Consultation System (2024a, 2024b, 2024c, and 2024d), the following endangered and candidate species could potentially occur within or near the Project Area:

- Monarch butterfly (*Danaus plexippus*) – Candidate
- Pallid sturgeon (*Scaphirhynchus albus*) – Endangered
- Piping plover (*Charadrius melodus*) – Threatened
- Rufa red knot (*Calidris canutus rufa*) – Threatened
- Whooping crane (*Grus americana*) – Endangered

No designated critical habitat is present in the Project Area (USFWS 2024a, 2024b, 2024c, and 2024d).

#### *Monarch Butterfly*

The monarch butterfly is a black and orange butterfly best known for its transcontinental migration pathways. Over the past two decades, monarch butterfly population numbers have decreased to the point of concern. The success of the monarch butterfly is directly linked to habitat fragmentation and pesticide use destroying milkweed species (e.g., *Asclepias* spp.) (USFWS 2024e). The monarch butterfly lives primarily in prairies, meadows, and roadways. During their caterpillar life history stage, they are completely reliant on milkweed while adults feed on a variety of flowering plants (SD Game, Fish and Parks [SD GFP] 2018). Adult monarchs are seen flying in South Dakota and North Dakota during the summer; and several generations are born each summer. The last generation born (late August) is the migratory adult that lives for seven to nine months to complete migration south, where reproduction occurs (ND Game and Fish Department [ND GFD] 2019a, SD GFP 2018). Population numbers and exact occurrence range within the Reservation are not available; however, occurrence is likely.

#### *Pallid Sturgeon*

Pallid sturgeons have a flattened snout, a long slender tail, and are armored with five lengthwise rows of bony plates down the side of their body instead of scales. Their mouth is toothless and positioned under their snout for sucking small fish and invertebrates from the river bottom. Currently, the species is found in fragmented segments of free-flowing river within its historic range, as well as in upstream portions of impoundments (USFWS 2024f). The use of major tributaries and their confluences within the Missouri River Basin (which could include areas within the Reservation) has been documented in many areas of the pallid sturgeon’s historical range, along with the confluence of the Missouri River and the Cannonball River in North Dakota (northern border of the Reservation). Known occurrence data for the species in the Project Area is not available; however, the eastern border of the Reservation is within the historical range and pallid sturgeons have been reintroduced to sections downstream of the Reservation (Aron 2006).

#### *Piping Plover*

Piping plovers are small, stocky shorebirds known to breed in the Great Plains and Great Lakes regions, often requiring open sandy areas near water for nesting (USFWS 2024g). In South Dakota, nesting activity is primarily on Missouri River sandbars, while some nesting activity takes place on the Missouri River. Piping plovers require open sandy areas near water for nesting (SD Birds 2024a); most of the piping plovers in North Dakota nest on prairie alkali lakes; others nest on the Missouri River (ND GFD 2019b). The breeding season in North and South

Dakota extends from mid-April through August (ND GFD 2019b, SD Birds 2024a). Species occurrence data on the Reservation are unknown; however, several observations (via a public site for documenting species occurrence) of piping plovers have been documented within the Reservation along the eastern border at the Missouri River corridor (eBird 2024).

#### *Rufa Red Knot*

Rufa red knots (hereon red knots) are medium-sized shorebirds that migrate annually between their breeding grounds in the central Canadian Arctic and several wintering regions. During both the northbound (spring) and southbound (fall) migrations, red knots use key staging and stopover areas to rest and feed. Their primary habitat is sandy or gravelly beaches and sandbars or alkaline wetlands (USFWS 2024h). In South Dakota, they are considered a migrant species using the Missouri River corridor for stopover habitat. They have been observed in the Missouri River system, sewage lagoons, and large permanent freshwater wetlands; however, observations of them in North Dakota are scattered throughout the state and there are no stopover sites consistently used (ND GFD 2019c). There are no known breeders within the state (SD Birds 2024b). Based on eBird (2024), no sightings of red knots have been documented within the Reservation.

#### *Whooping Crane*

The whooping crane is a tall bird standing five feet in height with a wingspan of up to seven feet long. Habitat in South Dakota (and thus the Reservation) consists of sloughs, marshes, and fields (SD Birds 2024c). However, potential habitat for the whooping crane in the individual project areas would be limited to, and likely consist of, only migration stopover habitat (SD Birds 2024c, ND GFD 2019d). Whooping cranes often stop wherever they happen to be during the evening or when conditions are no longer suitable for flight, although whooping cranes generally avoid rocky substrates and heavily vegetated sites (Armbruster 1990). Based on eBird (2024), one sighting of whooping cranes has been documented on the Reservation.

#### *Black Horse Butte*

There is no available habitat for piping plover, red knot, or pallid sturgeon at this site. The site is in proximity to open cultivated fields and there is potential for monarch butterfly occupancy and whooping crane stopover; however, this habitat does not overlap with the site. There are no official surveys documenting the presence of either species at this site.

#### *Little Eagle SE*

There is no available habitat for piping plover, red knot, or pallid sturgeon at this project site. The site is in proximity to open cultivated fields and there is potential for monarch butterfly occupancy and whooping crane stopover in the adjacent habitat; however, this habitat does not overlap with the site. There are no official surveys documenting the presence of either species at this site.

#### *Morristown E*

There is no available habitat for piping plover, red knot, or pallid sturgeon at this project site. The site is in proximity to open cultivated fields and there is potential for monarch butterfly occupancy and whooping crane stopover in the adjacent habitat; however, this habitat does not overlap with the site. There are no official surveys documenting the presence of either species at this site.

### SW Solen

There is no available habitat for piping plover, red knot, or pallid sturgeon at this project site. The site is in proximity to open cultivated fields and there is potential for monarch butterfly occupancy and whooping crane stopover in the adjacent habitat; however, this habitat does not overlap with the site. There are no official surveys documenting the presence of either species at this site.

### Critical or Threatened / Endangered Habitat

A critical habitat, whether threatened or endangered, is a geographic area occupied by a species at the time of listing. This habitat contains the physical or biological features that are essential to the conservation of listed species that may need special management or protection (USFWS 2017). There are no critical habitats located within or overlapping the Project Area (per USFWS 2024a, 2024b, 2024c, and 2024d); the nearest critical habitat to the Project Area is piping plover critical habitat approximately 5 miles to the northeast of Little Eagle SE site (USFWS 2002).

### Wetland Habitats

Wetlands are areas where water covers the soil or is present near the soil surface for a period of time that influences the types and animals communities living in and on the soils. Section 404 of the Clean Water Act (CWA) regulates the dredging and or filling of wetlands. Additionally, discharging materials to the waters of the United States (WOTUS) requires permitting (33 USC 1344). As previously discussed, EO 11990 is the Protection of Wetlands and requires federal agencies to minimize the destruction, loss, or degradation of wetlands to preserve and enhance the natural and beneficial values of said wetlands. Additionally, the construction of infrastructure in wetlands should be avoided to the extent practicable.

Locations of wetlands were identified using the National Wetlands Inventory (NWI) mapping data and federally adopted classification scheme originally developed by Cowardin et al. (1979; USFWS 2023). There are no wetland types potentially occurring within the Project Area; however, some potential wetlands may be located adjacent to the tower sites, as shown on Figures 6a-6d in Appendix B. The closest wetland to the Project Area is a riverine wetland over 500 feet west of Little Eagle SE. The nearest wetland to the remaining sites in the Project Area is provided below:

- The closest wetland to Black Horse Butte is a freshwater pond located east of the site approximately 1,700 feet.
- The closest wetland to Morristown E is a riverine wetland located west of the site approximately 900 feet.
- The closest wetland to SW Solen is a freshwater pond located west of the site approximately 1,300 feet.

### Vegetation

Ecoregions are areas where ecosystems are generally similar. The four tower sites all lie in the same Level 1 ecoregion, Great Plains (US EPA 2023b) and ecosystems are generally similar between the four tower sites. To represent vegetation on the Reservation, ecological systems at the four sites were mapped using the GAP/LANDFIRE National Terrestrial Ecosystems dataset. The dataset is produced by the U.S. Geological Survey (USGS) in collaboration with the LANDFIRE Program (USGS 2011) and is shown on Figures 7a through 7d.

The dominant ecological systems (i.e., those that comprise a portion of at least one project site) consist of the following:

- Northwestern Great Plains Mixedgrass Prairie (Black Horse Butte, Little Eagle SE, Morristown, SW Solen)
- Northwestern Great Plain – Black Hills Ponderosa Pine Woodland and Savanna (Little Eagle SE)
- Introduced Upland Vegetation – Perennial Grassland and Forbland (Little Eagle SE, Morristown East)
- Cultivated Cropland (Little Eagle SE, Morristown East, Black Horse Butte)
- Developed, Open Space (Black Horse Butte, Little Eagle SE)

Northwestern Great Plains Mixedgrass Prairie, Northwestern Great Plain – Black Hills Ponderosa Pine Woodland and Savanna and Introduced Upland Vegetation – Perennial Grassland and Forbland are described below due to their complex species composition.

#### *Northwestern Great Plains Mixedgrass Prairie*

The Northwestern Great Plains Mixedgrass Prairie is a system that extends from northern Nebraska into southern Canada and westward through the Dakotas to the Rocky Mountain Front in Montana and eastern Wyoming. This system is the predominate vegetative system and is found throughout the Reservation. Drought, in particular, can impact this system resulting in a reduction of mid-grasses and an increase in short grasses (Menard et al. 2015).

Common species found in this system include (Menard et al. 2015):

- Western wheatgrass (*Pascopyrum smithii*)
- Green needlegrass (*Nassella viridula*)
- Needle-and-thread (*Hesperostipa comata*)
- Prairie sagewort (*Artemisia frigida*)
- Silver sagebrush (*Artemisia cana*)

#### *Northwestern Great Plain – Black Hills Ponderosa Pine Woodland and Savanna*

The Northwestern Great Plain – Black Hills Ponderosa Pine Woodland and Savanna occurs throughout the northwestern Great Plains along areas that border the Rocky Mountains. These areas range from very sparse patches of trees on drier site to nearly closed-canopy forest stands where available soil moisture is higher. This system occurs primarily on gentle to steep slopes along escarpments, buttes, canyons, rock outcrops or ravines (Reid and Schulz 2018).

Dominant species in this system include, but are not limited to, the following (Reid and Schulz 2018):

- Ponderosa pine (*Pinus ponderosa*)
- Rocky Mountain juniper (*Juniperus scopulorum*)
- Green ash (*Fraxinus pennsylvanica*)
- Bur oak (*Quercus macrocarpa*)
- Quaking aspen (*Populus tremuloides*)

#### *Introduced Upland Vegetation – Perennial Grassland and Forbland*

The vegetation composition of introduced upland varies from location to location but is the result of plant colonization in areas where natural disturbances (i.e., fire, flood, heavy grazing, and

human alterations) have altered the native ecology beyond recognition (SD GFP 2014; National Wildlife Federation [NWF] 2001). The land cover is altered by introduced, non-native perennial grasses and forbs. This system is primarily found in patches surrounded by the Northwestern Great Plains Mixedgrass Prairie and scattered throughout the Reservation in small, isolated patches (Montana Field Guide [MFG] 2024).

Common species found in this system include (MFG 2024):

- Crested wheatgrass (*Agropyron cristatum*)
- Smooth brome (*Bromus inermis*)
- Timothy (*Phleum pratense*)
- Kentucky bluegrass (*Poa pratensis*)
- Knapweed (*Centaurea* spp.)
- Canada thistle (*Cirsium arvense*)
- Leafy spurge (*Euphorbia esula*)
- Perennial pepperweed (*Lepidium latifolium*)
- Sweetclover (*Melilotus* spp.)

#### *Black Horse Butte*

Three dominant vegetation types can be found on the proposed Black Horse Butte site, as shown on Figure 7a (USGS 2011). The percentage of the site that each vegetation type occupies is listed below (USGS 2011):

- Northwestern Great Plains Mixedgrass Prairie – 18% of the site
- Cultivated Cropland – 78% of the site
- Developed, Open Space – 4% of the site

#### *Little Eagle SE*

Five dominant vegetation types can be found on the proposed Little Eagle SE site, as shown on Figure 7b (USGS 2011). The percentage of the site that each vegetation type occupies is listed below (USGS 2011):

- Northwestern Great Plains Mixedgrass Prairie – 67% of the site
- Introduced Upland Vegetation – Perennial Grassland and Forbland – 22% of the site
- Developed, Open Space – 2% of the site
- Cultivated Cropland – 5% of the site
- Northwestern Great Plain – Black Hills Ponderosa Pine Woodland and Savanna – 4% of site

#### *Morristown E*

Two dominant vegetation types can be found on the proposed Morristown E site, as shown on Figure 7c (USGS 2011). The percentage of the site that each vegetation type occupies is listed below (USGS 2011):

- Introduced Upland Vegetation – Perennial Grassland and Forbland – 4% of the site
- Cultivated Cropland – 96% of the site



### SW Solen

One dominant vegetation type can be found on the proposed SW Solen site, Northwestern Great Plains Mixedgrass Prairie, which makes up 100% of the site, as shown on Figure 7d (USGS 2011).

### Migratory Birds and Wildlife

The Migratory Bird Treaty Act (MBTA) of 1918 stipulates protection for not only migratory birds, but also for habitats and environments necessary for the birds' survival. Several migratory birds that could occur within the Reservation, and thus the Project Area, are listed on the USFWS Birds of Conservation Concern list. Examples of such species include, but are not limited to, the following: the Baird's sparrow (*Ammodramus bairdii*), black-billed cuckoo (*Coccyzus erythrophthalmus*), bobolink (*Dolichonyx oryzivorus*), chestnut-collard longspur (*Calcarius ornatus*), Ferruginous hawk (*Buteo regalis*), Hudsonian godwit (*Limosa haemastica*), Lark bunting (*Calamospiza melanocorys*), red-headed woodpecker (*Melanerpes erythrocephalus*), and Sprague's pipit (*Anthus spragueii*). The entire list of species protected by the MBTA can be found in 50 CFR 10.13.

The Bald and Golden Eagle Protection Act of 1962 provides special rules to protect these species and their nesting areas and nesting season. Bald eagles (*Haliaeetus leucocephalus*) are large raptors; adults are characterized by a dark brown body with a white head and tail. Fish comprise a large portion of their diets, though they are opportunistic feeders and they will also eat waterfowl, small mammals, and carrion. Bald eagles typically nest near, or within sight of, large open bodies of water; nests are generally placed in large, mature or old growth trees, but may also be placed on cliffs and rock outcrops (Aron 2005). Additionally, bald eagles are found throughout South Dakota and North Dakota, primarily along waterways (SD Birds 2024d, ND GFD 2019e). Three of the sites (i.e., Black Horse Butte, Morristown SE, and SW Solen) do not have any potential nesting habitat for eagles, therefore, no nests are likely to occur. Little Eagle SE has possible very minimal habitat (less than one acres), per USGS (2011); however, aerial imagery review does not indicate any nesting habitat overlapping the site. USFWS (2024i) noted that bald eagles are known to occur in the vicinity of the SW Solen site.

Golden eagles (*Aquila chrysaetos*) are also large raptors; they are characterized by a golden color along the back of their head, while the rest of their body is a uniform dark brown color. Golden eagles feed primarily on small mammals, but they may also feed on carrion. Golden eagles appear to prefer open shrublands and grasslands and will occasionally use riparian or woodland/brushland areas. Nests are typically placed on cliffs, but golden eagles may also nest in trees and on the ground (Kaufman 2024). In South Dakota, the Reservation lies within non-breeding golden eagle range (SD Birds 2024e). In North Dakota, the Reservation lies within secondary golden eagle range (ND GFD 2019f). Both bald and golden eagle sightings are common across North and South Dakota (eBird 2024).

Common wildlife found throughout the Reservation, and thus could potentially occur within the Project Area, include but are not limited to white-tailed deer (*Odocoileus virginianus*), mule deer (*O. hemionus*), antelope (*Antilocapra americana*), and coyote (*Canis latrans*) (Standing Rock Game and Fish 2024).

## 4.6. Historic and Cultural Resources

The Standing Rock Sioux Reservation was originally established in 1868 under Article 2 of the Treaty of Fort Laramie of April 29, 1868. At that time, the boundaries of the Reservation began



at the 46<sup>th</sup> parallel of north latitude to the east bank of the Missouri River, south along the east bank to the Nebraska line, then west to the 104<sup>th</sup> parallel of the west longitude. However, the Reservation's boundaries were condensed through the years despite lacking the consent of three-fourths of the Sioux, as was required by the 1868 Treaty of Fort Laramie. The final boundaries of the Reservation, as they are today, were delineated in 1889. Despite the official boundaries of the Reservation being delineated beginning in 1868, the Lakota people had called the area home since the early 19th century when they became a northern Plains people and practically divested themselves of most all Woodland traits (Standing Rock Sioux Tribe n.d.).

There are multiple federal regulations that protect historic and cultural resources. The National Historic Preservation Act of 1966 (NHPA) directs the Federal Government to consider the effects of its actions on historic and cultural resources under Section 106. The Standing Rock Sioux Tribe entered into an agreement with the National Park Service in August 1996 to assume certain responsibilities and functions under the NHPA within the exterior boundaries of the Reservation. The Tribal Historic Preservation Office (THPO) was created to protect sacred and historic properties within its aboriginal territory. It is the policy of the Standing Rock Sioux Tribe to protect sacred sites, stone features, and historic properties contained within its tribal lands, ancestral, aboriginal/buffalo territory, and ceded lands. The Tribe has a 100% survey policy on tribal lands to ensure that all lands within the exterior boundaries of the Reservation are archaeologically surveyed under the NHPA and a traditional cultural property (TCP) survey conducted prior to any groundbreaking activity (Standing Rock Sioux Tribe 2015).

Class III surveys were completed for the tower sites in October 2023 by a Tribal Archaeologist. A summary of archaeological resources, architectural resources, and Native American traditional, cultural, and/or religious resources encountered at each site, if applicable, is described below.

#### **Black Horse Butte**

A 5-acre area of potential effect (APE) was pedestrian surveyed in transects spaced 5 meters apart. No eligible cultural resources were located in the APE and no previously recorded sites were located in the APE (Iron Eyes 2023a).

#### **Little Eagle SE**

A 5-acre APE was pedestrian surveyed in transects spaced 5 meters apart. No eligible cultural resources were located in the APE and no previously recorded sites were located in the APE (Iron Eyes 2023b).

#### **Morristown SE**

A 5-acre APE was pedestrian surveyed in transects spaced 5 meters apart. No eligible cultural resources were located in the APE and no previously recorded sites are located in the APE (Iron Eyes 2023c).

#### **SW Solen**

A 5-acre APE was pedestrian surveyed in transects spaced 5 meters apart. Potentially eligible cultural resources were located in the APE; therefore, avoidance areas have been identified (see Figure 8). The guy wires were rotated to not disturb the avoidance areas. No previously recorded sites were located in the APE (Iron Eyes 2023d).

## 4.7. Aesthetic and Visual Resources

Aesthetic and visual resources can be defined in many ways but are based on the context of an area and can influence community cohesion and values. Vast open spaces with vastly spaced development across the area, recreational activities are readily available and highly prized (Travel South Dakota 2024a).

### Black Horse Butte

This tower site is located on primarily flat land with rolling hills in the background. The tower site's access road would be right off of SD Hwy 65 where several agricultural fields are present. The tower would be approximately 300 feet from SD Hwy 65 and would be visible from the highway. Using a visual simulation analysis on Google Earth (2014), the tower site is visible approximately 15 miles away. There are no listed monuments, national parks, or state interest sights near the tower site. The closest national or state interest is the Little Moreau State Recreation Area that is located 28 miles south of the tower site (ESRI 2021).

### Little Eagle SE

This tower site is located approximately 500 feet off SD Hwy 63 and would be visible from the highway, nearby residences, and the southern portion of Little Eagle, SD. The site is located in a primarily undeveloped area with dispersed residences throughout the area. Using a visual simulation analysis on Google Earth (2014), the tower site is visible approximately 16 miles away. There are no listed monuments, national parks, or state interest sights near the tower site. The closest national or state interest is the Little Moreau State Recreation Area that is located 21 miles southwest of the tower site (ESRI 2021).

### Morristown E

This tower site is located approximately 2.5-miles southeast of the town of Morristown, South Dakota, in a heavily cultivated area. SD Hwy 12 is approximately 0.5 mile north of the site as well as a railroad; the tower site would be visible from SD Hwy 12, the railroad, and from Morristown. Using a visual simulation analysis on Google Earth (2014), the tower site is visible approximately 18 miles away. There are no listed monuments, national parks, or state interest sights near the tower site. The closest national or state interest is the Shadehill Reservoir State Recreation Area that is located 27 miles west of the tower site (ESRI 2021).

### SW Solen

This tower site is located approximately 1-mile east of ND Hwy 6 and would be visible from ND Hwy 6. Using a visual simulation analysis on Google Earth (2014), the tower site is visible approximately 16 miles away. There are no listed monuments, national parks, or state interest sights near the tower site. The closest national or state interest is the Lake Patricia State Conservation Area that is located 16 miles northwest of the tower site (ESRI 2021).

## 4.8. Land Use

The Reservation encompasses all of Sioux County, ND, and all of Corson County, SD, with portions overlapping Ziebach and Dewey counties, SD. The Reservation is primarily rural with agricultural land uses dispersed throughout the area. The Missouri River makes up the eastern boundary of the Reservation and Fort Yates, ND, is home to the Standing Rock Sioux Tribal Government and the BIA Standing Rock Agency (BIA 2024).

### Black Horse Butte

Current land use at the Black Horse Butte tower site is agriculture, both cropland and grazing and is located on allotted land. Land use surrounding the tower site is primarily undeveloped/vacant land with agricultural land uses (i.e., cultivated fields) to the south. Additionally, SD Hwy 65 runs adjacent to the tower site.

### Little Eagle SE

The Little Eagle SE tower site is located on tribal trust land and undeveloped. Land use surrounding the tower site is primarily agricultural. SD Hwy 63 runs adjacent to the tower site.

### Morristown E

Current land use of the Morristown E tower site is agriculture, specifically cropland and is located on allotted land. Land use surrounding the tower site is primarily agriculture (e.g., cultivated cropland with some grazing). A residence, railroad tracks, and SD Hwy 12 are also in the general vicinity. Additionally, the Morristown E tower site soil type is rated as prime farmland if irrigated per FPPA and a portion of the soils will likely be converted from prime farmland.

### SW Solen

The SW Solen tower site is located on tribal trust land, undeveloped, and was likely used for agricultural activities (i.e., grazing). There is a residence nearby and the nearest highway is ND Hwy 6, which is located approximately 1-mile east. Additionally, one of the SW Solen tower site soil types (Vebar-Parshall; 14% of the site) is classified as farmland of statewide importance per FPPA and a portion of the soils will likely be converted from prime farmland.

## 4.9. Infrastructure

Across the Reservation, access to utilities is limited due to the rural nature of the area. Existing electrical grids provide power to most residences (North Dakota Studies 2024). Rural water systems or private wells provide water. Gas services are available in communities, but rural homesteads require propane. Finally, access to affordable telecommunications has been limited (Nokia 2024). Existing infrastructure across each site is minimal to nonexistent. Each tower site would require the installation of necessary infrastructure for basic operations. Infrastructure would consist of the tower foundations, controlled access (i.e., fencing), utilities, back-up generators, and appropriate warning systems (i.e., Federal Aviation Agency lighting). Utilities (e.g., electrical, broadband fiber, etc.) would be brought into each tower site from the nearest access/easement point. Each tower site would have a single, above-ground back-up generator that is free standing and powered by a 1,000-gallon propane tank. Each generator will also be shielded with a weather protective cover. In order to minimize the number of strikes at cellular towers and to mitigate such impacts, lighting systems have been changed from solid lighting to flashing or strobing lights (further discussed in Section 5.5 to reduce bird collisions). This lighting modification also reduces energy use and saves tower owners on operating costs.

### Black Horse Butte

The planned tower is approximately 304-ft at its highest point including the lightning rod, aviation lighting, and antennas. This tower site would require grading of land and installation of a gravel road access directly off of SD Hwy 65. All utilities would be trenched along the access road within the 30-foot utility easement.

### Little Eagle SE

The planned tower is approximately 304-ft at its highest point including the lightning rod, aviation lighting, and antennas. This tower site would require the grading of land and installation of a gravel road access from SD Hwy 63. All utilities would be trenched along the access road within the 30-foot utility easement.

### Morristown E

The planned tower is approximately 304-ft at its highest point including the lightning rod, aviation lighting, and antennas. This tower site would require the grading of land and installation of a gravel road access from 223<sup>rd</sup> Avenue. All utilities would be trenched along the access road within the 30-foot utility easement. Access to US Hwy 12 is located approximately 2.5 miles east/northeast from the tower site.

### SW Solen

The planned tower is approximately 304-ft at its highest point including the lightning rod, aviation lighting, and antennas. This tower site would require the grading of land and installation of a gravel road access from 76<sup>th</sup> Street SW. All utilities would be trenched along the access road within the 30-foot utility easement. ND Hwy 6 is located approximately 1 mile west of the tower site.

## 4.10. Socioeconomic Resources

Specific demographic information for the Project Area is not available; therefore, demographic information for the Reservation is summarized below. The estimated population of the Reservation was approximately 7,817 people (as of 2022, US Census Bureau [USCB] 2024a). The median age on the Reservation is 28. Approximately 40% of the population is under the age of 20, and approximately 10% of the population is 65 years or older (USCB 2024a). The median household income was approximately \$42,308; the population that had income below the poverty level in the past 12 months on the Reservation was approximately 32% (USCB 2024b).

The unemployment rate for the civilian labor force on the Reservation is approximately 12% (USCB 2024b). The majority of the employed civilian population (i.e., approximately 45%) works in management, business, science, and arts occupations; followed by approximately 20% of the employed civilian population, which works in the service occupation (USCB 2024b).

EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, tasks federal agencies with identifying and addressing, as appropriate, disproportionately high adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations. Minority populations include the following population groups: American Indian or Alaskan Native; Asian or Pacific Islander; Black, not of Hispanic origin; and Hispanic (CEQ 1997). For this analysis, low-income populations are defined as persons living below the poverty level based on the USCB population reports.

Overall, the population in the Project Area is considered a minority and low-income population based on the USCB data. Approximately 32% of the population is living below the poverty line (USCB 2024b) and approximately 77% identify as American Indian and Alaska Native (USCB 2024a).

#### 4.11. Human Health and Safety

Concerns for human health and safety for the Project Area are likely closely tied to the proximity of the proposed infrastructure and individual residences. No known specific minimum distance is established for the towers to existing roadways and buildings, including residences; however, Physicians for Safe Technology (2023) cites various cell towers and city ordinances with distances ranging from 200 feet to 1,500 feet from residences in case of tower foundation failure. Therefore, these minimum distances are considered when revising impacts from tower minimum distance to outside infrastructure. Utilities servicing the towers would be buried along easements. Buried utilities would be marked with tracer lines, warning tape, and contained within conduit. The main tower base would be secured behind a 6-ft high security fence with a secure access gate. However, transformers would be located outside of the security fence. Having transformers outside of the security fence is intentional in case of electrical service emergencies (e.g., blown transformers, power outage, etc.). Each tower site would be well marked and have gravel roads with proper drainage and sized to support vehicle travel.

The majority of public and worker exposure to health and safety concerns would occur during the construction phase of each tower. Heavy machinery necessary to erect the towers, grade the sites, and build the tower foundations may result in increased traffic along public roadways. Waste management would be established as required by law to prevent any mass waste dumping or hazardous waste dumping. There are no Resource Conservation and Recovery Act facilities or National Priorities List sites near the Project Area (US EPA 2024g, 2024h, 2024i, and 2024j; US EPA 2023c).

It should be noted that developing technologies and access to cellular and internet communications is limited across the Project Area, which hinders communications across the Reservation. This not only limits individuals' access to emergency services, but also increases response times for emergency services.

### 5.0 Analysis of Environmental Impacts

The following section provides a comprehensive analysis of the potential direct and indirect effects of the Proposed Action and the No Action Alternatives with a side-by-side comparison summary included in Table 5-1. The level of significance of each effect was evaluated in both context and intensity. Context refers to the significance of the action such as the potential impacts to society, affected region, affected interests, and the immediately affected local environment. Intensity refers to the severity of an action's impact and the degree of potential controversy surrounding both the Proposed Action and the No Action. Both context and intensity of an impact is considered across both the short- and long-term period. Potential impacts that are handled through the issuance of permits, consultation, design modifications, or other agreements across stakeholder parties are generally not considered to be significant unless there are exceptional circumstances or substantial controversy. A complete list of regulations, rules, and permit requirements is included in Section 6.0. Affected environments where impacts are anticipated to be similar between sites and across the Reservation are not further discussed for each tower location. Additionally, affected resources that are not anticipated to be similarly affected across tower sites include site-specific details.

#### 5.1. Noise

Under the Proposed Action Alternative, there are anticipated to be two types of anthropogenic noise impacts. One would be the direct result of the construction of each tower site and the

second would be any noise emitted by the operation and/or maintenance of each tower. The noise generated by necessary construction equipment (i.e., passenger vehicles, earth moving equipment, trencher, cranes, and haul trucks) can cause noise levels from 80 to 120 dB (Spencer n.d.); as shown in Section 4.1 the noises can range from 55 to 85 dB. These impacts would be temporary and minor and would be limited to the local area around the tower site when noise-generating equipment is being operated. Additionally, due to the rural nature of the overall Project Area, it is anticipated that this impact would be minimally adverse over the short-term. During operations, the primary noise sources at a cell tower are cooling units, backup generators, and occasional pickup trucks. An above-ground propane generator is anticipated to be used and is known to be the quietest and has an operational noise level of just 58 dBA (Reliable Power Systems 2024). Though there are no known defined applicable noise limits in the Project Area, typical noise limits in the U.S. are 55 dBA during daytime hours (Noise Engineers 2024). However, equipment failure and backup generator operations are not anticipated; if they were to occur, it would be a temporary impact that would be limited to the local area and only occur until total failure, equipment repair, or until utility service (i.e., electrical) are restored.

The states of North and South Dakota, the Reservation, and the counties in which the Reservation lie do not have known sound ordinances specific to the operations of construction equipment. Furthermore, neither site is within a town or city limit where additional noise ordinances may be in effect. Additionally, a BMP for the operation of construction equipment is to operate during daylight hours limiting the timeframe of noise exposure.

Potential impacts under the Proposed Action would depend upon the tower site location and are further discussed below. Under the No Action Alternative, no impacts would occur to or from noise levels because no construction or tower operation would occur.

#### **Black Horse Butte**

Due to the rural location of this tower site and the lack of any residences in the vicinity, there are anticipated to be no impacts to noise levels from the Proposed Action Alternative.

#### **Little Eagle SE**

Under the Proposed Action, adverse impacts would be negligible. The tower site is located in a rural area and only one residence is located in the vicinity (i.e., approximately 0.6-mile southeast of the site). Sound from the site during construction may be audible depending upon wind speed and direction and the level of the noise but it would be negligible and short term. Noise from the daily operations of the tower would not likely be heard at the residence.

#### **Morristown E**

Under the Proposed Action, adverse impacts would be negligible. The tower site is located in a rural area and only one residence is located in the vicinity (i.e., approximately 0.4-mile south of the site). Sound from the site during construction may be audible depending upon wind speed and direction and the level of the noise but it would be negligible and short term. Noise from the daily operations of the tower would not likely be heard at the residence

#### **SW Solen**

Under the Proposed Action, adverse impacts would be negligible. The tower site is located in a rural area and only one residence is located in the vicinity (i.e., approximately 0.4 mile north of the site). Sound from the site during construction may be audible depending upon wind speed



and direction and the level of the noise but it would be negligible and short term. Noise from the daily operations of the tower would not likely be heard at the residence.

## 5.2. Air Quality

Under the Proposed Action Alternative, impacts to air quality are anticipated to be from both the construction of the tower sites and from the operation of the tower sites. The construction of each tower site would require heavy equipment, passenger vehicles, and the removal and addition of ground cover. The operation of vehicles (both heavy and passenger) would generate air emissions which would likely be minor and temporary, likely resulting in negligible impacts to air quality limited to the local area around the tower site. For example, five or less pickup trucks would likely transport contractors to and the site during construction; a backhoe would likely run a maximum of 10 hours per days for no more than 60 days; and a crane would likely run for 10 hours for one day. However, these emissions are expected to result in temporary increases in localized particulate emissions of particulate matter, volatile organic compounds, nitrogen oxides, and carbon monoxide.

Such fugitive emissions from construction activities would be mitigated through BMPs and would include:

- Machinery and other construction vehicle engines would not be left to idle unnecessarily; and
- Standard dust suppression procedures would be used to control fugitive dust.

The ground preparation required for each site (i.e., road construction, leveling, contouring) would also generate particulate matter in the form of dust. To minimize the effects of dust during construction, BMPs such as dust suppression efforts via water trucks or other methods may be implemented. Additionally, construction plans for each site include large areas of gravel base on roadways, tower foundations, and parking lots. Additional BMPs would further minimize dust and erosion potentially impacting the local air quality, including the reseeding and revegetation of the disturbed areas. Construction activities are expected to directly contribute to greenhouse gas emissions; however, due to the small scale of each tower project and the intrinsically rural nature of the area those impacts are anticipated to be minor over the short term.

During operations of each of the four towers, there are anticipated to be minimal to negligible impacts to air quality through the operation of vehicles and equipment to maintain and operate each site. However, impacts to climate change and greenhouse gas emissions are anticipated be minor over the long term. Each cell tower is hooked into the electrical grid and requires varying levels of power to operate. The electrical demand of each tower is driven by operating temperatures (i.e., heating and cooling needs), broadcast range, and broadcast frequency (i.e., density of users and Mbps used) (Swinhoe 2022). Taken as individual towers, the electrical demand and overall contribution to greenhouse gases and climate change through energy consumption is likely negligible over the long term. However, the addition of four cell towers would likely increase the overall contribution to greenhouse gases and climate change, although likely still at a negligible rate, when compared to the national level (U.S. Energy Information Administration [EIA] 2023). Upon completion of the Proposed Action, there would be no impacts to air quality due to the operation of the new towers. Additionally, the project does not meet the greenhouse gas reporting requirements as listed under 40 CFR 98.



Both the states of North and South Dakota have air monitoring programs that require air permitting for construction activities; however, in this case both states do not require an air permit for the construction of the towers (ND DEQ 2024; SD DENR 2020b). Since the potential impacts are primarily temporary and localized to the project site from construction activities, overall, the impacts to air quality as part of the Proposed Action Alternative are anticipated to be negligible to minor over the short and long term.

Under the No Action Alternative, no impacts to air quality would occur because no construction or tower operation would occur.

### 5.3. Geology and Soils

Under the Proposed Action Alternative, no impacts to geology are anticipated. Each site requires some grading and contouring for the tower footprint. All sites have a relatively small footprint of disturbed ground. The disturbed ground will not cause notable changes to the local topography or regional geology.

Under the Proposed Action Alternative, general impacts to soils are anticipated to be minor over the short and long-term. The construction of each tower site is similar between towers. Construction management and application of BMPs would be similar between locations and implemented to reduce the overall impact under the Proposed Action Alternative. During construction, soils would be subject to erosion by both wind and water. However, BMPs for erosion control would be implemented where and when necessary. Such BMPs would include the following measures to stabilize soils and reduce erosion:

- Utilization of straw blankets
- Reseeding of vegetation
- Utilization of fertilizer, as needed, during revegetation

Furthermore, any areas identified to be eroded, collapsed, or deemed insufficient in any other way would be repaired post construction on an as needed basis.

There are no soils designated as *Prime Farmland* soils (NRCS 2023), though some *Farmland of Statewide Importance* and *Prime farmland if Irrigated* soils are present. Localized impacts to soils at each tower site are anticipated and further described below. Coordination with NRCS for FPPA will be completed before construction; Farmland Conversion Impact Rating forms are provided in Appendix C.

Under the No Action Alternative, no impacts to geology or soils would occur because no construction or tower operation would occur.

#### Black Horse Butte

Under the Proposed Action Alternative, impacts to soil at this tower site are anticipated to be adverse and minor-moderate over the long-term, and limited to the local area around the tower site. This site is composed of one soil type, Daglum-Rhoades complex, 0 to 6% slope. This soil type is deep to very deep, moderately to well drained clay type alluvium. It is moderately susceptible to compaction and is drought vulnerable (NRCS 2023). Soils at this site have been previously disturbed for agricultural purposes; however, they likely have not been excavated or compacted to the extent needed for tower support. During construction, direct impacts to soils are anticipated. The grading, sloping, compacting, and covering of the native soils could alter its natural state and soil profile (Penn State 2005); however, the BMPs for erosion control that

would be implemented would reduce such impacts (i.e., utilization of straw blankets and reseeding of vegetation). Further, the minimal amount of acreage of soils disturbed at the site (i.e., 0.9 acre) further reduces the overall impact. Nonetheless, impacts are anticipated to be minor over the short and long term.

#### Little Eagle SE

Under the Proposed Action Alternative, impacts to soil at this tower site are anticipated to be adverse and minor to moderate over the long-term and limited to the local area around the tower site. The tower site and roadway lie across two soil types. Both soil types are considered moderately deep, well drained, moderately permeable, with medium to high susceptibility to compaction (NRCS 2023). The tower site lies on soils that have not been previously disturbed. However, the roadway follows an existing service or access road used for residential purposes. Additionally, the Cabba-Amor loams, 15 to 60% slopes are considered *Farmland of Statewide Importance* (NRCS 2023); coordination with NRCS for FPPA will be completed before construction. A portion of the soils at this tower site likely have not been excavated or compacted to the extent needed for tower support. During construction direct impacts to soils are anticipated. The grading, sloping, compacting, and covering of the native soils could alter its natural state and soil profile (Penn State 2005); however, the BMPs for erosion control that would be implemented would reduce such impacts (i.e., utilization of straw blankets and reseeding of vegetation). Further, the minimal amount of acreage of soils disturbed at the site (i.e., 1.5 acres) further reduces the overall impact. Nonetheless, impacts are anticipated to be minor over the short and long term.

#### Morristown E

Under the Proposed Action Alternative, impacts to soil at this tower site are anticipated to be adverse and minor to moderate over the long term, and limited to the local area around the tower site. This site is composed of one soil type. This soil type is very deep, well drained sand and gravel. It is moderately susceptible to compaction and is drought vulnerable (NRCS 2023). This soil type is rated as *Prime farmland if Irrigated* (NRCS 2023); coordination with NRCS for FPPA will be completed before construction. Soils at this site have been previously disturbed for agricultural purposes; however, they likely have not been excavated or compacted to the extent needed for tower support. During construction direct impacts to soils are anticipated. The grading, sloping, compacting, and covering of the native soils could alter its natural state and soil profile (Penn State 2005); however, the BMPs for erosion control that would be implemented would reduce such impacts (i.e., utilization of straw blankets and reseeding of vegetation). Further, the minimal amount of acreage of soils disturbed at the site (i.e., 1 acre) further reduces the overall impact. Nonetheless, impacts are anticipated to be minor over the short and long term.

#### SW Solen

Under the Proposed Action Alternative, impacts to soil at this tower site are anticipated to be adverse and minor to moderate over the long-term, and limited to the local area around the tower site. This site is composed of two soil types. Both soil types are considered well drained, drought vulnerable, and have a low to medium compaction rating (NRCS 2023); coordination with NRCS for FPPA will be completed before construction. Soils at this site have been previously disturbed for agricultural purposes; however, they likely have not been excavated or compacted to the extent needed for tower support. During construction direct impacts to soils is anticipated. The grading, sloping, compacting, and covering of the native soils could alter its

natural state and soil profile (Penn State 2005); however, the BMPs for erosion control that would be implemented would reduce such impacts (i.e., utilization of straw blankets and reseeding of vegetation). Further, the minimal amount of acreage of soils disturbed at the site (i.e., 1.1 acres) further reduces the overall impact. Nonetheless, impacts are anticipated to be minor over the short and long term.

#### 5.4. Water Resources

Water resources potentially affected and evaluated in this EA include surface water, groundwater, coastal zone, intertidal, and estuary areas, wild and scenic rivers, and floodplains.

##### Surface Water (i.e., Lakes and Rivers)

No impacts to surface water resources would occur under the No Action Alternative or the Proposed Action. There are no surface water resources in the Project Area.

##### Groundwater

Groundwater potentially affected by the Proposed Action Alternative include shallow and deep aquifers. There were no identified sole source aquifers in or near each tower site in the Project Area. Additionally, shallow aquifers have not been mapped. Under the Proposed Action Alternative, impacts to groundwater are anticipated to be negligible to minimal over the short- and long-term as construction and operation of the tower sites are not likely to reach the deep aquifers.

Under the No Action Alternative, no impacts would occur to groundwater resources.

##### *Black Horse Butte*

Under the Proposed Action Alternative, local impacts to groundwater in and near this tower site are possible in the event of a spill or release of chemical contaminants during construction. Chemicals used on site will include diesel fuel and gasoline to power heavy equipment, construction equipment, and personal vehicles. Refueling of equipment will be conducted by a mobile fuel delivery service contractor; therefore, no fuel will be stored on site. To eliminate the potential for spills, equipment will only be refueled in a designated area and no overfilling or “topping off” of equipment will occur. Construction and refueling equipment will be regularly inspected to ensure the integrity of the equipment. In addition, fueling of personal vehicles will occur off site. The release of chemicals, whether intentional or accidental, have the potential to adversely affect groundwater resources through effluent release, percolation, and leaching (U.S. EPA n.d.). Contaminated groundwater has the potential to adversely impact nearby water wells over the long term. However, under the Proposed Action Alternative, construction will be conducted following industry standards and implementing BMPs to protect from chemical releases. Additionally, the tower site will be graded and sloped to reduce the impacts of standing water and uncontrolled effluent release. Construction activities are anticipated to have minimal to negligible impacts on the local hydrology and water conditions. With the implementation of BMPs and following industry standard construction guidelines, impacts to groundwater are anticipated to be negligible over the short and long-term.

The operation and maintenance of this tower site is anticipated to have no impact to groundwater under the Proposed Action Alternative. The tower site would be graded and sloped to prevent areas of standing water which could influence existing groundwater recharge zones (USGS 2013). There are no anticipated impacts to the local hydrology based on the long-term operation and maintenance of this tower.

### *Little Eagle SE*

Under the Proposed Action Alternative, impacts to groundwater are not anticipated to be different than previously described based on this tower location.

### *Morristown E*

Under the Proposed Action Alternative, impacts to groundwater are not anticipated to be different than previously described based on this tower location.

### *SW Solen*

Under the Proposed Action Alternative, impacts to groundwater are not anticipated to be different than previously described based on this tower location.

### Coastal Zone, Estuary, and Inter-tidal Areas

No impacts to coastal zones, estuaries, or inter-tidal areas would occur under the No Action Alternative or the Proposed Action. There are no coastal zones, estuaries, or inter-tidal areas in the Project Area.

### Floodplains

No impacts to floodplains would occur under the No Action Alternative or the Proposed Action. There are no floodplains in the Project Area (see Figures 5a-5d).

### Wild and Scenic Rivers

No impacts to wild and scenic rivers would occur under the No Action Alternative or the Proposed Action. There are no wild and scenic rivers in the Project Area. The closest wild and scenic river to the Project Area, specifically Little Eagle SE, is approximately 176 miles from the Niobrara Wild and Scenic River (U.S. Forest Service 2022).

## 5.5. Biological Resources

Biological resources potentially affected by the Proposed Action Alternative include threatened and endangered species, migratory birds, and common wildlife. There would be no impact to designated critical habitat as there is none present in or near any tower sites (USFWS 2024a, 2024b, 2024c, 2024d, and 2024i).

Under the No Action Alternative, no impacts are anticipated for any biological resources.

### Threatened and Endangered Species

The Proposed Action Alternative would have no effect on the pallid sturgeon because the Proposed Action would not impact suitable habitat for the species, and although its historical range has been observed within the Reservation, the probability of pallid sturgeon occurring is negligible (USFWS 2024i).

Impacts to piping plover, red knots, and whooping cranes under the Proposed Action Alternative are discussed under each tower site. Based on the USFWS consultation (USFWS 2024i; Appendix D), the Proposed Action Alternative may affect, but is not likely to adversely affect the piping plover, red knot, and whooping crane. Mitigation measures provided by USFWS (2024i; Appendix D) would be followed and prevent any potential impacts to the threatened and endangered species.

### *Black Horse Butte*

There is no available habitat for piping plover, red knot, or pallid sturgeon at this site. The site is in proximity to open cultivated fields and there is potential for monarch butterfly occupancy and

whooping crane stopover; however, this habitat does not overlap with the site. There are no official surveys documenting the presence of either species at this site (USFWS 2024i; Appendix D).

#### *Little Eagle SE*

There is no available habitat for piping plover, red knot, or pallid sturgeon at this project site. The site is in proximity to open cultivated fields and there is potential for monarch butterfly occupancy and whooping crane stopover in the adjacent habitat; however, this habitat does not overlap with the site. There are no official surveys documenting the presence of either species at this site (USFWS 2024i; Appendix D).

#### *Morristown E*

There is no available habitat for piping plover, red knot, or pallid sturgeon at this project site. The site is in proximity to open cultivated fields and there is potential for monarch butterfly occupancy and whooping crane stopover in the adjacent habitat; however, this habitat does not overlap with the site. There are no official surveys documenting the presence of either species at this site (USFWS 2024i; Appendix D).

#### *SW Solen*

There is no available habitat for piping plover, red knot, or pallid sturgeon at this project site. The site is in proximity to open cultivated fields and there is potential for monarch butterfly occupancy and whooping crane stopover in the adjacent habitat; however, this habitat does not overlap with the site. There are no official surveys documenting the presence of either species at this site (USFWS 2024i; Appendix D).

#### **Critical or Threatened / Endangered Habitat**

Under the Proposed Action Alternative, there would be no impact to critical, threatened, or endangered habitats as there are none listed in or near the Project Area for each tower site (USFWS 2024a, 2024b, 2024c, 2024d, and 2024i).

#### **Wetland Habitats**

No impacts to wetland habitats would occur under the No Action Alternative or the Proposed Action. There are no wetlands in the Project Area. The nearest wetland to the Project Area is 500 feet from Little Eagle SE.

#### **Vegetation**

Under the Proposed Action Alternative, impacts to vegetation would be minimally adverse over the short and long-term for local vegetation. Construction activities will result in the scraping and removal of existing vegetation. Additionally, compacted gravel pads and roadways will be built on soils preventing vegetation stands from recolonizing. Once construction is complete, areas that were disturbed, but not graveled, will be reseeded with native grassland species. Tower site-specific area impacts are described below. Overall, approximately 1.32 acres of native vegetation stands would be permanently disturbed under the Proposed Action Alternative. Given the small acreage size when compared to the total acres of native vegetation within the Reservation, the total impacts to vegetation under the Proposed Action Alternative would be minimal.

### *Black Horse Butte*

This tower site consists of approximately 0.9-acre of disturbed vegetation. Of that, approximately 0.73 acres is a vegetation type that has been previously disturbed (i.e., cultivated cropland and developed open space) (USGS 2011).

### *Little Eagle SE*

This tower site consists of approximately 1.49 acres of disturbed vegetation. Of that, approximately 0.42-acres is a vegetation type that has been previously disturbed (i.e., cultivated cropland, developed open space, and introduced upland vegetation) (USGS 2011).

### *Morristown E*

The tower site consists of approximately 0.97-acres of disturbed vegetation. Of that, approximately 100% of the area is a vegetation type that has been previously disturbed (i.e., cultivated cropland, and introduced upland vegetation) (USGS 2011).

### *SW Solen*

The tower site consists of approximately 1.1 acres of disturbed vegetation. Of that, approximately 0% is a vegetation type that has been previously disturbed (USGS 2011).

### **Migratory Birds and Wildlife**

Under the Proposed Action Alternative, adverse impacts to migratory birds, bald and golden eagles, and common wildlife would be negligible to minor over the short and long term. Per USFWS (2024a; 2024b; 2024c; 2024d) there are no migratory birds of conservation concern known to occur within the Project Area. Bald eagles are known to occur in the vicinity of the SW Solen site (per USFWS 2024i); however, there is no habitat present for nesting eagles within the Project Area. Migratory birds, eagles, and wildlife are highly mobile and would likely vacate an area if disturbed by construction activities. Under the Proposed Action Alternative, the impacts to migratory birds and common wildlife during construction activities would be temporary, and minor to negligible. Additionally, once construction has finished, migratory birds, eagles, and common wildlife would likely move back into the area and utilize habitat adjacent to and near the towers. No additional impacts to wildlife species are anticipated under the Proposed Action Alternative.

Under the Proposed Action Alternative, impacts from the operation of the tower sites to migratory birds and eagles are anticipated to be adverse and minor over the long term from potential bird strikes, as cellular towers can directly impact migratory birds through bird strikes (Partners in Flight 2024). These bird strikes are often related to the lighting systems on cellular towers attracting and then confusing migratory birds in flight, often resulting in a fatal strike with equipment (USFWS 2024j). In order to minimize the number of strikes at cellular towers and to mitigate such impacts, lighting under the Proposed Action Alternative would include strobes during the day and LED red lights in the night hours. When flashing or strobing lights are utilized, birds are not as attracted to the light (Partners in Flight 2024; USFWS 2024j). Specifically, as noted in USFWS (2022), lighting a tower with only flashing lights at night has been found to reduce bird collisions by as much as 70% while still promoting safety by alerting pilots to tower locations. Additionally, as required in (USFWS 2021), if taller towers requiring lights for aviation safety must be constructed, the minimum amount of pilot warning and obstruction avoidance lighting required by the FAA should be used. Unless otherwise required by the FAA, only white or red flashing lights should be used at night, and these should follow FAA obstruction and marking standards with regards to the minimum number of lights, minimum



intensity, and minimum number of flashes per minute. The use of non-flashing warning lights should be avoided at night (USFWS 2021). Additionally, mitigation measures provided by USFWS (2024i; Appendix D) would also be followed to prevent any potential impacts to the migratory birds and eagles. For example, one measure that is required and would be implemented is that the project proponent would turn off all unnecessary lighting at night. If nighttime lighting is required, the use of motion sensor security lights that are only activated as needed can be used. The use of sodium vapor lights at site facilities should be minimized or avoided to reduce the attraction of migratory birds.

Cellular towers can also act as an attractant to bald and golden eagles for nesting areas (Riley 2023). Eagles are naturally attracted to high areas for nesting, including power poles, transmission towers, cellular towers, and other infrastructure. If this occurs, nests have the potential to directly impact the operations of equipment (Riley 2023). However, the mitigation measures provided by USFWS (2024i; Appendix D) include the National Bald Eagle Management Guidelines (USFWS 2007), which prohibit removal or destruction of both active and alternate bald eagle nests. For example, USFWS requires that the project proponent install nest exclusion devices on existing or new structures to discourage nest construction and use (USFWS 2024i). Additionally, per USFWS (2021), the following measures would be followed, as well. If birds are nesting on communication towers that require maintenance activities, the state natural resource protection agency and/or the USFWS should be contacted for permits, recommendations, and requirements. Excess wires would be minimized and securely attached to the tower structure to reduce the likelihood of birds becoming entangled on the tower. A bird nest exclusion device on the towers would be considered where birds frequently nest. Additionally, construction and maintenance activities around the nesting and activity schedule of protected birds would be scheduled as well. Vegetation removal and maintenance activities would be scheduled outside of the peak bird breeding season to reduce the risk of bird take. Such an adverse impact is anticipated to be minor and long term with the incorporation of the mitigation measures above.

Under the No Action Alternative, no impacts to migratory birds, bald or golden eagles, or other wildlife would occur because no construction or tower operation would occur.

#### *Black Horse Butte*

Mitigation measures to reduce the potential for short- and long-term adverse impacts to migratory birds and eagles would be implemented at this site. For example, this tower will be outfitted with flashing lights at the mid-range height and mitigation measures provided by USFWS (2024i; Appendix D) would be followed to prevent any potential impacts to the migratory birds and eagles. Under the Proposed Action Alternative, impacts to migratory birds and eagles would be negligible over the long term with implementation of the above mitigation measures.

#### *Little Eagle SE*

Mitigation measures would be similarly implemented at this tower site.

#### *Morristown E*

Mitigation measures would be similarly implemented at this tower site.

#### *SW Solen*

Mitigation measures would be similarly implemented at this tower site.



## 5.6. Historic and Cultural Resources

Under the Proposed Action there would be no adverse impacts to cultural resources. The THPO reached a determination of No Historic Properties Affected for the Project Area, assuming specific mitigation measures are implemented (Appendix E). Details of the THPO's concurrence and recommendations for each site are further described below.

### Black Horse Butte

The THPO issued a determination of No Historic Properties Affected for this site (Appendix E); however, a SRST THPO Tribal Monitor must be on site during all ground disturbing activities as a precaution for any subsurface deposits. Furthermore, in the unlikely event that human remains are encountered, or an inadvertent discovery is made, all ground disturbing activities must immediately cease, and the THPO be immediately notified.

### Little Eagle SE

The THPO issued a determination of No Historic Properties Affected for this site (Appendix E); however, a SRST THPO Tribal Monitor must be on site during all ground disturbing activities as a precaution for any subsurface deposits. Furthermore, in the unlikely event that human remains are encountered, or an inadvertent discovery is made, all ground disturbing activities must immediately cease, and the THPO be immediately notified.

### Morristown E

The THPO issued a determination of No Historic Properties Affected for this site (Appendix E); however, a SRST THPO Tribal Monitor must be on site during all ground disturbing activities as a precaution for any subsurface deposits. Furthermore, in the unlikely event that human remains are encountered, or an inadvertent discovery is made, all ground disturbing activities must immediately cease, and the THPO be immediately notified.

### SW Solen

The THPO issued a determination of No Historic Properties Affected for this site (Appendix E); however, a SRST THPO Tribal Monitor must be on site during all ground disturbing activities and the avoidance areas avoided. Furthermore, in the unlikely event that human remains are encountered, or an inadvertent discovery is made, all ground disturbing activities must immediately cease, and the THPO be immediately notified.

Under the No Action Alternative, there would be no adverse impacts to cultural resources because no construction or tower operation would occur.

## 5.7. Aesthetic and Visual Resources

Localized aesthetic and visual resource impacts at each tower site are further described below. Lighting under the Proposed Action Alternative would include strobes during the day and LED red lights in the night hours.

### Black Horse Butte

Under the Proposed Action Alternative, impacts to aesthetic and visual resources are anticipated to be negligible, but adverse over the long term. This tower location is in a wide-open view scape with little to no other infrastructure altering the viewshed. The area is primarily rural in nature but has been previously disturbed for cultivation activities. Lighting (day and night) from the Proposed Action Alternative would be visible (likely from 6 miles away [Google Earth 2024]); however, there are minimal homes around the Black Horse Butte site. Additionally, there are no listed monuments, national parks, or state interest sights near the tower site.

Therefore, such impacts would result in negligible impacts over the long term under the Proposed Action Alternative.

#### Little Eagle SE

Under the Proposed Action Alternative, impacts to aesthetic and visual resources are anticipated to be minor, but adverse over the long term. This tower location is adjacent to an already disturbed area where infrastructure such as roadways and transmission lines are already present. Additionally, the area is relatively flat with rolling topography. There are no listed monuments, national parks, or state interest sights near the tower site. Though this tower is likely visible from a nearby residence, and lighting (day and night) from the Proposed Action Alternative would be visible (likely from 6 miles away [Google Earth 2024]); there are minimal homes around the Little Eagle SE site. Therefore, long-term adverse impacts are expected to be minor due to minimal community members' proximity and distance.

#### Morristown E

Under the Proposed Action Alternative, impacts to aesthetic and visual resources are anticipated to be negligible, but adverse over the long term. This tower location is in an already disturbed area, with nearby residential infrastructure, roadways, and a train route. It is also in close proximity to Morristown, SD, where other infrastructure has previously fractured the viewshed. The tower would likely be seen from 6 miles away (Google Earth 2024). However, there are no listed monuments, national parks, or state interest sights near the tower site. Therefore, long-term adverse impacts are expected to be negligible due to other infrastructure in the immediate surrounding area.

#### SW Solen

Under the Proposed Action Alternative, impacts to aesthetic and visual resources are anticipated to be minor, but adverse over the long term. This tower location is well off the nearby highway where bluffs and rolling topography naturally limit visual interference from the road. There are no listed monuments, national parks, or state interest sights near the tower site. However, the tower is located adjacent to a residence where it is likely visible along with lighting (day and night) from the Proposed Action Alternative and would likely be seen from 6 miles away (Google Earth 2024). However, long-term impacts are expected to be adverse, but minor, due to minimal community members' proximity over the long term.

Under the No Action Alternative, no impacts to aesthetic and visual resources would occur because no construction or tower operation would occur.

### 5.8. Land Use

#### Black Horse Butte

Under the Proposed Action Alternative, impacts to land use are anticipated to be negligible and would be limited to the local area around the tower site. The construction of the tower would result in the permanent disturbance of approximately 0.9-acre of land. This land was previously utilized for agricultural purposes, primarily crop cultivation. Although the land would no longer be available for crop cultivation, the area has been previously disturbed, the amount of land is minimal, and it would not result in a change to developed land. Therefore, impacts are anticipated to be negligible over the long term.

### Little Eagle SE

Under the Proposed Action Alternative, impacts to land use are anticipated to be negligible and would be limited to the local area around the tower site. The construction of the tower would result in the permanent disturbance of approximately 1.5 acres of land. This land has been primarily undeveloped with use for agricultural purposes, primarily grazing. Although the land associated with the tower infrastructure would no longer be available for grazing, it would not prevent grazing or other agricultural uses from occurring adjacent to or nearby. Coordination with NRCS for FPPA will be completed before construction; though conversion of prime farmland would occur, the project would result in a negligible change in land use due to the minimal amount of acreage conversion and is expected for the long term.

### Morristown E

Under the Proposed Action Alternative, impacts to land use are anticipated to be negligible and would be limited to the local area around the tower site. The construction of the tower would result in the permanent disturbance of approximately 1 acre of land. This land was previously utilized for agricultural crop cultivation. Although the land would no longer be available for crop cultivation, the area has been previously disturbed, and the project would not result in a change to developed land. Coordination with NRCS for FPPA will be completed before construction; though conversion of prime farmland would occur, impacts are anticipated to be negligible over the long term due to the minimal amount of acreage conversion.

### SW Solen

Under the Proposed Action Alternative, impacts to land use are anticipated to be negligible and would be limited to the local area around the tower site. The construction of the tower would result in the permanent disturbance of approximately 1.1 acres of land. This land has been primarily undeveloped with use for agricultural purposes, primarily grazing. Although the land associated with the tower infrastructure would no longer be available for grazing it would not prevent grazing or other agricultural uses from occurring adjacent to or nearby. Coordination with NRCS for FPPA will be completed before construction; though conversion of prime farmland would occur, the project would result in a negligible change in land use due to the minimal amount of acreage conversion and is expected for the long term.

Under the No Action Alternative, no impacts to land use would occur because no construction or tower operation would occur.

## 5.9. Infrastructure

### Black Horse Butte

Under the Proposed Action Alternative, adverse impacts to infrastructure are expected to be negligible to minor over the short and long term. During construction of the tower, tie-ins to existing infrastructure would be necessary. During the tie-ins, impacts to nearby infrastructure may result. During construction, line strikes are possible and damage to other infrastructure, such as roadways, could occur. Any damage would be considered an adverse impact over the short term. Mitigation measures to prevent short-term adverse impacts during construction would include notifying *One Call* and performing underground line locates prior to digging. Additionally, any direct damage or interruptions to services would be immediately addressed and repaired.

Under the Proposed Action Alternative, impacts to infrastructure would be beneficial. Installation of this tower would increase the availability of telecommunication services in the area, and

ultimately facilitate the continued distribution of telecommunication infrastructure across the Reservation, which would be a long-term beneficial impact. However, the operations of the tower require support services, such as electricity. This would increase the demand on the current electrical infrastructure, which would be a negligible to minor adverse impact on the electrical infrastructure over the long term. However, the power usage by this tower is anticipated to be minor to negligible over the long term and the existing power grid would be able to support the power demand.

Under the No Action Alternative, there would be no impacts to existing infrastructure since there would be no changes to existing infrastructure. The current telecommunications infrastructure would remain limited and this could make future expansion of the telecommunication infrastructure cost prohibitive.

#### Little Eagle SE

Impacts under the Proposed Action Alternative would be similar as those previously described.

#### Morristown E

Impacts under the Proposed Action Alternative would be similar as those previously described.

#### SW Solen

Impacts under the Proposed Action Alternative would be similar as those previously described.

### 5.10. Socioeconomic Resources

Under the Proposed Action Alternative, beneficial impacts to socioeconomic resources are expected over the long term. The rural area of the Reservation and communities within has resulted in population areas with no to limited access to communication technologies. This limits the potential for certain communities and residences across the Reservation to access communication services that are more readily available in urban areas. The lack of communication access has hindered economic growth and individual development across the Project Area. The installation of the towers would allow for many of those rural areas to have better and more consistent access.

Under the No Action Alternative, major adverse impacts to socioeconomic resources could occur over the long term. The need for better access to telecommunication services across the Reservation has been identified. The lack of reliable communications across the area would continue to hinder socioeconomic resources in an adverse manner.

The population in the Project Area is considered a minority population and low-income population according to the USCB data. As discussed in Section 4.10, Socioeconomic Resources, above, approximately 32% of the population is living below the poverty level (USCB 2024b). Furthermore, approximately 77% of the population identify as American Indian and Alaska Native (USCB 2024a).

Under the Proposed Action Alternative there would be no adverse impacts to environmental justice populations. As discussed throughout this EA, the construction and operation of the towers would not result in adverse human health impacts or significant adverse environmental effects. Therefore, there would not be disproportionately high and adverse impacts to the environmental justice populations located in and around the Project Area.

Under the No Action Alternative, there would be moderate to major adverse impacts to environmental justice populations. If the towers were not constructed, the essential

communication services would not be available to these environmental justice populations, which would perpetuate the lack of essential services to these disadvantaged populations.

### 5.11. Human Health and Safety

Under the Proposed Action Alternative, impacts to human health and safety are expected to be minor and adverse over the short term; and beneficial over the long term with safety mitigation efforts included. During construction activities impacts to human health may occur. Impacts related to traffic management, utility line strikes, decreased air quality from dust and utility services, and accidental release of hazardous materials (i.e., fuels) could occur. However, mitigation efforts to manage traffic, identify buried utilities, dust management, and general protection of existing infrastructure will be in place under the Proposed Action Alternative. Such measures would include performing utility locations prior to construction, discussing traffic management plan with state Department of Transportation agency officials, and dust suppression efforts. To reduce the potential for accidental releases of hazardous materials, fuels or other chemicals would be stored and maintained in designated staging areas. Additionally, an emergency spill kit containing absorption pads, material, shovel, and other cleanup items would be readily available for cleanup of chemical or fuel releases. Construction activities would be completed in a relatively short period.

Additionally, during the operations and maintenance period of each tower, mitigation measures such as fencing and controlled access would be implemented. Limiting access to potentially dangerous equipment would mean that the operations of the towers does not lead to any adverse impacts to human health and safety over the long-term. Such mitigation measures would be in place including:

- Towers would be placed beyond a safe distance to outside infrastructure (per Physicians for Safe Technology 2023) (i.e., the towers would be sited more than 200 feet from existing roadways and buildings, including residences) in case of tower foundation failure.
- Utilities servicing the towers would be buried along easements. Buried utilities would be marked with tracer lines, warning tape, and contained within conduit.
- The main tower base would be secured behind a 6-ft high security fence with a secure access gate.
- Transformers would be located outside of the security fence. Having transformers outside of the security fence is intentional in case of electrical service emergencies (e.g., blown transformers, power outage, etc.).

Additionally, the operations of the towers would be a long-term beneficial impact to human health and services since the towers will improve or establish communications in rural areas. This would directly improve response times for emergency services in the area.

Under the No Action Alternative, impacts to human health and safety are anticipated to be adverse over the long term. A need for better telecommunication services across the Reservation has been identified. This need is in part due to the inability for some rural communities and residents to contact emergency services when needed, which is a continued major impact to human health and safety across the Project Area.

### 5.12. Cumulative Impacts

Per NEPA and CEQ regulations, the consideration of the cumulative impacts of a proposed action is required (32 CFR §651.16). A cumulative impact is defined as effect on the environment that results from the incremental effects of action when added to the effects of other past, present, and reasonably foreseeable future actions, regardless of what agency (federal or non-federal) or person undertakes such other actions (40 CFR §1508.1(g)(3)). Past actions are actions that occurred in the past that may warrant consideration in determining whether there are potential cumulative impacts. Present actions are actions that are occurring in the same general period as the Proposed Action and the No Action Alternative. Reasonably foreseeable actions are actions that may affect the projected impacts of the Proposed Action and the No Action Alternative. The cumulative impacts analysis area varies by resource; it may encompass a portion of each tower site within the Project Area, the entire Reservation, or expand beyond the defined Project Area footprint.

The Proposed Action Alternative would cumulatively provide beneficial impacts along with past actions to establish, provide, and increase telecommunication services across the Reservation during the present and foreseeable future. Efforts, to date, have been made to update existing towers with newer, more reliable equipment (Oxendine 2021) as part of a Tribal strategic initiative to increase communication capabilities across the Project Area (Standing Rock Sioux Tribe 2019).

There would be negligible to no cumulative impacts to noise, air quality, geology and soils, water, biological, and historic resources for past, present, or foreseeable future under the Proposed Action Alternative or the No Action Alternative as there would be little to no effect by either alternative.

There would be minor to moderate adverse impacts to infrastructure, socioeconomic, and human health and safety resources under the No Action Alternative as current conditions would continue as they have in the past, into the present and foreseeable future. This action alternative does not align with the Standing Rock Sioux Tribe Strategic Plan (Standing Rock Sioux Tribe 2019). However, under the Proposed Action Alternative impacts to those previously listed resources would be beneficial since the communications towers will directly improve connectivity across the area and community.

No cumulative impacts under the No Action Alternative to aesthetic and visual, and land use resources are expected, as no action would occur. Cumulative impacts to those same resources would be adverse, but minor to negligible, for the past, present, and foreseeable future under the Proposed Action Alternative. The areas where the tower sites are placed as defined under the Proposed Action Alternative have been previously disturbed or are adjacent to areas that were previously disturbed. Overall, the cumulative effects are not anticipated to result in adverse environmental impacts.

**Table 5-1 Comparison of the Potential Environmental Impacts by Alternative**

<b>Alternative</b>	<b>Potential Impacts</b>
<b>Noise</b>	--
Proposed Action	Negligible to minor adverse impacts over the short and long-term.



<b>Alternative</b>	<b>Potential Impacts</b>
No Action Alternative	No impacts to noise levels.
<b>Air Quality</b>	--
Proposed Action	Negligible to minor to adverse impacts over the short and long-term to air quality, greenhouse gas emissions, and climate change.
No Action Alternative	No impacts to air quality, greenhouse gas emissions, and climate change.
<b>Geology and Soils</b>	--
Proposed Action	No impacts to geology, but adverse minor to moderate impacts to soils over the short and long-term. Applicable BMPs to reduce overall adverse impacts to soil conditions and erosion potential.
No Action Alternative	No impacts to geology and soils.
<b>Water Resources</b>	--
Proposed Action	No impacts to surface water, coastal zones, floodplains, or wild and scenic rivers. Impacts to groundwater is anticipated to be negligible to minor over the short and long-term with the application of applicable BMPs and the prevention of chemical releases to the environment during construction activities. No impacts to groundwater over the long-term during the routine operations and maintenance of each tower site.
No Action Alternative	No impacts to water resources.
<b>Biological Resources</b>	--
Proposed Action	Negligible to minor adverse impacts over the short and long-term to biological resources. Mitigation measures considered for some biological resources to reduce the overall impacts over the long-term. Mitigation measures to reduce overall adverse impacts to migratory birds and eagles, include the following, but would not be limited to lighting that would include strobes during the day and LED red lights in the night hours; no unnecessary lighting at night; if nighttime lighting is required use motion sensor security lights that are activated as needed; installation of nest exclusion devices on existing or new structures to discourage nest construction and use; if birds are nesting on communication towers that require maintenance activities, the state natural resource protection agency and/or the USFWS should be contacted for permits, recommendations, and requirements. All mitigation measures provided by USFWS (2024i; Appendix D) would be implemented.
No Action Alternative	No impacts to biological resources.

<b>Alternative</b>	<b>Potential Impacts</b>
<b>Historic and Cultural Resources</b>	
Proposed Action	The THPO issued a determination of No Historic Properties Affected for the Project Area (Appendix E); however, a SRST THPO Tribal Monitor must be on site during all ground disturbing activities at Black Horse Butte, Little Eagle SE, Morristown E, and SW Solen, and the avoidance areas avoided at SW Solen. Furthermore, in the unlikely event that human remains are encountered at any of the sites, or an inadvertent discovery is made, all ground disturbing activities must immediately cease, and the THPO be immediately notified.
No Action Alternative	No impacts to historical and cultural resources.
<b>Aesthetic and Visual Resources</b>	
Proposed Action	Negligible to minor to adverse impacts over the long-term to aesthetic and visual resources.
No Action Alternative	No impacts to aesthetic and visual resources.
<b>Land Use</b>	
Proposed Action	Negligible adverse impacts over the long-term to land use.
No Action Alternative	No impacts to land use resources.
<b>Infrastructure</b>	
Proposed Action	Short- and long-term beneficial impacts to infrastructure for operation of the towers, but negligible to minor adverse short-term impacts during construction of the towers is possible.
No Action Alternative	Short and long-term minor adverse impacts to infrastructure.
<b>Socioeconomic Resources</b>	
Proposed Action	Short and long-term beneficial impacts to socioeconomic resources.
No Action Alternative	Long-term adverse impacts to socioeconomic resources.
<b>Human Health and Safety</b>	
Proposed Action	Long-term beneficial impacts to human health and safety for operation of the towers, but minor adverse short-term impacts during construction of the towers are possible. Applicable BMPs to reduce overall adverse impacts to health and safety.
No Action Alternative	Minor to moderate long-term adverse impacts to human health and safety.

### 6.0 Applicable Environmental Permits and Regulatory Requirements

The following table lists the applicable environmental permits and regulatory requirements and any BMPs that must be implemented to under each, if relevant.

**Table 6-1 Applicable Environmental Permits and Regulatory Requirements**

Potentially Applicable Requirement	Relevant Project Information
<b>All Resources</b>	--
National Environmental Policy Act (NEPA) of 1969 42 U.S.C. § 4321 et seq.	Public scoping was initiated on 3/19/24. A draft EA was provided to the public for review for a 30-day comment period beginning 7/9/24. No comments were received.
<b>Vegetation, Wildlife, and Fish</b>	--
Endangered Species Act of 1973 16 U.S.C. § 1531 et seq.	No effect on the pallid sturgeon; may affect but is not likely to adversely affect the piping plover, red knot, and whooping crane. Mitigation measures provided by USFWS (2024i; Appendix D) would be followed and prevent any potential impacts to the threatened and endangered species. USFWS concurrence received 4/30/24.
Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) of 1976 16 U.S.C. 1801 et seq.	The Project will have no effect on fisheries.
Bald Eagle and Golden Eagle Protection Act (Eagle Act) of 1940 16 U.S.C. § 668-668d	<p>No bald or golden eagle nests are documented near the project sites. Additionally, the project as currently proposed will have minor to negligible effect on bald and golden eagles. Mitigation measures would be implemented to avoid impacts, including but not limited to the following:</p> <ul style="list-style-type: none"> <li>• Lighting under the Proposed Action Alternative would include strobes during the day and LED red lights in the night hours.</li> <li>• Turn off all unnecessary lighting at night. If nighttime lighting is required use motion sensor security lights that are activated as needed.</li> <li>• Minimize or avoid the use of sodium vapor lights at site facilities to reduce attraction of migratory birds.</li> <li>• Install nest exclusion devices on existing or new structures to discourage nest construction and use.</li> <li>• If birds are nesting on communication towers that require maintenance activities, the state natural resource protection agency and/or the USFWS should be contacted for permits, recommendations, and requirements.</li> <li>• Excess wires would be minimized and securely attached wires to the tower structure to reduce the likelihood of birds becoming entangled on the tower.</li> <li>• A bird nest exclusion device on the towers would be considered where birds frequently nest. Construction and maintenance activities around the nesting and activity schedule of protected birds would be scheduled as well.</li> <li>• Vegetation removal and maintenance activities would be scheduled outside of the peak bird breeding season to reduce the risk of bird take.</li> <li>• All mitigation measures provided by USFWS (2024i; Appendix D).</li> </ul>

<b>Potentially Applicable Requirement</b>	<b>Relevant Project Information</b>
Migratory Bird Treaty Act (MBTA) of 1918 16 U.S.C. § 703-712  Responsibilities to Federal Agencies to Protect Migratory Birds EO 13186	There are no migratory bird concerns directly associated with each tower location. The Project will have minor to negligible effect on migratory birds. USFWS concurrence received 4/30/24. The same mitigation measures outlined in the Eagle Act described above would avoid impacts to migratory birds.
Fish and Wildlife Conservation Act 16 U.S.C. § 2901 et seq.  Fish and Wildlife Coordination Act 16 U.S.C. § 661 et seq.	There will be no effect on wildlife resources.
<b>Waters, Wetlands, and Floodplains</b>	--
Clean Water Act 33 U.S.C. § 1251 et seq.  Floodplain/Wetlands Environmental Review  Requirements 10 CFR 1022.12 Floodplain Management EO 11988  Protection of Wetlands EO 11990	No wetlands, floodplains, surface waters, or WOTUS have been identified on any sites. The project will not impact these features as long as mitigation measures are followed regarding erosion and sediment transport.
Coastal Zone Management Act (CZMA) 16 U.S.C. § 1451 et seq.	The project is not located in a coastal zone requiring coordination under the CZMA.
<b>Air Quality and Greenhouse Gases</b>	--
The Clean Air Act, as revised in 1990 42 U.S.C. § 4701	The project is not expected to require any air permits. To minimize the effects of fugitive dust and emissions during construction, dust suppression techniques via water trucks or other methods would be implemented; and machinery and other construction vehicle engines would not be left to idle unnecessarily.
Final Mandatory Reporting of Greenhouse Gases Rule 40 CFR 98  Federal Leadership in Environmental, Energy, and Economic Performance EO 13514	The project does not meet the greenhouse gas reporting requirements as listed under 40 CFR 98.  EO 13514 was revoked by EO 13693 in 2015. The project does not fall within the confines of either EO but may be considered as part of any Tribal objectives to improve sustainability and renewable energy sources as specified under EO 13693.

Potentially Applicable Requirement	Relevant Project Information
<b>Cultural and Historic Resources</b>	--
<p>Antiquities Act of 1906 16 U.S.C. § 431-433</p> <p>Historic Sites Act of 1935 16 U.S.C. § 461-467</p> <p>National Historic Preservation Act (NHPA), as amended, inclusive of Section 106 54 U.S.C. § 306108 et seq.</p> <p>Archaeological Data Preservation Act of 1974 (16 U.S.C. § 469 – 469-1)</p> <p>Archaeological Resources Protection Act of 1979, as amended 16 U.S.C. § 469 a-c</p> <p>Native American Graves Protection and Repatriation Act 25 U.S.C. § 3001 et seq.</p> <p>Indian Sacred Sites EO 13007</p> <p>American Indian Religious Freedom Act of 1978 (42 U.S.C. § 1996)</p>	<p>No adverse impacts to cultural resources. As the lead federal agency, and as provided for in 36 CFR 800.5, NTIA reached a determination of no historic properties affected for this undertaking based on the findings and recommendation of the Principal Investigator (Iron Eyes 2023a-d). The following additional recommendation was made by the Principal Investigator for the project: the identified avoidance areas should be recognized in order to avoid impacting the potentially eligible cultural resources located within the APE.</p>
<b>Noise, Public Health, and Safety</b>	--
<p>Noise Control Act of 1972 42 U.S.C. § 4901 et seq.</p>	<p>Due to the rural nature of the project site, sensitive receptors have not been identified and the project does not fall within this requirement.</p>
<p>Spill Prevention Control and Countermeasures Rule 40 CFR 112</p> <p>Comprehensive Environmental Response, Compensation, and Liability Act 42 U.S.C. § 9601 et seq.</p> <p>Resource Conservation and Recovery Act 42 U.S.C. § 6901 et seq.</p>	<p>Construction work will be performed during normal daylight hours. Workers will follow OSHA requirements for worker protection (i.e., wearing appropriate personal protective equipment). The Responsible Party will identify buried utilities prior to subsurface disturbance utilizing the <i>One Call</i> (Call Before You Dig) database tool. Heavy equipment and specialized equipment for construction will be done by qualified workers. A qualified worker is someone who is trained or experienced with the task, tool, or material being utilized. Coordination with the FAA will be completed to ensure each tower does not pose a hazard to air navigation.</p> <p>No gross wastes will be generated or left on site as part of the construction or operation and maintenance of each tower site.</p>
<p>The Toxic Substances Control Act 15 U.S.C. 2601 et seq.</p>	<p>No toxic substances will be used as part of the construction or operations and maintenance of each tower.</p>
<p>Federal Communications Commission (FCC)</p>	<p>Compliance with FCC rules to implement NEPA and protect aviation safety compliance and notification process.</p>
<b>Environmental Justice</b>	--
<p>Environmental Justice</p>	<p>No additional requirements apply to the project for Environmental Justice.</p>

Potentially Applicable Requirement	Relevant Project Information
Tribal Plan Consistency	--
List Any State, County or Local Planning agencies	North and South Dakota state planning, county level planning, and local municipality planning. Tribal government planning on tribal allotted land – land lease through Tribe.

## 7.0 Consultations

Table 7-1 Consultations Completed

Agency and Name	Consultation	Status
USFWS, South Dakota Ecological Services, Christopher Swanson	Section 7 Endangered Species Act Informal Consultation and Migratory Bird Treaty Act	Concurrence received 4/30/24.
THPO, Jon Eagle	NHPA, as amended, inclusive of Section 106	THPO concurrence response received 2/14/24 and 2/28/24.

## 8.0 References

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