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RESOURCE REPORT 1

1.0 GENERAL PROJECT DESCRIPTION

WBI Energy Transmission, Inc. (WBI Energy) proposes to construct and operate the 2023 Line Section 27 Expansion Project (Project). The Project involves the installation of the proposed Spring Creek Compressor Station (Compressor Station) to provide additional transportation capacity on WBI Energy's existing Line Section 27 (North Badlands Sub-System) for delivery to Northern Border Pipeline Company (Northern Border) at the existing Spring Creek Interconnect in McKenzie County, North Dakota.

The Project also involves:

- Installation of approximately 1000' of new 24-inch diameter pipeline connecting the proposed Compressor Station to WBI Energy's Line Section 27;
- Installation of new block valve setting on the existing Line Section 27 16-inch diameter and 24-inch diameter pipelines;
- Increasing meter capacity at the existing Demicks Lake Plant Receipt Station;
- Modifications at the existing Cherry Creek Valve Setting; and,
- Additional measurement and pipeline facilities at the Spring Creek Interconnect.

WBI Energy is filing an application with the Federal Energy Regulatory Commission (FERC or Commission) pursuant to Title 18 Code of Federal Regulations (CFR) Sections 157.205 and 157.210 of the Commission's regulations, requesting approval to construct and operate the proposed facilities.

1.1 PROPOSED FACILITIES

1.1.1 Purpose and Need

The purpose of the Project is to provide additional capacity necessary for the transportation of incremental natural gas volumes to WBI Energy's Spring Creek Interconnect with Northern Border in McKenzie County, North Dakota. ONEOK Rockies Midstream, L.L.C. (ONEOK) is expanding the processing capacity at its Demicks Lake natural gas processing plant and WBI Energy has entered into a precedent agreement with ONEOK for 175,000 equivalent dekatherms per day (dkt/day) of incremental firm transportation service from the tailgate of the Demicks Lake Plant to WBI Energy's Spring Creek Interconnect with Northern Border. The Project is designed to provide a timely increment of new pipeline transportation capacity to accommodate receipts of processed gas from the expanded Demicks Lake Plant.

1.1.2 Pipeline Facilities

The Project includes the construction and operation of two 24-inch diameter natural gas pipelines, approximately 500' in length, from the proposed Compressor Station connecting to WBI Energy's existing Line Section 27 16-inch and 24-inch pipelines. Following successful installation of the pipelines, hydrostatic testing will be completed to confirm the integrity of the pipelines. Aerial and topographic location exhibits depicting the proposed pipelines are included in Appendices II-B and II-C. Aerial construction alignment sheets are included in Appendix II-D.

1.1.3 Aboveground Facilities

In addition to the new pipeline facilities described above, the Project will require construction of a greenfield compressor station and valve setting, modifications to existing facilities, and expansion of the Spring Creek Interconnect to accommodate new measurement facilities. Table 1.1.3-1 provides the locations of the aboveground facilities to be installed or modified for the Project.

TABLE 1.1.3-1
Aboveground Facilities

Facility	Approximate Location	County, State
Spring Creek Compressor Station	Section 30, T149N, R098W	McKenzie County, ND
Demicks Lake III Valve Setting	Section 30, T149N, R098W	McKenzie County, ND
Spring Creek Interconnect	Section 30, T149N, R098W	McKenzie County, ND
Demicks Lake Plant Receipt Station	Section 20, T151N, R096W	McKenzie County, ND
Cherry Creek Valve Setting	Section 24, T150N, R098W	McKenzie County, ND

Spring Creek Compressor Station

WBI Energy proposes to construct a new 8000 horsepower (hp) Compressor Station on an approximately 600' x 600' (8.3-acre) site. The compressor station will consist of two 4000 horsepower Hyundai Electric Motors with Ariel KBZ/4 Compressor units, a unit cooler and motor control center for each compressor unit, an auxiliary building, communication devices, and auxiliary facilities. A valve setting consisting of suction, discharge, and station bypass valves will also be installed. Station auxiliary equipment will consist of suction and discharge filter separators as well as two double walled underground tanks. A crushed rock base and a security fence will be installed following construction. In addition, a new access road will be constructed for permanent access to this facility. A plot plan depicting the Spring Creek Compressor Station is included in Appendix III-B.

Demicks Lake III Valve Setting

The proposed 24-inch-diameter pipelines described above will connect the Compressor Station to WBI Energy's existing Line Section 27 at the proposed Demicks Lake III Valve Setting. The valve setting will consist of four block valves, two crossover valves, and one building to house communication equipment. The valve setting will be on an approximate 200' by 200' (0.9-acre) pad consisting of a crushed rock base and a security fence installed following construction. WBI Energy is proposing a new permanent access road to this valve setting. A plot plan depicting the Demicks Lake III Valve Setting is included in Appendix II-E.

Spring Creek Interconnect

The Project will involve increasing the capacity at WBI Energy's existing Spring Creek Interconnect by expanding the existing gravel pad and installing new facilities including a 10" ultrasonic meter, over-pressure protection equipment, a coalescing filter and 2,000-gallon below ground storage tank, a control valve, station piping, a meter/control valve building, communications equipment, a gas chromatograph

and gas quality analyzers, and a communications/analyzer building. Modifications to the existing 24" pig launcher/receiver will be made and a 16" tie in valve will be installed. A retaining wall will be constructed on the south side of the expanded gravel pad along with a new security fence installed around the perimeter of the pad expansion. A plot plan depicting the Spring Creek Interconnect is included in Appendix II-E.

Demicks Lake Plant Receipt Station

WBI Energy will replace two 10-inch ultrasonic meter/meter runs with two 12-inch ultrasonic meter/meter runs to increase the capacity at the existing Demicks Lake Plant Receipt Station. A plot plan of the receipt station is included in Appendix II-E.

Cherry Creek Valve Setting

Automation will be added to an existing valve and a new 16-inch valve and 16-inch crossover piping will be installed at WBI Energy's existing Cherry Creek Valve Setting. A plot plan of the Cherry Creek Valve Setting is included in Appendix II-E.

1.2 LAND REQUIREMENTS

Table 1.2-1 summarizes the land requirements for the Project. More detailed information regarding land requirements and use is provided in Resource Report 8. Construction of the Project will affect approximately 54.7 acres of land, including the pipeline rights-of-way (R/W), additional temporary workspace (ATWS), staging areas, access roads, and aboveground facilities. Following construction, approximately 36.22 acres, including the right-of-way, ATWS, staging areas, and temporary workspace at aboveground facility sites, will revert to preconstruction conditions and uses. The remaining approximately 21.15 acres, including the permanent pipeline easements, permanent aboveground facility sites, and permanent access roads, will be retained for operation of the Project facilities.

Table 1.2-1

Summary of Land Requirements

Facility	County, State	Land Affected During Construction (acres)	Land Affected During Operation (acres)
Pipeline Facilities			
Pipeline	McKenzie Co., ND	0.69	0.51
Subtotal		**0.69**	**0.51**
Aboveground Facilities			
Spring Creek Compressor Station	McKenzie Co., ND	14.99	8.0
Demicks Lake III Valve Setting	McKenzie Co., ND	0.92	0.92
Spring Creek Interconnect	McKenzie Co., ND	9.17	5.34
Demicks Lake Plant Receipt Station	McKenzie Co., ND	0.46	0.46
Cherry Creek Valve Setting	McKenzie Co., ND	1.83	1.58

Subtotal		**27.37**	**16.3**
Staging Areas			
Franz Yard	McKenzie Co., ND	22.16	0
Subtotal		**22.16**	**0**
Access Roads			
Existing Access Roads[1]	McKenzie Co., ND	2.81	2.67
New Access Roads[2]	McKenzie Co., ND	1.67	1.67
Subtotal		**4.48**	**4.34**
Project Total		**54.70**	**21.15**

[1]Existing access roads include both pipeline and aboveground facility locations and have a width of 20 feet.
[2]New access roads have a typical road width of approximately 30 feet.

1.2.1 Pipeline Facilities

The Project includes construction and operation of two new 24-inch diameter pipelines approximately 0.2 miles in length. The pipelines will connect the new Spring Creek Compressor Station to the new Demicks Lake III Valve Setting. The pipelines will have bi-directional flow capabilities and a Maximum Allowable Operating Pressure of 1550 pounds per square inch gauge (psig). The pipeline construction right-of-way will be accessed via new permanent roads being constructed to the Demicks Lake III Valve Setting and the Spring Creek Compressor Station. Access road impacts are discussed in section 1.2.2.

Due to the pipelines paralleling each other, the entire 50-foot R/W and ATWS will be mowed and graded followed by excavation and trenching for the southern (suction) pipeline. Once the southern pipeline has been lowered in and backfilled, excavation and trenching will begin for the northern (discharge) pipeline. After the northern pipeline has been lowered in and backfilled, grading will commence, followed by final reclamation steps.

One temporary storage yard, the Franz yard, is approximately 22.16 acres and will be utilized to store pipe, materials, and equipment during construction. The existing 0.14-acre access road will be utilized during construction. The storage yard and access road will be restored to pre-disturbance conditions following construction, with zero acres of land affected during operation.

1.2.2 Aboveground Facilities

Spring Creek Compressor Station

Construction and operation of the proposed Spring Creek Compressor Station will affect approximately 14.99 acres. Approximately 8 acres will be fenced and maintained for operation of the compressor station. Approximately 6.99 acres will be used as TWS. After construction, the TWS will be fenced and seeded to a herbaceous state. A new 1.22-acre access road will be constructed and maintained as permanent access following construction. A plot plan for the compressor station is provided in Appendix III-B.

Demicks Lake III Valve Setting

Construction and operation of the Demicks Lake III Valve Setting will affect approximately 0.46 acres which will be fenced and maintained for operation. A new access road will be constructed from the Spring

Creek Interconnect to the valve setting permanently converting 0.45 acres. A plot plan for the valve setting is provided in Appendix II-E.

Spring Creek Interconnect

Construction of the proposed facilities at WBI Energy's existing Spring Creek Interconnect will affect approximately 9.17 acres. The existing Spring Creek Interconnect boundary will be expanded to 5.34 acres for permanent operation of the facility. Approximately 3.83 acres of additional temporary workspace will be required to construct the proposed facilities and will revert to pre-construction uses. The existing permanent 0.08-acre access approach will be used during construction and ongoing operation of the facility. A plot plan for the Spring Creek Interconnect expansion is provided as Appendix II-E.

Demicks Lake Plant Receipt Station

Construction and operation of the proposed modifications to WBI Energy's existing Demicks Lake Plant Receipt Station will occur entirely within the fenced boundaries of the existing station, impacting approximately 0.46 acres. The existing 1.03-acre access road will be utilized to access the station. A plot plan for the Demicks Lake Plant Receipt Station is provided in Appendix II-E.

Cherry Creek Valve Setting

Proposed facilities at WBI Energy's existing Cherry Creek Valve Setting will be installed entirely within the existing fenced boundary of the site, impacting approximately 1.58 acres for ongoing operation of the facility. Approximately 0.25 acres of temporary workspace will be required to construct these facilities and will revert to preconstruction uses. The existing 1.56-acre access road will be used to access the valve setting. A plot plan of the Cherry Creek valve setting is provided in Appendix II-E.

1.3 INSTRUCTION PROCEDURES

WBI Energy will adopt and implement the FERC's May 2013 versions of the *Upland Erosion Control, Revegetation, and Maintenance Plan* (Plan) and *Wetland and Waterbody Construction and Mitigation Procedures* (Procedures). Relevant portions of the Plan and Procedures will be included in any agreements executed with independent contractors. Additionally, WBI Energy will implement supplemental construction, restoration, and mitigation plans it has prepared for the Project. These include the following plans:

3.0 *Spill Prevention Control and Countermeasure Plan* (Appendix II-G)

4.0 *Plan for Unanticipated Discovery of Historic Properties or Human Remains* (Appendix II-H)

5.0 *Plan for Unanticipated Discovery of Paleontological Resources During Construction* (Appendix II-I)

6.0 *Plan for Unanticipated Discovery of Contaminated Environmental Media* (Appendix II-J)

7.0 *Fugitive Dust Control Plan* (Appendix II-K)

WBI Energy will contract a third-party Environmental Inspector (EI) for the Project. In this capacity, the EI will have the authority to start and stop any work activity, oversee proper installation of erosion control and pollution prevention measures, evaluate their effectiveness, and ensure all applicable environmental conditions are satisfied. The EI will be present onsite throughout all phases of construction. WBI Energy will submit weekly progress reports to the FERC detailing task completion status, current and upcoming Project activities, and associated photographs. Construction activities will comply with applicable Occupational Safety and Health Administration standards.

1.3.1 Construction Schedule and Workforce

Construction activities are planned to commence in March of 2023, with an anticipated in-service date of November 1, 2023. Based on the current construction schedule, WBI Energy anticipates that construction during winter conditions will not be necessary. However, if a change in the construction schedule necessitates that construction activities occur during the winter months, WBI Energy will file a Winter Construction and Stabilization Plan with FERC for review and approval prior to conducting winter construction activities.

In general, all construction activities will occur Monday through Saturday between the hours of 7:00 a.m. to 7:00 p.m. However, certain construction activities may occur up to 24 hours per day, including Sundays and potentially federal holidays. These activities include hydrostatic testing and associated activities, critical tie-ins, and above ground facility commissioning. The majority of these activities will be associated with the Spring Creek Compressor Station, Spring Creek Interconnect, Demicks Lake III Valve Setting and installation of the pipeline. The nearest noise sensitive area (NSA) to these facilities is approximately 2,000 ft west. As discussed further in Resource Report 9, ambient noise surveys conducted at nearby NSAs showed elevated ambient noise levels due to heavy vehicle traffic and oil and gas operations in the area. Due to the distance of the NSAs from the Project area and the elevated ambient noise levels, these activities are not likely to impact noise levels at nearby NSAs.

WBI Energy estimates the duration of construction for the proposed pipeline and aboveground facilities will be approximately 214 days. The pipeline construction will occur as a single spread, with one contractor crew completing installation of the proposed pipeline. Separate workgroups will conduct aboveground facility construction. Restoration activities will begin as soon as possible following the completion of construction. If construction activities are completed outside the recommended fall seeding window, the Project area will be stabilized and monitored until seeding can occur within recommended timeframes. Temporary erosion control measures will remain in place until final stabilization has been achieved.

Once construction of the Project is complete, WBI Energy anticipates hiring one new permanent employee to assist in operations and maintenance of the new facilities.

1.3.2 Training, Inspection, and Environmental Compliance

WBI Energy is committed to constructing and operating the Project in a manner that will minimize environmental impacts and comply with applicable permits and approvals. Crews working onsite will be trained in relevant portions of the FERC Plan and Procedures, permit conditions, as well as WBI Energy's Project specific plans. An EI will be present throughout all phases of construction and will serve as the onsite lead for environmental compliance.

1.3.3 General Pipeline Construction Procedures

Pipeline construction will follow industry-standard practices and procedures as described below. Conventional open-ditch construction methods will be used to install the proposed pipelines. Construction will occur in a linear sequence which includes the following: survey and staking; right-of-way clearing and grading; pipe stringing, bending, and welding; trenching; lowering-in and backfilling; hydrostatic testing; final tie-in; commissioning; and right-of-way cleanup and restoration. Figure 1.3.3-1 illustrates each of the steps in a typical construction scenario. A description of each step in the process is provided in the following sections.

Construction Sequence

1.3.3.1 Surveying and Staking

Affected landowners will be notified before preconstruction survey and staking are conducted. After these notifications, WBI Energy's survey crews will stake the pipeline centerlines and the limits of the construction right-of-way and ATWS areas. Additionally, the survey crew will flag the location of approved access roads. Roads that are travel-prohibited will also be clearly marked with no-access signs. WBI Energy will have existing utility lines (e.g., cables, conduits, and pipelines) located and marked with flags or stakes to prevent accidental damage during construction.

1.3.3.2 Clearing and Grading

After surveying and staking activities have been completed, the pipeline R/W, TWS, and ATWS will be cleared and graded to remove vegetation cover and provide a level, safe construction workspace. Topsoil will be segregated in accordance with the FERC Plan and Procedures. In areas disturbed by grading, and as required by the FERC Plan and Procedures, temporary erosion and sediment controls will be installed within the right-of-way to minimize erosion. These erosion and sediment controls will be inspected and maintained throughout the construction and restoration phases of the Project, as appropriate, and as required by the FERC Plan and Procedures. During this phase of construction, fences will be altered, and temporary gates installed as necessary.

1.3.3.3 Stringing/Bending/Welding of Pipe

Steel pipe joints will be placed end-to-end along the working side of the R/W. Bending will be performed with hydraulic bending machines as necessary to allow for uniform fit with the contours at the bottom of the trench and horizontal points of inflection. Pipe joints will then be placed on temporary supports, aligned, and welded together. Welding will be conducted in compliance with 49 CFR 192 and American Petroleum Institute Standard 1104 *Welding of Pipelines and Related Facilities*. Completed welds will be visually and non-destructively inspected and coated in accordance with required specifications. The coating will be inspected for defects, and repaired, if necessary, prior to lowering the pipe into the trench.

1.3.3.4 Trenching

A track-mounted excavator or similar equipment will be utilized to excavate the pipeline trench. Trench excavation dimensions will measure approximately 8 feet deep and 3 feet wide to accommodate the 24-inch pipe. Trench spoil will be deposited adjacent to the trench within the construction right-of-way, and adjacent to the topsoil pile. Segregation of topsoil and subsoil stockpiles will be maintained throughout all phases of construction.

1.3.3.5 Lowering-in and Backfilling

Side-boom tractors or similar equipment will lift and lower welded and coated sections of pipe into the trench, and trench breakers will be installed around the pipe as necessary. Crossing locations may require pipe to be lowered into the trench in segments. In these cases, pipe joints will be welded together as part of the pipe string after they are placed into the trench. In high groundwater areas, trench dewatering may be required prior to lowering activities. In these circumstances, erosion control devices such as filter bags will be utilized to minimize erosion or other impacts to the surrounding area. All

discharges will take place in accordance with the Plan and Procedures, and applicable permit requirements. After the pipe string has been successfully lowered-in, excavators or similar equipment will backfill the trench with subsoil materials. Special care will be taken to avoid mixing of topsoil and subsoil.

1.3.3.6 Hydrostatic Testing

Hydrostatic testing activities will occur after the pipeline is constructed and prior to final tie-ins. Water for hydrostatic testing will be obtained from a commercial water depot or a municipal source and transported to the site. The total volume of water required for final hydrostatic testing activities is anticipated to be approximately 120,000 gallons. After the test is complete, the water will be discharged into an approved well-vegetated upland area in accordance with permit conditions and the FERC's Plan.

1.3.3.7 Final Tie-In and Commissioning

After hydrostatic testing, the final pipeline tie-in will be completed, and commissioning of the pipeline and aboveground facilities will commence. The pipeline will be cleaned, dried, and inspected. Further commissioning activities will include purging the line of air and loading the pipeline with natural gas.

1.3.3.8 Cleanup and Restoration

After the pipeline has been successfully tied-in, clean-up and restoration activities will be completed. Trash and debris remaining onsite will be removed and appropriately disposed of. Final grading activities will restore surface contours to original conditions. Permanent erosion controls will be installed as necessary, in accordance with the Project Storm Water Pollution Prevention Plan (SWPPP) and the FERC Plan and Procedures. Agricultural land (cropland) will be revegetated per landowner request. WBI Energy will monitor reclamation success in disturbed areas until successful final stabilization has been achieved.

1.3.4 General Aboveground Facility Construction Procedures

Construction of the aboveground facilities will include a standard sequence of events. Construction will begin with clearing and grading of sites to establish level grades for the facilities. Subsequent construction activities will include preparing foundations, installing underground piping, erecting and installing buildings, installing aboveground piping and equipment, testing the piping, testing the control equipment, cleaning up the work area, and graveling access roads and parking areas. Once construction is complete areas within the fence line but outside the new facilities will be covered with gravel/scoria or maintained in a herbaceous state.

1.3.5 Other Considerations

Reclamation activities will proceed in accordance with the FERC's Plan and in accordance with applicable permit conditions. Any surplus material, equipment, trash, litter, and miscellaneous debris resulting from construction activities will be removed and properly disposed.

The project may involve the removal of asbestos containing material (ACM) in the form of pipe wrap or gaskets. All asbestos removal activities will be conducted in accordance with applicable regulations as further described in resource report 9.

1.4 OPERATION AND MAINTENANCE

The proposed pipeline and aboveground facilities will be designed, constructed, tested, operated and maintained in accordance with the requirements of 49 CFR Part 192, *Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards*, and with all other applicable local, state, and federal regulations and codes. The pipeline will be inspected periodically on foot as required by applicable regulatory requirements to identify potential concerns that may affect the safety and operation of the pipeline. Pipeline markers and signs will be installed, inspected, and maintained or replaced as necessary to ensure that pipeline locations are clearly identified. Field personnel will advise the appropriate operations personnel of new construction along or near the pipeline system. If pipeline patrols or vegetation maintenance identify areas on the R/W where erosion is occurring, WBI Energy will repair existing erosion control devices or install additional devices as necessary to stabilize the area and prevent future erosion.

Inspections of Project construction workspaces will be conducted in accordance with the Project SWPPP and the FERC Plan until successful reclamation of disturbed areas has been completed.

WBI Energy personnel will also perform regular operation and maintenance activities on equipment at the Spring Creek Interconnect, Cherry Creek Valve Setting, Demicks Lake Plant Receipt Station, Demicks Lake III Valve Setting, and the Spring Creek Compressor Station locations. These activities may include calibration, inspection, or scheduled and routine maintenance. Operational testing will be performed on safety equipment to ensure proper functioning condition, and any problems will be corrected.

1.5 FUTURE PLANS AND ABANDONMENT

No future plans, beyond those described in this resource report, are currently anticipated for the Project. If future market demands warrant an expansion of the Project, WBI Energy will file an application with FERC, as appropriate. WBI Energy has no future plans for abandonment of the pipelines or aboveground facilities and will file an appropriate application with FERC if and when facilities are to be abandoned.

1.6 PERMITS AND APPROVALS

WBI Energy will ensure that all necessary permits, clearances, and licenses for Project construction and operation are obtained by the time required prior to construction. Table 1.6-1 lists the federal and state environmental permits and approvals required to construct and operate the Project, along with the status of each permit or approval. In each case, WBI Energy has initiated the permitting or approval process through agency contacts and consultations. A summary of agency contacts and copies of applicable agency correspondence to date are provided in Appendix II – L and Appendix II – M.

Table 1.6-1

Permits and Approvals Applicable to the Project

Permit/Approval	Administering Agency	Status
Federal		
Endangered Species Act Section 7 consultation	USFWS	Consultation sent on May 20, 2022; Received concurrence on May 25, 2022. Secondary consultation sent on August 4, 2022; Received concurrence August 11, 2022.
State of North Dakota		
National Historic Preservation Act	ND SHPO	Consultation sent on May 20, 2022; Received concurrence on June 8, 2022. Secondary consultation sent on August 4, 2022; Received concurrence August 25, 2022.
National Pollutant Discharge Elimination System (NPDES) – General Permit for Stormwater Discharges from Construction Activities General Permit for Temporary Discharge Activities (i.e., construction dewatering and discharges of hydrostatic test water)	ND Department of Environmental Quality	
Conditional Water Permit (water appropriation associated with drilling mud and hydrostatic test water)	State Water Commission	

1.7 AFFECTED LANDOWNERS

The names and addresses of landowners affected by the Project can be found in Appendix IV-B. WBI Energy certifies that all affected landowners have been or will be notified as required by Section 157.203(d)(2) of FERC's regulations.

1.8 NON-JURISDICTIONAL FACILITIES

At the Spring Creek Compressor Station, electric service will be obtained from McKenzie Electric Cooperative. Power will be supplied by a nearby substation with a newly built power line dedicated to the station. Water for potable water and cleaning needs will be provided by McKenzie County Water

Resource District. A 2-inch diameter poly line will run from the compressor station to the existing water line.

Additional electric service at Spring Creek Interconnect will be obtained from McKenzie Electric Cooperative. A new 200 amp 120/240V single phase service line will be installed. Two electric meters currently serving two 200 amp 120/240V single phase service lines will be replaced with a single meter serving all three service lines.

The existing electric supply and rural water supply at Demicks Lake Plant Receipt Station and Cherry Creek Valve Setting are sufficient to support station modifications.

1.9 REFERENCES

Federal Energy Regulatory Commission (FERC). 2013a. *Upland Erosion Control, Revegetation, and Maintenance Plan*. Available online at: https://www.ferc.gov/industries/gas/enviro/plan.pdf. Accessed June 2022.

FERC. 2013b. *Wetland and Waterbody Construction and Mitigation Procedures*. Available online at: https://www.ferc.gov/industries/gas/enviro/procedures.pdf. Accessed June 2022.

RESOURCE REPORT 2

2.0 WATER USE AND QUALITY

Resource Report 2 describes existing water resources, including groundwater resources, watersheds, surface waters, water supplies, and wetlands potentially affected by WBI Energy Transmission, Inc.'s (WBI Energy) proposed 2023 Line Section 27 Expansion Project (Project). The report documents the potential impacts of the Project on water resources and describes the measures that will be implemented to mitigate the impacts. Resource Report 1 provides a detailed Project description.

2.1 GROUNDWATER RESOURCES

2.1.1 Regional Aquifers

Ground water resources in North Dakota occur in two principal aquifer types: (1) unconsolidated glacial deposits and (2) sedimentary bedrock within the Northern Great Plains region (Sun and Johnston, 1994). Irrigation is the largest use of ground water. Permitted ground water use averages approximately 109 billion gallons per year. Half of North Dakota's population relies on ground water for drinking water supplies. In addition, ground water is essentially the only source of water supply for farm families and their livestock, and residents of small communities that are not served by public water systems (DEQ 2022a).

2.1.1.1 Bedrock Aquifers

Bedrock aquifers surrounding the Project are mostly composed of sand, silt, lignite, and other fine-grained rock from glacial-lake deposits (Whitehead, 1996 and Paulson, 1983). A majority of the Project is underlain by lower Tertiary sandstone bedrock aquifers that occur mainly within the Fort Union Group (Carlson, 1985). The Paleocene aquifer systems underlying McKenzie County include, the Sentinel Butte Formation, Ludlow Aquifer, and the Tongue River Aquifer (Croft, 1985). Aquifers surrounding the Project are commonly found flowing under artesian flowing conditions[1] and have decreased over time (NDGS, 2008).

The Sentinel Butte Formation can reach 600 feet in thickness and is composed of interbedded sand, lithified gray to brown mudstone, siltstone, claystone, sandstone, and lignite. The Sentinel Butte bedrock units form badland topography, described as the most widespread near-surface Tertiary formation exposed in North Dakota (Biek and Gonzalez, 2001). The Ludlow Aquifer system underlies all of McKenzie County at depths of more than 500 feet. The Ludlow Aquifer consists of terrestrially deposited fine-to medium grained sandstone, claystone, and lignite and is separated from the overlying Tongue River (Bullion Creek) Aquifer by approximately 75 feet of claystone. The Tongue River Aquifer system also underlies all of McKenzie County at a range from 140 to 500 feet. The aquifer materials consist of fine-to medium-grained sandstone, siltstone, claystone, and lignite that were deposited as distributary channel and delta-plain deposits (Croft 1985). The aquifer recharge is predominately obtained from surface sources such as rivers, rainwater, and reservoirs.

[1] A well in which water is under pressure; especially one in which the water flows to the surface naturally.

2.1.1.2 Unconsolidated-deposit Aquifers

Overlying the bedrock aquifer systems are unconsolidated-deposit aquifers. These aquifers are composed of loose beds of gravel, sand, silt, and/or clay resulting from glacial outwash deposits, and they are typically more productive and of better water quality than aquifers found in the underlying bedrock (Paulson, 1983). The proposed project area does not cross any unconsolidated-deposit aquifers (NDSWC 2022).

The North Dakota State Water Commission (NDSWC) has estimated that the major unconsolidated-deposit aquifers in the state contain about 60 million acre-feet of water in storage (Paulson, 1983). Test drilling and other geo-hydrological data indicate that in most places within the major unconsolidated aquifer areas, well yields range from 50 gallons per minute to as much as 500 gallons per minute (Paulson, 1983).

Away from the major aquifer areas, in some locations potable and domestic use water can be obtained from unconsolidated aquifers which consist of thin beds of sand and gravel that seem to have a random distribution both vertically and laterally. Well yields from these minor aquifers are generally less than 10 gallons per minute; however, these aquifers occur in sufficient quantities to produce adequate yields for domestic needs for many farmsteads in the area (Paulson, 1983).

Water quality in the unconsolidated glacial aquifers is generally less mineralized than in the underlying bedrock aquifers; however, upper aquifers are less reliable sources for development than the deeper aquifers. Generally, the deeper the aquifer the more saline the water. The dissolved-solids concentration in the unconsolidated aquifers is commonly less than 1,000 mg/L, although in many places the water is very hard and may be high in iron and manganese. Despite upper aquifers being a less reliable water source, most farms and ranches and many small communities are able to obtain sufficient quantities of water from these aquifers (Paulson, 1983).

2.1.1.3 Sole Source Aquifers

The U.S. Environmental Protection Agency (EPA) defines Sole Source Aquifers as those aquifers which supply at least 50 percent of the drinking water consumed in the area overlying the aquifer. These areas can have no alternative drinking water source(s) which could physically, legally, and/or economically be supplied to those who depend upon the aquifer for drinking water (EPA 2017). There are currently no designated sole source aquifers in North Dakota. The nearest sole source aquifers are the Eastern Snake River Plain Aquifer Source Area, located approximately 421 miles southwest and the Millie Lacs Sole Source Aquifer, located approximately 456 miles southeast of the Project area (EPA 2022). No impacts to sole source aquifers are anticipated.

2.1.2 Source Water Protection

The North Dakota Source Water Protection Program was developed in response to the 1996 Safe Drinking Water Act amendments that require all states to define and assess the source waters of public water systems (groundwater and surface water). All public water systems that have wells or intakes are participants in this program (DEQ 2022c). The Source Water Protection Program is designed to protect drinking water quality through multiple goals:

Prevent contamination of water supplies,
Encourage the placement of certain activities in areas less likely to contaminate public water supplies, and

Raise public awareness of water resources used for public water supplies.

North Dakota currently includes 190 independent ground water Public Water Systems (PWSs) in the Source Water Protection Program. Of these systems, 108 are community PWSs with 22 being rural water systems, and 82 are non-community systems, with 32 on seasonal status. An additional 17 systems are classified as nonpublic (DEQ 2022g).

Source water protection areas were assessed using the Wellhead Protection and Source Point Protection Areas online mapper. The nearest Source Water Protection Area (SWPA) to the Project is located approximately 0.18 miles northeast of the Spring Creek Interconnect (DEQ 2022f). No known water distribution lines are crossed by the proposed Project. No impacts to public water supplies are anticipated.

2.1.3 Water Wells and Springs

WBI Energy reviewed the NDSWC well permit database and online map system to evaluate the potential presence of wells within 150 feet of the Project footprint. This review determined that based on the data available no water wells occur withing 150 feet of the proposed Project. If a water well is discovered during construction, the well will be marked and completely avoided. No impacts to water wells are anticipated.

2.1.4 Potential Sources of Contaminated Groundwater

Ground water contamination resulting from human activities can take place more rapidly than natural contamination. Such contamination is categorized as being from either a point source or a nonpoint source. A point source is a specific local site, such as an underground storage tank that contains wastes, petroleum, or chemicals; a landfill; a storage pond, pit, or lagoon; a spill of hazardous chemicals or petroleum products; or a disposal or injection well that received municipal or industrial wastes. Nonpoint contamination sources are large scale and can extend over hundreds of acres. Examples of nonpoint sources are agricultural activities, such as application of fertilizer or pesticides to fields; urban areas with concentrations of septic tanks and cesspools; animal feedlots; mining operations; and oil and gas production. Unconfined shallow aquifers are more susceptible to contamination, with water quickly infiltrating from the land surface to the aquifer. Confined aquifers are deeply buried and overlain by confining units that have minimal permeability and are less susceptible to contamination (Whitehead 1996).

The primary potential sources of groundwater contamination in the vicinity of the Project are related to agricultural activities and oil and gas production (DEQ 2022b). Based on a review of recent aerial photographs, WBI Energy did not identify any livestock feedlots, municipal landfills, or sewage lagoons within 0.25 miles of the construction workspace. In addition, a review of the EPA's Facility Registration System map service and the NDDEQ underground storage tank data identified no known sites of potential contamination within 500 feet of the Project area (EPA 2022a). On-site septic systems are the primary form of wastewater treatment in rural North Dakota; however, WBI Energy does not anticipate that construction activities will affect active septic systems.

2.1.5 Groundwater Construction Impacts and Mitigation Measures

Ground water impacts associated with the proposed Project are expected to be minimal and temporary. Construction of the pipeline will generally require a trench excavation of about 6 feet (or deeper at some crossings including roads, utilities, and foreign pipelines). Dewatering of the pipeline trench is not

anticipated, however if shallow groundwater is encountered within the excavation zone, appropriate National Pollutant Discharge Elimination System (NPDES) permits will be obtained prior to any discharges. The water pumped from the excavation will be discharged in accordance with the FERC's *Wetland and Waterbody Construction and Mitigation Procedures* (Procedures).

Impervious surfaces resulting from compacted soil or installation of structures at aboveground facilities sites could decrease infiltration, which in turn will impact ground water recharge rates. The proposed Spring Creek Compressor Station, Spring Creek Interconnect, and Demicks Lake III Valve Setting will have buildings that will reduce the area of direct infiltration and recharge below the structure, but runoff will eventually be conveyed to pervious surfaces that will provide ground water recharge. Backfill placed within the pipeline trench may temporarily be more permeable than the surrounding soil and rock units until the natural pore structure of the backfilled soils is reestablished. As a result, the trench could act as a preferential pathway for groundwater flow in areas where it intersects the water table and potentially alter the existing groundwater flow patterns within shallow saturated zones. Construction may temporarily impact groundwater resources, however through implementation of measures in the FERC's *Upland Erosion Control, Revegetation, and Maintenance Plan* (Plan), Procedures, and the Project's Storm Water Pollution Prevention Plan (SWPPP), these impacts are expected to be minimal. No impacts on water yield or water quality are expected.

Materials brought onsite during construction have the potential to contaminate water or soil if not properly managed. Accidental spills and leaks of hazardous materials could cause impacts on groundwater resources through the introduction of contaminants. WBI Energy will implement the spill prevention and control measures identified in its *Spill Prevention, Control, and Countermeasure Plan* (Appendix II-G). Additionally, WBI Energy will comply with the FERC Plan and Procedures and all applicable NPDES permits to minimize potential impacts on groundwater resources.

The risk of encountering contaminated groundwater or soil within the Project area is low as there are no known contamination sites near the Project. While risk is low, if contaminated soil or groundwater is encountered during Project activities, WBI Energy will follow procedures outlined in the *Plan for Unanticipated Discovery of Contaminated Environmental Media* (Appendix II-J).

WBI Energy identified one water well within 150 feet of the proposed Project footprint. One domestic water well is located across Hwy 34 southwest of the Project area. Water wells will be marked and completely avoided during construction. WBI Energy will assess any damage to wells from construction activities and perform the necessary repairs and/or modifications to return the well to its former capacity or function. If an active water well is identified within construction workspaces and must be taken out of service, WBI Energy will provide an alternate water source or negotiate a mitigation plan with the landowner to offset any adverse impacts.

Although construction may temporarily impact groundwater resources, levels are expected to quickly re-establish and original conditions will be restored.

2.2 SURFACE WATER RESOURCES

This section describes the surface water resources that are crossed by the proposed Project, regulations that apply to those resources, and measures proposed by WBI Energy to mitigate potential impacts on those resources. Surface water resources were evaluated through desktop analysis and wetland/waterbody delineation field surveys conducted by Beaver Creek Environmental (Beaver Creek) which is included in Appendix II-N.

2.2.1 Watersheds

Within McKenzie County, all drainage patterns ultimately flow into Lake Sakakawea (NRCS, 2008). The Project area is within the Lower Little Missouri (10110205) and Lake Sakakawea (10110101) Basin, detailed in Table 2.2.1-1 below. None of the watersheds or the subwatersheds crossed by the proposed Project contain surface water fed public water systems. Therefore, no impacts on watersheds are anticipated.

Table 2.2.1-1
Hydrologic Units Impacted

Subwatershed (HUC 12)	**Watershed (HUC 10)**	**Subbasin (HUC 8)**	**Basin (HUC 6)**	**Subregion (HUC 4)**	**Region (HUC 2)**	**County**
Spring Creek (101102030403)	Cherry Creek (1011020504)	Lower Little Missouri (10110205)	Little Missouri (101102)	Missouri-Little Missouri (1011)	Missouri Region	McKenzie County, ND
Northfork Creek (101102050405)	Cherry Creek (1011020504)	Lower Little Missouri (10110205)	Little Missouri (101102)	Missouri-Little Missouri (1011)	Missouri Region	McKenzie County, ND
Upper Clear Creek (101101010806)	Tobacco Garden Creek (10110101108)	Lake Sakakawea (10110101)	Lake Sakakawea (101101)	Missouri-Little Missouri (1011)	Missouri Region	McKenzie County, ND
Watford City – Cherry Creek (101102050404)	Cherry Creek (1011020504)	Lower Little Missouri (10110205)	Little Missouri (101102)	Missouri – Little Missouri (1011)	Missouri Region	McKenzie County, ND

Source: DEQ 2022d (https://deq-ndgov.maps.arcgis.com/home/webmap/viewer.html?webmap=31c6acddb4194d34923fc9d697ad6068)

Insert Figure 2.2.1-1 Regional Watersheds

2.2.2 Waterbodies Crossed

FERC Procedures define a waterbody as "any natural or artificial stream, river, or drainage with perceptible flow at the time of crossing, and other permanent waterbodies such as ponds and lakes." Waterbodies are classified as minor (less than or equal to 10 feet wide), intermediate (greater than 10 feet wide but less than 100 feet wide), or major (greater than 100 feet wide) (FERC 2013). Waterbodies were differentiated from wetland areas by having defined channels and perceptible flow at the time of crossing. Based on field survey data collected by Beaver Creek, no waterbodies are crossed by the proposed Project.

2.2.3 Sensitive Surface Waters

2.2.3.1 Impaired or Contaminated Waters

The Clean Water Act (CWA) contains several sections which require states to report on the quality of their waters. Section 305(b) (State Water Quality Assessment Report) requires a comprehensive biennial report, and Section 303(d) requires a list of a state's water quality-limited waters needing total maximum daily loads (TMDLs). Once a TMDL is established, responsibility for reducing pollution among both point sources (pipes) and diffuse sources is assigned. Diffuse sources may include, but are not limited to run-off (urban, agricultural, forestry, etc.), leaking underground storage tanks, unconfined aquifers, septic systems, stream channel alteration and damage to riparian areas (DEQ 2022e).

Based on the North Dakota *2018 Integrated Section 305(b) Water Quality Assessment Report and Section 303(d) List of Waters Needing Total Maximum Daily Loads* there are no impaired waters located within the Project area. The nearest impaired water is The Little Missouri River located approximately 6.6 miles south and Handy Water Creek 11.9 miles southeast of the Project area. Impaired water is detailed in Table 2.2.3.1-1 below.

Table 2.2.3.1-1
Nearest 303(d) Impaired Waters

Assessment Unit ID	AU Description	Impairment
ND-10110203-033-S_00	Little Missouri River from HWY 85 downstream to its confluence with Cherry Creek. Located in McKenzie and Dunn County.	Escherichia coli
ND-10110101-056-S_00	Handy Water Creek, including all tributaries. Located in Eastern McKenzie County.	Methylmercury

Source: DEQ 2022a

2.2.3.2 National Wild and Scenic Rivers

The National Wild and Scenic Rivers System was created by Congress in 1968 to preserve certain rivers with outstanding natural, cultural, and recreational values in a free-flowing condition for the enjoyment of present and future generations. North Dakota has approximately 54,373 miles of river, but there are no designated wild or scenic rivers in North Dakota (WSR 2022). No Wild and Scenic Rivers will be impacted as part of the proposed Project.

2.2.3.3 State and Federal Threatened and Endangered Species Habitat

There are four threatened species and one endangered species that have the potential to occur in McKenzie County: Northern long-eared bat *(Myotis septentrionalis)*, piping plover *(Charadrius melodus),* Rufa red knot *(Calidris canutus rufa),* Dakota skipper *(Hesperia dacotae),* and whooping crane *(Grus americana)* (Beaver Creek 2022). Of these, the endangered whooping crane may use the area within the Project as stopover habitat; however, due to amount of human activity in the Project area, the whooping crane is likely to avoid these areas. Further discussion on threatened and endangered species are included in Sections 3.4 of Resource Report 3.

2.2.4 Floodplains

The North Dakota State Water Commission coordinates the National Flood Insurance Program in North Dakota. The Federal Emergency Management Agency (FEMA) creates flood hazard maps which show high-risk areas, moderate-to-low risk areas, and undetermined-risk areas. The Project is located in an area of minimal flood hazard (FEMA 2022). Flash flooding hazards are discussed further in Section 6.1.6 of Resource Report 6.

2.2.5 U.S. Army Corp of Engineers Section 10 Waters

The U.S. Army Corps of Engineers (Corps) broadly defines “navigable waters of the United States” under Section 10 of the Rivers and Harbors Act. Navigable waters are defined by 33 CFR Part 329 as waters that are subject to the ebb and flow of the tide and/or are presently used, have been used in the past, or may be susceptible for use to transport interstate or foreign commerce. There are no Section 10 navigable waters located within the Project area (Corps 2012). The nearest known Section 10 water is the Missouri River, located approximately 23 miles north of the Spring Creek Compressor Station and 16 miles north of the Demicks Lake Plant Receipt Station.

2.2.6 Water for Hydrostatic Testing, Guided Bores, & Dust Suppression

Water for hydrostatic testing the pipeline facilities will be obtained from a nearby commercial water depot or a municipal source and trucked in. An estimated 120,000 gallons of water will be obtained to conduct final hydrostatic testing of the new pipeline.

Water requirements at the Spring Creek Interconnect includes approximately 302,000 gallons for compaction of fill material during construction of the gravel pad. An estimated 7,150 gallons of water will be obtained for hydrostatic testing of the new measurement facilities. Water for fill compaction and hydrostatic testing will be sourced from a nearby commercial water depot or a municipal source and trucked in.

Hydrostatic test water will be discharged in an approved upland area with appropriate erosion control devices in accordance with NPDES discharge permit. Filter bags and energy dissipation devices will be used during discharges to minimize impacts to the surround area. All appropriate permits will be obtained prior to discharge.

Water trucks will be provided onsite by the contractor and implemented whenever needed for dust suppression. These water trucks will hold approximately 2,000 gallons/truck to be utilized for dust control as necessary. WBI Energy will comply with conditions set forth in the Project Fugitive Dust Control Plan, included in Appendix II-K.

2.2.7 Surface Water Impacts and Mitigation Measures

No waterbodies will be crossed by the Project area. WBI Energy will comply with local floodplain ordinances and obtain/comply with conditions set forth in all other applicable permits (Corps, DEQ, etc), as well as comply with the FERC Plan and Procedures. BMPs will be installed to minimize impacts to sensitive areas. No impacts to surface water resources are anticipated.

2.3 WETLANDS

Wetland resources within the Project area were identified through wetland delineation field surveys conducted by Beaver Creek. According to FERC Procedures, a wetland includes "any area that is not in actively cultivated or rotated cropland and that satisfies the requirements of the current federal methodology for identifying and delineating a wetland" (FERC 2013).

2.3.1 Existing Wetland Resources

Beaver Creek biologists used the on and off-site methodology set forth in the 1987 U.S. Army Corps of Engineers Wetlands Delineation Manual and the 2012 U.S. Army Corps of Engineers Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region to delineate wetlands within the survey corridor. No wetlands were delineated within the Project area. Further information on Beaver Creek's Demicks Lake III – Line Section 27 Expansion Aquatic Resource Delineation Report is included as Appendix II - N.

2.3.2 Wetland Impacts and Mitigation

WBI Energy will conduct Project activities in accordance with FERC Plan and Procedures. No wetlands will be impacted by the proposed Project. To minimize impacts, temporary and permanent best management practices (BMPs) will be used for sediment and erosion control in accordance with the FERC Plan and Procedures and the Project SWPPP. An Environmental Inspector (EI) will be present throughout all phases of construction to ensure that BMPs are in proper working condition and install additional measures as necessary. Following construction activities, all disturbed areas will be restored to pre-existing conditions. All construction crew members and EIs will be trained on proper spill response protocols in accordance with the Project SPCC Plan.

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RESOURCE REPORT 3

3.0 FISH, WILDLIFE, AND VEGETATION

Resource Report 3 provides information regarding fisheries, wildlife, and vegetation that may be within the proposed Project area. This information was gathered through literature reviews, desktop analysis, field surveys, and consultations with agency personnel. This report discusses existing fish, wildlife, and vegetation resources, expected Project impacts on these resources, and mitigation measures to avoid or minimize these impacts. Resource Report 1 provides a detailed Project description.

3.1 AGENCY CONSULTATION

Portions of the 2023 Line Section 27 Expansion Project area (the Demicks Lake Plant Receipt Station, Cherry Creek Valve Setting, and Franz Yard) overlap previous survey corridors associated with WBI Energy's Demicks Lake – Cherry Creek Pipeline Project and North Bakken Expansion Project. Western EcoSystems Technology, Inc. (West) completed natural resource field surveys and aquatic resource delineation field surveys for the Demicks Lake – Cherry Creek Pipeline Project. West completed natural resource field surveys and Environmental Resource Management (ERM) completed aquatic resource delineation field surveys for the North Bakken Expansion Project. WBI Energy initiated consultation on August 4, 2022, with the United States Fish and Wildlife Service (USFWS) regarding portions of the Project that overlapped these two previous survey corridors. The USFWS concurred with the "no effect" determination on August 11, 2022.

The Spring Creek Interconnect, Demicks Lake Valve Setting, and the Spring Creek Compressor Station are located outside previous survey corridors that were originally inventoried by West and ERM. These additional areas were inventoried by Beaver Creek Environmental (BCE) on March 30, 2022, during aquatic resource delineation and natural resource field surveys. WBI Energy initiated consultation with the USFWS on May 17, 2022, regarding these additional areas, receiving concurrence on May 25, 2022. USFWS consultation documents are included in Appendix II – L.

3.2 FISHERY RESOURCES

Fisheries are typically classified according to water temperature (warmwater or coldwater), type of use (commercial or recreational/sport fishing), salinity (marine, freshwater, or estuarine), and use by open water marine fishes that require freshwater upstream areas to spawn (anadromous) or freshwater species that migrate to marine waters for reproduction (catadromous). The North Dakota Game and Fish Department (NDGFD) website indicates that all fisheries in the state are warmwater with the exception of portions of the Missouri River system.

McKenzie County contains the Yellowstone River, Missouri River, Littler Missouri River, and Lake Sakakawea. The nearest known waterbody that supports fishery resources is the Little Missouri River (located approximately 6.8 miles south) and the Watford City Park Pond (located approximately 7 miles north). The Little Missouri River is primarily inhabited with chubs, minnows, blue gill, carpsuckers, catfish, goldeyes, and sauger (NPS 2020). The Watford City Park Pond is annually stocked with adult channel catfish and rainbow trout (NDGFD 2021). There are no waterbodies located within the Project area.

3.2.1 Fisheries of Special Concern

North Dakota's Wildlife Action Plan focuses on species that are considered Species of Conservation Priority. Fish species of Conservation Priority are categorized into three levels according to their conservation need in North Dakota.

- Level I: These species are in decline and receive little or no monetary support or conservation efforts. Level I species have a high level of conservation priority because of declining status across their range.

- Level II: These species have a moderate level of conservation priority or have a high level of conservation priority but a substantial level of non-State Wildlife Grant (SWG) funding available to them.

- Level III: These species have a moderate level of conservation priority but are believed to be peripheral or non-breeding in North Dakota.

No fisheries of special concern are located within the Project area and no impacts are anticipated. Fish species of Conservation priority in North Dakota are listed in Table 3.1.1-1 below:

Table 3.2.1-1
North Dakota Fish Species of Conservation Priority

Species Name	Category	Scientific Name
Sturgeon chub	Level I	*Marcrhybopsis gelida*
Sicklefin chub	Level I	*Marcrhybopsis meeki*
Northern pearl dace	Level I	*Margariscus nachtriebi*
Blue sucker	Level I	*Cycleptus elongatus*
Paddlefish	Level II	*Polyodon spathula*
Pallid sturgeon	Level II	*Scaphirhynchus albus*
Burbot	Level II	*Lota lota*
Northern redbelly dace	Level II	*Chrosomus eos*
Silver chub	Level II	*Marcrhybopsis storeriana*
Flathead chub	Level II	*Platygobio gracilis*
Trout-perch	Level II	*Percopsis omiscomaycus*
Chestnut lamprey	Level III	*Ichthyomyzon castaneus*
Silver lamprey	Level III	*Ichthyomyzon unicuspis*
Largescale stoneroller	Level III	*Campostoma oligolepis*
Horneyhead chub	Level III	*Nocomis biguttatus*
Pugnose shiner	Level III	*Notropis anogenus*
Blacknose shiner	Level III	*Notropis heterolepis*
Carmine shiner	Level III	*Notropis percobromis*
Finescale dace	Levell III	*Phoxinus neogaeus*
Yellow bullhead	Level III	*Ameiurus natalis*
Logperch	Level III	*Percina caprodes*
River darter	Level III	*Percina shumardi*

(Source: NDGFD 2022a) (https://gf.nd.gov/wildlife/scp.)

3.2.2 Impacts and Mitigation

No waterbodies are crossed by the Project area and no impacts to fishery resources are anticipated. Equipment will be inspected regularly for leaks and spills. Construction activities will be conducted in accordance with the FERC Procedures and the Project SPCC Plan. Contractors and employees will be trained on applicable FERC Procedures, spill response methods, or any other applicable regulatory requirements, and spill kits will be readily available. Potential impacts and mitigation measures to water resources are further discussed in Resource Report 2.

3.3 WILDLIFE RESOURCES

Wildlife habitat characterizations were obtained from published literature, agency websites, reviews of aerial photographs of the Project area, and field surveys. The suitability of an area as habitat for wildlife is closely related to the surrounding vegetation. A description of vegetation within the Project area is provided in Section 3.3.2 below. Threatened and endangered species are discussed in Section 3.4.

3.3.1 Existing Wildlife Resources

Existing wildlife resources were assessed based on biological field surveys conducted by ERM and BCE, as well as data from the North Dakota Game and Fish Department (NDGFD).

Portions of the Project area were previously surveyed by ERM in 2018 as part of the Demicks Lake – Cherry Creek Pipeline Project and again in 2020 for the North Bakken Expansion Project. Additional environmental field surveys were completed by BCE on March 30, 2022, to cover areas outside the original survey corridor (Spring Creek Interconnect, Demicks Lake III Valve Setting, and Spring Creek Compressor Station). ERM's *Demicks Lake-Cherry Creek Pipeline Project Biological Report, North Bakken Expansion Project Biological Assessment,* and Beaver Creek's *Demicks Lake III – Line Section 27 Expansion Biological Assessment* are included in Appendix II-O.

Table 3.3.1-1 lists the characteristic wildlife species present within the Project area that are not classified as a Species of Conservation Concern.

TABLE 3.3.1-1
Representative Wildlife Species in the Project Area

Species	Agricultural Lands	Open Lands	Developed Lands
Mammals			
American Badger (*Taxidea taxus*)		X	
American beaver (*Castor canadensis*)		X	
American mink (*Neovision vision*)		X	
Common muskrat (*Ondatra zibethicus*)		X	
Coyote (*Canis latrans*)	X	X	X
Deer mouse (*Peromyscus maniculatus*)		X	
Eastern cottontail (*Sylvilagus floridanus*)		X	
Eastern fox squirrel (*Sciurus niger*)		X	X
Elk (*Cervus elaphus*)		X	
Long-tailed weasel (*Mustela frenata*)		X	
Meadow vole (*Microtus pennsylvanicus*)		X	
Mule deer (*Odocoileus hemionus*)	X	X	
Pronghorn (*Antilocaptra americana*)	X	X	
Raccoon (*Procyon lotor*)	X	X	X
Red fox (*Vulpes vulpes*)		X	
Striped skunk (*Mephitis mephitis*)	X	X	
White-footed mouse (*Peromyscus leucopus*)		X	
White-tailed deer (*Odocoileus virginianus*)	X	X	X
White-tailed jackrabbit (*Lepus townsendii*)	X	X	
Birds			
American wigeon (*Anas americana*)		X	
Blue-winged teal (*Anas discors*)		X	
Canada goose (*Branta canadensis*)	X	X	
Clay-colored sparrow (*Spizella pallida*)		X	
Gadwall (*Anas strepera*)		X	
Greater white-fronted goose (*Anser albifrons*)	X	X	
Gray Partridge (*Perdix perdix*)	X	X	
Least flycatcher (*Empidonax minimus*)		X	
Magpie (*Pica hudsonia*)	X	X	
Mallard (*Anas platyrhynchos*)	X	X	
Mourning dove (*Zenaida macroura*)	X	X	X
Northern harrier (*Circus cyaneus*)	X	X	
Northern shoveler (*Anas clypeata*)		X	
Prairie falcon (*Falco mexicanus*)	X	X	
Red-eyed vireo (*Vireo olivaceus*)		X	
Redhead (*Aythya americana*)		X	
Red-tailed hawk (*Buteo jamaicensis*)	X	X	
Ring-necked pheasant (*Phasianus colchicus*)	X	X	

Sandhill crane (*Grus canadensis*)	X	X	
Sedge wren (*Cistothorus platensis*)		X	
Sharp-tailed grouse (*Tympanuchus phasianellus*)		X	
Snow goose (*Chen caerulescens*)	X	X	
Western kingbird (*Tyrannus verticalis*)		X	
Yellow warbler (*Dendroica petechial*)		X	
Reptiles and Amphibians			
Boreal chorus frog (*Pseudacris maculate*)	X	X	X
Bullsnake (*Pituophis catenifer*)		X	
Common gartersnake (*Thamnophis sirtalis*)		X	
Eastern yellow-bellied racer (*Coluber constrictor*)		X	
Great Plains toad (*Bufo cognatus*)		X	
Northern leopard frog (*Rana pipiens*)		X	
Plains gartersnake (*Thamnophis radix*)		X	
Plains spadefoot toad (*Spea bombifrons*)	X	X	
Prairie rattlesnake (*Crotalus viridis*)		X	
Short-horned lizard (*Phrynosoma douglassi*)		X	
Tiger salamander (*Ambystoma tigrinum*)		X	
Western painted turtle (*Chrysemys picta*)		X	
Woodhouse's toad (*Anaxyrus woodhousii*)		X	X

Sources: NDGFD 2015a, 2015b, 2016, 2019

3.3.2 Unique and Sensitive Wildlife and Habitat

3.3.2.1 Significant and Sensitive Habitat

The nearest known significant and sensitive wildlife habitat consists of the Theodore Roosevelt National Park, Little Missouri State Park, Lake Ilo National Wildlife Refuge, and Killdeer Mountains Wildlife Management Area. These valuable wildlife habitats are further detailed below.

The Theodore Roosevelt National Park (TRNP) encompasses 70,446 acres that span approximately 110 miles of land in three sections: the North Unit, the South Unit, and the Elkhorn Ranch Unit. An abundance of native grasses provides sustenance for grazing animals while the vast habitat diversity attracts a great number of birds. The terrain of the badlands creates microclimates of warm, dry slopes, relatively cool and wet juniper woodlands, and river bottoms suitable to sustain a wide variety of species. The species range from more than 186 bird species; large grazing animals such as bison, feral horses, elk, white-tail deer, mule deer, pronghorn; and small grazers such as prairie dogs. Several varieties of snakes and lizards dwell in the semi-arid climate of TRNP (NPS 2022). The Little Missouri River flows through all three units of TRNP and is home to multiple fish species including: chubs, minnows, blue gills, carpsuckers, catfish, northern pike, sauger, walleye, and goldeyes (NPS 2020). TRNP is located approximately 7 miles southeast of the Project area (NDGFD 2022).

The Little Missouri State Park lies on the western side of the Little Missouri River and encompasses over 6,000 acres in the North Dakota Badlands. The Park is home to over 45 miles of trails open to horseback riding and hiking. Numerous wildlife species frequent the park, including mule deer, coyote, fox, bobcat, and golden eagles. The Little Missouri State Park is located approximately 27 miles southeast of the Project area in Dunn County, North Dakota (NDTD 2022).

The Lake Ilo National Wildlife Refuge (NWR) encompasses 4,033 acres of wetlands, native prairie, and planted grasslands managed by the U.S. Fish and Wildlife Service (USFWS). The refuge attracts

waterfowl, shorebirds, and other wildlife species by providing summer breeding habitat and spring and fall migration stopover habitat (USFWS 2022a). The Lake Ilo NWR is located 35 miles southeast of the Project area in Dunn County, North Dakota.

The Killdeer Mountains Wildlife Management Area (WMA) is located 21 miles southeast of the Project area in Dunn County, North Dakota (NDGFD 2022). Killdeer Mountains WMA consists of 7,051 acres and provides habitat for multiple species including wild turkeys, deer, upland bird species, waterfowl, elk, and bighorn sheep (City of Killdeer 2022).

3.3.2.2 Migratory Bird Treaty Act

Migratory raptor, game, and songbird species are protected under the Migratory Bird Treaty Act (MBTA) of 1918. The MBTA protects species or families of birds that live, reproduce, or migrate within or across international borders at some point in their life cycle. It prohibits the take (including killing, capturing, selling, trading, and transport) of protected migratory species without prior authorization by the Department of Interior USFWS. The MBTA applies to migratory birds that are identified in 50 CFR 10.13 (USFWS 2020).

According to the USFWS Information and Planning and Consultation system, 14 migratory bird species may occur within McKenzie County, North Dakota. Table 3.3.2.2-1 below lists these species (USFWS 2022).

Table 3.3.2.2-1
Migratory Bird Species that Potentially Occur within the Project Area

Species Name	Scientific Name
Baird's Sparrow	*Ammodramus bairdii*
Bald eagle	*Haliaeetus leucocephalus*
Black tern	*Chlidonias niger*
Black-billed cuckoo	*Coccyzus erythropthalmus*
Bobolink	*Dolichonyx oryzivorus*
Chestnut-collared longspur	*Calcarius ornatus*
Ferruginous hawk	*Buteo regalis*
Franklin's gull	*Leucophaeus pipixcan*
Lark bunting	*Calamospiza melanocorys*
Lesser yellowlegs	*Tringa flavipes*
Marbled godwit	*Limosa fedoa*
Red-headed woodpecker	*Melanerpes erythrocephalus*
Sprague's pipit	*Anthus spragueli*
Willet	*Tringa semipalmata*

Source: USFWS 2022

3.3.2.3 Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (BGEPA) prohibits anyone, without a permit issued by the Secretary of the Interior, from "taking" bald or gold eagles, including their parts (including feathers), nests, or eggs. This Act defines "take" as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb" (USFWS 2022b).

BCE and ERM conducted on-the-ground eagle nest surveys within one mile of the proposed Project area. No bald or golden eagles individuals or nests were observed during surveying within a 1-mile radius of the Project.

3.3.3 Impacts and Mitigation

Impacts on wildlife habitat include disturbance of soils and vegetation during construction. Direct impacts to wildlife may also include the potential mortality or injury during construction or vehicle collisions. Indirect impacts to wildlife may include increased noise from construction equipment and increased human activity, which may lead to displacement and avoidance of workspace areas. To minimize impacts to wildlife resources, WBI Energy will utilize existing access roads, stay within approved workspace boundaries, and limit construction to daylight hours. Open excavations and idle equipment will be routinely checked for wildlife before initiating construction activities each day. Any wildlife that has entered the work area will be allowed to exit the work area. All disturbed areas outside aboveground facility boundaries will be restored to original condition following construction. Potential impacts to wildlife will be temporary, with no long-term impacts anticipated.

The NDGFD states that primary nesting season for migratory birds is April 15 through August 1 (NDGFD 2022b). To minimize impacts to migratory bird nesting habitat, any ground-disturbing activities on non-agricultural land occurring within this timeframe will be preceded by ground-based nest surveys with the objective of having surveys completed within 7 days of ground disturbance. Once nesting surveys have cleared, WBI Energy will mow the construction right-of-way to deter birds from nesting within the Project area. If nests are identified during surveys, depending on local topography and vegetation buffers, work will stop up to 0.1 miles from the active nest. The nest will be monitored and construction activities will resume once chicks have fledged or the nest has failed.

All disturbed areas will be restored to original condition following construction in accordance with the FERC Plan and Procedures. Agriculture land will be restored to active production and other areas will be revegetated to pre-disturbance conditions. Project related impacts on wildlife and migratory birds are anticipated to be temporary and limited to the period of construction activities. No substantial changes in wildlife habitat availability or sustainability are anticipated as a result of the Project.

3.4 VEGETATION RESOURCES

This section describes the existing vegetation resources that occur within the Project area, as well as potential impacts from construction activities. Vegetation locations of special concern and noxious and invasive species are also discussed. Information on existing vegetation was obtained from biological field surveys, review of aerial photography, and available literature.

3.4.1 Ecoregions within the Project Area

Ecoregions are determined based on general similarity of geology, physiography, vegetation, climate, soils, land use, wildlife, and hydrology. The Environmental Protection Agency (EPA) classification scheme divides North Dakota into four level III ecoregions: The Lake Agassiz Plain, the Northern Glaciated Plains, the Northwestern Glaciated Plains, and the Northwestern Great Plains (EPA 2022).

The Project area lies entirely within the Missouri Plateau region of the Northwestern Great Plains ecoregion of west-central North Dakota. The Northwestern Great Plains ecoregion is characterized by

semiarid rolling plain of shale, siltstone, and sandstone punctuated by occasional buttes and badlands. Native grasslands persist in areas of steep or broken topography, but they have been largely replaced by spring wheat and alfalfa over most of the ecoregion. Agriculture is limited by erratic precipitation patterns and limited opportunities for irrigation (USGS 2022). The Missouri Plateau was largely unaffected by glaciation and retains its original soils and complex stream drainage pattern. A mosaic of spring wheat, alfalfa, and grazing land covers the shortgrass prairie where herds of bison, antelope, and elk once grazed (USGS 2022)

3.4.2 Existing Vegetation Resources

Vegetation across the entire Project area includes mixed-grass and short grass prairie plant communities, wooded draws, smooth brome dominated communities, and agricultural crop fields. Species within these communities included: junegrass (Koeleria macratha), western wheatgrass (Pascopyrum smithii), green needlegrass (*Nassella viridula*), blue grama (*Bouteloua gracilis*), needle-and-thread (*Hesperostipa comata*), threadleaf sedge (*Carex filifolia*), little bluestem (*Schizachyrium scoparium*), plains muhly (*Muhlenbergia cuspidata*), and buffalograss (Bouteloua dactyloides). Grassland forbs include pasque flower (*Pulsatilla vulgaris*), buttercup (*Ranunculus*). Pussytoes (*Antennaria*), prairie phlox (*Phlox pilosa*), wild parsley (*Anthriscus sylvestris*), yellow wild parsley (*Pastinaca sativa*), prairie smoke (*Geum triflorum*), locoweed (*Oxytropis*), golden pea (*Gompholobium latifolium*), Missouri milvetch (Astragalus missouriensis), and purple prairie clover (Dalea purpurea).

The smooth brome dominated community was present along the road ditch edges and well pads. This contained other ruderal vegetation such as kochia (*Bassia scoparia*), Russian thistle (*Kali tragus*), and field sow thistle (*Sonchus arvensis*) (Beaver Creek 2022).

3.4.3 Unique, Sensitive, and Protected Vegetation Communities

Conservation Reserve Program

The Conservation Reserve Program (CRP) is a land conservation program administered by the Farm Service Agency. In exchange for a yearly rental payment, farmers enrolled in the program agree to remove environmentally sensitive land from agricultural production and plant species that will improve environmental health and quality. The long-term goal of the program is to re-establish valuable land cover to help improve water quality, reduce soil erosion, and reduce loss of wildlife habitat (FSA 2022). There is no known CRP land within the Project area. No impacts to CRP land are anticipated.

3.4.4 Noxious Weeds and Other Invasive Species

According to North Dakota Century Code (NDCC) 4.1-47-01, noxious weeds are defined as any “plant propagated by either seed or vegetative parts and determined to be injurious to public health, crops, livestock, land, or other property.” The North Dakota Department of Agriculture (NDDA) has established and implemented a statewide network to manage noxious weeds. Under these regulations, “each person shall do all things necessary and proper to control the spread of noxious weeds and no person may distribute, sell, or offer for sale” noxious weeds (NDDA 2015).

Noxious and invasive plant species include non-native, undesirable native, or introduced species that are able to exclude and/or out-compete desired native vegetation, thereby decreasing overall species diversity. The NDDA noxious weed list is recognized and regulated by all cities and counties in North

Dakota and detailed in Table 3.4.4-1 below. Cities and counties also have the option to add additional weeds onto a list for enforcement in their jurisdictions. Baby's breath, burdock, and black henbane are additional county or city noxious weed species in McKenzie County. Kochia, Russian thistle, and field sow thistle invasive weed species were identified within the Project area; however, no noxious weed species were identified during environmental field surveys.

Table 3.4.4-1
Noxious Weeds in North Dakota

Species Name	**Scientific Name**
Absinth wormwood	*Artemisia absinthium L.*
Canada thistle	*Cirsium arvense (L.) Scop.*
Dalmation toadflax	*Linaria genistifolia spp. dalmatica*
Diffuse knapweed	*Centaurea diffusa Lam.*
Houndstongue	*Cynoglossum officinale L.*
Leafy spurge	*Euphorbia esula L.*
Musk thistle	*Carduus nutans L.*
Palmer amaranth	*Amaranthus palmeri*
Purple loosestrife	*Lythrum salicaria L., Lythrum virgatum L., and all cultivars*
Russian knapweed	*Centaurea repens L.*
Saltcedar	*Tamarisk spp.*
Spotted knapweed	*Centaurea maculosa Lam.*
Yellow toadflax	*Linaria vulgaris*
Source: NDDA 2017	

3.4.5 Impacts and Mitigation

Vegetation resources within the Project area are limited to an active agricultural crop field and grassland. Major impacts on vegetation resources will include temporary ground disturbance to complete construction activities. Vegetation removal and soil disturbance during construction of the pipeline facilities and pipeline right-of-way could create optimal conditions for the establishment of invasive, non-native plant and noxious weed species. Construction equipment traveling from weed-infested areas into weed-free areas could disperse invasive and noxious species, resulting in the establishment of undesirable vegetation. Potential impacts will be minimized by restricting construction activities to only approved access roads and workspaces and completing Project activities in accordance with the FERC Plan and Procedures. Extra care will be taken to preserve the entire topsoil layer and maintain topsoil and subsoil segregation to ensure that fertility of the cropland is restored. Equipment will be cleaned prior to coming onsite to reduce potential weed infestation or other contaminants.

Following construction, the active agricultural field and grasslands will revert to pre-disturbance conditions. WBI Energy will communicate with landowners to ensure that agricultural land and grasslands are managed appropriately. Any disturbed areas outside of the active agricultural crop field boundaries will be seeded with an approved seed mix representative of surrounding vegetation and historic native plant communities. WBI Energy will consult with the local soil conservation service and landowners, and adhere to seed mix, method, rate, and time frame recommendations. Vegetation establishment will be continually monitored during onsite inspections until final stabilization is achieved. If noxious weed species become established on the R/W, WBI Energy will make efforts to control weeds and work with adjacent landowners to prevent the spread of noxious weed species. WBI Energy will control noxious weed species at WBI Energy-managed aboveground facility sites to prevent the spread of weeds onto

adjacent properties. Invasive and noxious weed species will be routinely monitored, and mechanical and chemical control methods implemented, when necessary, in accordance with state regulations.

3.5 ENDANGERED AND THREATENED SPECIES

WBI Energy contracted qualified biologist at Beaver Creek and ERM to conduct natural resource surveys of the Project area and to assess the potential effects to federally listed threatened, endangered, and proposed species and their critical habitat. The findings of these surveys and assessments are found in the Biological Assessment Reports included in Appendix II-O and summarized in the following sections.

3.5.1 Federally Listed Species

The Northern long-eared bat, piping plover, rufa red knot, whooping crane, Dakota skipper, and pallid sturgeon are listed as endangered or threatened species in McKenzie County (USFWS 2022). All species have the potential to occur within the Project area. These species are detailed in Table 3.5.1-1 (Beaver Creek 2022, ERM 2018, 2020).

TABLE 3.5.1-1

Federally Listed Species in the Project Area

Taxa	Common Name	Scientific Name	Status
Bird	Piping plover	*Charadrius melodus*	Threatened
Bird	Whooping crane	*Grus americana*	Endangered
Bird	Red knot	*Calidris canutus rufa*	Threatened
Mammal	Northern Long-eared Bat	*Myotis septentrionalis*	Threatened
Insect	Dakota skipper	*Hesperia dacotae*	Threatened
Fisheries	Pallid Sturgeon	*Scaphirhynchus albus*	Endangered

Piping Plover

The piping plover is a small, stocky shorebird that is white and light gray in color, with a prominent black band across the forehead and upper breast. Piping plovers eat aquatic and terrestrial invertebrates. Suitable nesting habitat for piping plovers in the Missouri and Yellowstone River systems is characterized as sparsely vegetated channel sandbars, sand and gravel beaches on islands, temporary pools on sandbars and islands, and island margins that interface with the river channel (Beaver Creek 2022).

There is no potential nesting or foraging habitat present in the Project area. The nearest potential habitat is the Missouri River approximately 23 miles to the north. BCE determined that the 2023 Line Section 27 Expansion Project would have no effect on the piping plover. West determined that the Demicks Lake – Cherry Creek Project would have no effect on the piping plover and the North Bakken Expansion Project may affect, but is not likely to adversely affect the piping plover. Based off results from previous natural resource inventories and the Project area being dominated by agricultural habitat, the Project would result in no effect to the piping plover.

Whooping Crane

The whooping crane is the tallest bird in North America, with a height of five feet and wingspan of up to seven feet. The mature bird is primarily white in color with black wingtips and red markings on the head. Their diet consists of crabs, crayfish, frogs, plants, and other small aquatic life.

Whooping cranes breed in wetland habitat associated with Wood Buffalo National Park in Alberta and the Northwest Territories of Northern Canada and overwinter on the Texas Coast. Their migration route follows the Missouri River corridor, with stopover habitat typically consisting of shallow marshes with no emergent zone for roosting and nearby upland cropland and pastures for foraging. Spring migration occurs from April 1-May 15, with most sightings occurring in the western two-thirds of the state. Fall migration normally begins in mid-September, with most birds arriving at the Texas wintering grounds between late October.

It is unlikely that stopover habitat within the Project area would be used by the whooping crane. Existing human developments in the area likely already deter use by this species such as traffic along US Highway 85 and various oil and gas developments. BCE determined that the 2023 Line Section 27 Expansion Project would have no effect on the whooping crane (Beaver Creek 2022). West determined that the Demicks Lake – Cherry Creek Project would have no effect on the whooping crane and that the North Bakken Expansion Project may affect, but is not likely to adversely affect the whooping crane (ERM 2018, 2020). Based off results from previous natural resource inventories, the Project would have no effect on the whooping crane.

Rufa Red Knot

The red knot is a medium-sized shorebird about 9 to11 inches in length, with a 20-inch wingspan and light-gray colored feathers that turn reddish during the breeding season. They primarily eat aquatic invertebrates and will eat terrestrial invertebrates during the breeding season. During migration, red knots are commonly found in marine habitats – sand beaches, saltmarshes, lagoons, mudflats of estuaries and bays, and mangrove swamps that contain an abundance of invertebrate prey (Cornell Lab of Ornithology 2022).

Information is lacking on specific non-coastal stopover habitat for the rufa red knot but would include wetland habitats similar to those selected by other shorebirds such as the least tern and piping plover. Red knots have been documented to use Lake Sakakawea as stopover habitat. There is no potential nesting or foraging habitat present in the Project area. BCE determined the 2023 Line Section 27 Expansion Project would have no effect on the rufa red knot (Beaver Creek 2022). West determined that the Demicks Lake – Cherry Creek Project and North Bakken Expansion Project would have no effect on the rufa red knot (ERM 2018, 2020). Based off results from previous natural resource inventories, the Project would have no effect on the rufa red knot.

Northern Long-eared Bat

The Northern long-eared bat is an insectivorous bat that uses different roost sites in different seasons. In winter, Northern long-eared bats hibernate in caves or mines with high humidity and stable temperatures. Suitable summer habitat consists of a wide variety of forested/wooded habitats where the bats roost, forage, and travel. No trees are crossed by the defined workspace areas. It is unlikely that temporary increased noise levels and human activity during construction would be discernible to Northern long-eared bats using adjacent habitat, compared to the existing traffic and noise regime, such that the Project would cause displacement. BCE determined that the 2023 Line Section 27 Expansion Project would have no effect on the Northern long-eared bat, as detailed in the Biological Assessment Report (Beaver Creek 2022). West determined that the Demicks Lake – Cherry Creek Pipeline Project would have no effect on the Northern long-eared bat and that the North Bakken Expansion Project may affect but is not likely to adversely affect the Northern long-eared bat. No suitable forested/wooded habitat is present within the Project

area. Based off results from previous natural resource inventories, the Project would have no effect on the Northern long-eared bat.

Dakota Skipper

The Dakota Skipper is a small butterfly found in tallgrass and mixed grass prairies of the Northern Great Plains. Dakota skippers have a single flight per year occurring from the middle of June through the end of July. Dakota skipper habitat has been categorized into two main types: "Type A" habitat is low, wet mesic prairie on near-shore glacial lake deposits dominated by bluestem grasses, and "Type B" habitat occurs on rolling terrain over gravelly glacial moraine deposits and is dominated by bluestems and needle grasses (Beaver Creek 2022).

Suitable native prairie habitat is not present within the Project area. BCE determined that the 2023 Line Section 27 Expansion Project would have no effect the Dakota skipper, as detailed in the Biological Assessment Report (Beaver Creek 2022). West determined that the Demicks Lake – Cherry Creek Pipeline Project would have no effect on the Dakota skipper and that the North Bakken Expansion Project may affect but is not likely to adversely affect the Dakota skipper (ERM 2018, 2020). Dakota skipper habitat does not occur within the Demicks Lake Plant Receipt Station, Cherry Creek Valve Setting, or the Franz Yard. Based off results from previous natural resource inventories, the Project would have no effect on the Dakota skipper.

- Pallid Sturgeon

The pallid sturgeon can grow up to seven feet in length and is light gray in color. Pallid sturgeon habitat includes large rivers with high turbidity, swift currents, and natural flow. Their preferred habitat has a diversity of depths and velocities formed by braided channels, islands, and mid-channel sandbars. The species' habitat is fragmented by dams on the Missouri River; only scarce populations remain in the upper Missouri River above Fort Peck Reservoirs, in the Missouri and lower Yellowstone Rivers.

Appropriate habitat for the pallid sturgeon does not occur in the Project area. West determined that the Demicks Lake – Cherry Creek Pipeline Project and North Bakken Expansion Project would have no effect on the pallid sturgeon (ERM 2018, 2020). Based off results from previous natural resource inventories and unsuitable habitat within the Project area, the Project would have no effect on the pallid sturgeon.

As required by Section 7(a)(2) of the Endangered Species Act (ESA) and in accordance with FERC guidelines, WBI Energy initiated informal consultation with the USFWS regarding federally listed species that may occur or potentially be affected by construction activities on November 8, 2018, and May 20, 2022, receiving acknowledgement that the proposed Project will have no effect on the listed species in letters dated November 30, 2018, and May 25, 2022. The USFWS provided no comments regarding impacts to threatened or endangered species.

3.5.2 Impacts and Mitigation

The Project is expected to have no effect on the piping plover, red knot, whooping crane, Northern long-eared bat, Dakota skipper, and pallid sturgeon. Due to the lack of habitat in the Project area and continuous human disturbances associated with agricultural and industrial activities, the likelihood of species occurring in the Project area is low. Potential impacts will be minimized by conducting construction activities in accordance with the FERC Plan and Procedures and restoring disturbed areas

to original conditions following construction. If a whooping crane is observed, construction will be stopped, the USFWS will be notified, and construction will not proceed until after whooping cranes have left the area and permission to proceed has been granted by the USFWS.

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RESOURCE REPORT 4

4.0 Cultural Resources

Resource Report 4 describes the nature and significance of cultural resources or historic properties that may be affected within the Project area. Class I and Class III archaeological investigations were completed by Alpine, ERM, and Beaver Creek Archelogy (BCA) to assess impacts on cultural resources within the Project area. Please refer to Resource Report 1 for a detailed Project description.

4.1 INTRODUCTION AND AGENCY CONSULTATIONS

Section 106 of the National Historic Preservation Act of 1966 (NHPA), as amended, requires federal agencies to analyze the effects of their undertakings on cultural resource sites that are listed or eligible for listing on the National Register of Historic Places (NRHP). WBI Energy is assisting the FERC in fulfilling its obligations under the NHPA by providing consultations with the North Dakota State Historic Preservation Office (SHPO) and conducting a detailed Class I and Class III cultural resource inventory of the Project area. The Class III cultural resource inventory reports are filed as privileged and confidential documents in Appendix IV-A.

Portions of the 2023 Line Section 27 Expansion Project area (the Demicks Lake Plant Receipt Station, Cherry Creek Valve Setting, and Franz Yard) overlap previous survey corridors associated with WBI Energy's Demicks Lake – Cherry Creek Pipeline Project and North Bakken Expansion Project. Alpine completed cultural resource investigations for the Demicks Lake – Cherry Creek Pipeline Project and ERM completed cultural resource investigations for the North Bakken Expansion Project. WBI Energy initiated consultation on August 4, 2022, with the SHPO regarding previous findings on the Demicks Lake Plant Receipt Station, Cherry Creek Valve Setting, and Franz Yard. The SHPO concurred with a "No Historic Properties Affected" determination on August 25, 2022.

The Spring Creek Interconnect, Demicks Lake III Valve Setting, and the Spring Creek Compressor Station are located outside previous cultural survey corridors that were originally inventoried by Alpine and ERM. These additional areas were inventoried by BCA on March 30 and May 4, 2022. On May 17, 2022, WBI Energy initiated consultation with the SHPO regarding the proposed 2023 Line Section 27 Expansion Project and provided the associated BCA Class III cultural resource inventory report. The SHPO found the Class III cultural resources inventory report acceptable and concurred with a "No Historic Properties Affected" determination on June 8, 2022. SHPO consultation documents regarding the Project are included in Appendix II-M.

4.2 AREA OF POTENTIAL EFFECT

As defined by 36 CFR 800.16(d), the area of potential effects (APE) is the "geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historic properties."

The APE for archaeological resources includes a 50-foot-wide corridor along access roads and boundaries of existing above-ground facilities for the Demicks Lake Plant Receipt Station, Cherry Creek Valve Setting, and Franz Yard. The APE encompasses the Spring Creek Compressor Station, Spring Creek Interconnect, and Demicks Lake III Valve Setting consists of 240 acres, of which 170 were previously surveyed for different projects conducted in the last ten years. As a result, a total of 70 acres were inventoried.

4.3 CULTURAL RESOURCE INVESTIGATIONS

Prior to field surveys, file searches of SHPO records to identify previously recorded cultural resources within the APE were conducted. Archaeologists then completed on-the-ground fieldwork. Each inventory consisted of pedestrian survey transects spaced no more than 15 meters apart. When cultural resources were encountered, the location was marked with pin-flags and the surrounding area assessed to determine the nature and extent of the resource. Locations of all cultural resources were mapped using GPS units capable of sub-meter accuracy.

Alpine's file search found 24 previously recorded cultural resources within one mile of the Demicks Lake – Cherry Creek Pipeline Project. No cultural resources were identified within the boundaries of the Demicks Lake Plant Receipt Station that are proposed as part of the 2023 Line Section 27 Expansion Project.

ERM's file search resulted in 370 previously recorded sites, isolated finds, and site leads located within 1 mile of the Project construction footprint of the North Bakken Expansion Project. One site (32MZ3307) is located within the survey corridor of Cherry Creek Valve Setting.

- **Find 32MZ3307:** is a low-density lithic scatter located on a level terrace overlooking Northfork Creek. No temporally diagnostic artifacts were recovered, and the resource is unlikely to contain intact subsurface features as a result of disturbances from agriculture and pipeline construction. The site is recommended ineligible for the NRHP, with no further work warranted.

BCA's file search revealed 47 previously recorded projects within 1 mile of the Project area. BCA's Class III cultural resources inventory resulted in two previously recorded cultural sites that were revisited and updated (32MZx1225 and 32MZx1608) and one new cultural resource (32MZx1808) that was documented. A brief description of these cultural resources is provided below:

- **Isolated Find 32MZx1225:** this site was originally recorded in 2012 and consists of three Knife Rive flint (KRF) flakes and one biface fragment. It was recommended as ineligible for nomination to the NRHP. BCA visited the site during the current inventory. No evidence of the isolated find was observed, and no shovel test probes were conducted due to the sloped landscape. It is recommended to remain ineligible for nomination to the NRHP, with no avoidance measures recommended.

- **Isolated Find 32MZx1608:** this site was originally recorded in 2016 and consists of three artifacts: one projectile point tip of hard siliceous (HS) Bed chert, one bifacially modified quartzite flake, and one KRF shatter fragment. One shovel test probe (STP) was excavated and was negative for cultural material (CM). The site was recommended as ineligible for nomination to the NRHP. It was updated in 2018 that no evidence of the isolated find was observed. It continued to be recommended as ineligible for nomination to the NRHP. BCA visited the site during the current inventory. The site is recommended to remain ineligible for nomination to the NRHP, with no avoidance measures recommended.

- **Isolated Find 32MZx1808:** this site was encountered during the current inventory and consists of a single gray porcellanite flake. A series of 5 STPs were excavated, and all were negative for CM. This site is an isolated occurrence, and it is recommended as ineligible for nomination to the NRHP, with no avoidance measures recommended.

Table 4.4-1 lists the cultural resource sites identified during the cultural resource inventories by resource number, site description, NRHP status, and avoidance recommendations.

TABLE 4.4-1

2023 Line Section 27 Expansion
Recorded Sites and Isolate Finds

Site Number	**Site Description**	NRHP Eligibility	Avoidance Recommendation
32MZ3307	**12 Lithic Artifacts**	Ineligible	No Further Work
32MZx1225	**3 KRF Flakes, 1 Biface Fragment**	Ineligible	No Avoidance
32MZx1608	**Projectile Point, Flake, Shatter**	Ineligible	No Avoidance
32MZx1808	**Single gray porcellanite flake**	Ineligible	No Avoidance

Source: Beaver Creek 2022

4.4 UNANTICIPATED DISCOVERY PLAN

WBI Energy has prepared a *Plan for Unanticipated Discover of Historic Properties or Human Remains* to prepare for the unforeseen discovery of cultural resources or human remains during construction. This Plan describes in detail the FERC and applicable state agency notification processes in the event that cultural resources or human remains are discovered. Copies will be on site during construction, and the field crews and environmental inspector will be trained and aware of its contents. The *Plan for Unanticipated Discovery of Historic Properties or Human Remains* is provided in Appendix II-H.

4.5 AVOIDANCE MEASURES

All sites encountered during the Class III cultural resource inventories were recommended ineligible for inclusion in the NRHP and no avoidance measures or further work are recommended. Please see the *Plan for Unanticipated Discovery of Historic Properties or Human Remains* for procedures that will be implemented in the event that cultural resources or human remains are discovered during construction.

4.6 REFERENCES

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RESOURCE REPORT 5

5.0 SOCIOECONOMICS

Resource Report 5 describes the existing socioeconomic conditions in the vicinity of the proposed Project, evaluates the potential socioeconomic impacts that could result from Project-related activities, and identifies proposed mitigation measures to avoid or minimize these impacts. This report summarizes baseline socioeconomic conditions, including population, economy and employment, housing, public services, and transportation. Evaluations presented in this section are based on the most current publicly available data published by a variety of federal and state agencies including the U.S. Department of Commerce, U.S. Bureau of Labor Statistics, and U.S. Census Bureau.

5.1 Existing socioeconomic conditions

The socioeconomic impacts of a project extend beyond its construction limits and often reach beyond the city or town where it's located. To understand the potential socioeconomic effects of a project on population characteristics and the services and economy of an area, WBI Energy considered both the character and scale of the Project and the characteristics of the region and other large developments in the area. Based on this approach, WBI Energy established a socioeconomic study area (study area) that encompasses McKenzie County where the proposed facilities are located.

The proposed construction crosses rural, sparsely populated areas and avoids larger populated areas. Watford City, North Dakota has the largest population within McKenzie County. At its nearest, the Project's Franz Yard is approximately 2.2 miles east of Watford City.

5.1.1 Population Density and Growth

Table 5.1.1-1 summarizes the 2010 and 2020 population census data and land area for McKenzie County and Watford City. Data for North Dakota was included for comparative purposes.

As shown in table 5.1.-1, available data indicates that the 2020 population of North Dakota was 779,094, with an average of 11.3 persons per square mile, making it the fourth least populous state in the United States. Watford City is the 12th largest city in North Dakota with a population of 6,207. The primary driver of population growth in the area from 2010 to 2020 was net migration (USCB 2022). Due to recent advancements in drilling technology, natural gas deposits in the region are more accessible and have regained economic prominence, resulting in high levels of migration to the state. North Dakota's current growth rate is in a slight decline around -0.5% growth.

TABLE 5.1.1-1

Line Section 27 Expansion Project
Land Area and Population Characteristics

State/County/ City or Town	Population (2010)	Population (2020)	Population Percent Change (2010 to 2020)	Population Density (2020) (persons per square mile)	Land Area (square miles)
NORTH DAKOTA	**672,591**	**779,094**	**13.7**	11.3	**68,995.86**
McKenzie County	6,360	14,704	131.2	2.3	2,760.1
Watford City	1,744	6,207	255.9	691.4	8.98

Source: U.S. Census Bureau, 2020

5.1.2 Economy and Employment

North Dakota's labor force reached over 367,918 people in April 2020, which is nearly a 6 percent decrease from April 2019 (North Dakota Job Services 2020). In 2021, jobs accounted for approximately 41 percent of all relocation to the state and 31 percent of all moves out of state (United Van Lines, 2021).

North Dakota holds the highest labor force participation in the United States at 67.6 percent compared to the United States at 58.4 percent (Statistic Atlas 2022). McKenzie County labor force participation rate is slightly higher than the North Dakota rate at 68.3 percent. The lower labor force participation rates in all states, including North Dakota, are indicative of the impact of the COVID-19 pandemic on the labor economy. Total employment is expected to increase by 0.5 percent annually between 2018 and 2028, which is slower than the national rate of 0.8 percent (Bureau of Labor Statistics 2019).

Table 5.1.2-1 shows the number of employees for each major industry in the Project's study area. The highest level of employment in North Dakota is in government which accounts for 17.6 percent of all employment in the state. Government is also the dominant industry in the Project area accounting for 22.5 percent of all employment in McKenzie County. The next highest industries of employment in the study area are Mining, Quarrying, and Oil and Gas Extraction at 17.9 percent and Transportation and Warehousing at 15.5 percent.

TABLE 5.1.2-1

2023 Line Section 27 Expansion Project
Major Industry Employment for the Socioeconomic Study Area (2020)[a]

Industry	North Dakota	McKenzie County
Accommodation and Food Services	29,466	509
Administrative and Waste Services	11,903	206
Agriculture, Forestry, Fishing and Hunting	4,804	43
Arts, Entertainment, and Recreation	4,762	29
Construction	25,376	1,273
Educational Services	2,714	23
Finance and Insurance	17,523	131
Health Care and Social Assistance	61,702	346
Information	5,780	37
Management of Companies and Enterprises	3,818	NA
Manufacturing	25,259	NA
Mining, Quarrying, and Oil and Gas Extraction	15,154	1,771
Other Services	10,646	193
Professional and Technical Services	15,923	320
Government	69,599	2,223
Real Estate and Rental and Leasing	4,974	253
Retail Trade	43,768	570
Transportation and Warehousing	16,402	1,536

Utilities	3,327	74
Wholesale Trade	23,087	341
Total	**395,988**	**9,897**

Sources: NDLMI 2021
[a] Average employment for occupational groups excludes most government employees, railroad employees, and self-employed persons. Therefore, employment for some groups may be higher than reported.
Notes: NA = Data not available

North Dakota's overall employment and economic outlook typically mirrors oil and gas industry trends. North Dakota currently has 17 active oil and gas producing counties, with four core counties producing over 95 percent of North Dakota's oil and gas in 2021 (United States Energy Information Administration 2021). McKenzie County is one of the four producing counties and is also part of the study area.

5.1.2.1 Per Capita Income

Table 5.1.2.1-1 shows the income statistics for the study area. The 2020 per capita income in McKenzie County was $36,414, which is slightly higher than the North Dakota per capita average of $36,289. In 2020, the percentage of the population with incomes below the poverty level in McKenzie County was 7.5 percent, which is 2.7 percent lower than the North Dakota state average of 10.2 percent (USCB 2022). The difference in per capita incomes relative to the state average may be associated with the expansion of the oil and gas industries.

TABLE 5.1.2.1-1

2023 Line Section 27 Expansion
Income Statistics for the Socioeconomic Study Area[a]

State/County	Unemployment Rate 2022 (percent)[a]	Average Per Capita Income ($)	Median Household Income ($)	Population with Incomes Below Poverty Level (percent)
North Dakota	2.6	36,289	65,315	10.2
McKenzie County	2.2	36,414	75,238	7.5

Sources: U.S. Census Bureau, 2022
[a] The labor force includes all people classified in the civilian labor force, plus active-duty members of the military. The civilian labor force consists of people classified as employed or unemployed. Excluded are people 16 years old and over who are not actively looking for work, such as students, homemakers, retired workers, seasonal workers who are not looking for work, institutionalized people, and people doing only incidental unpaid family work. Also excluded are working-age individuals who have stopped looking for work because they believe work is unavailable.

5.1.2.2 Unemployment

As of May 2022, North Dakota's unemployment rate was 2.6 percent, which is the 11th lowest unemployment rate in the United States (US Bureau of Labor Statistics 2022). The state's unemployment rate has historically remained below the national average. As shown in Table 5.1.2.1-1, unemployment rates in McKenzie County are lower than the state average. The difference in unemployment rates in the study area relative to the state average may be associated with the expansion of the oil and gas industries in the area. This expansion has resulted in significant job creation in North Dakota over the last several years.

5.1.2.3 Major Industries

As shown in Table 5.1-2 above, construction; mining, quarrying, and oil and gas extraction; and transportation and warehousing are the dominant industries in the study area.

Although not listed as one of the most dominant industries in the Project area in Table 5.1-2, agriculture is also a major industry in the study area and in North Dakota. Statistical Atlas (2022) reports that 1.6 percent of the state's civilian population was employed in the agricultural industry in 2021; the sixth highest in the United States. Crops make up 81 percent of agricultural sales in the state – the majority being grains, oilseeds, dry beans, and dry peas. Livestock, poultry, and other animal products make up the remaining 19 percent. Between 2012 and 2017, the total number of farms in North Dakota decreased by 15 percent, but the average size of each farm increased by 18 percent (USDA 2021). This may be due to declines in the market value of the state's agricultural products over the past several years. From 2011 to 2019, prices for agricultural goods decreased by as much as 15.3 percent while prices paid for production equipment and supplies increased by as much as 24 percent (USDA 2021). Over 96 percent of farms are family owned and, therefore, are less resilient to market fluctuation, resulting in buyouts and consolidation of agricultural operations. Markets in McKenzie County typically mirror industry trends in the rest of the state.

5.1.2.4 Tourism

The study area offers a variety of entertainment and recreational tourist activities; however, outdoor recreation is generally the most utilized. Entertainment attractions in the study area include casinos, museums, historical buildings, water parks, and farmer's markets. Recreational activities include auto racing, indoor sports, swimming, fishing, boating, camping, hiking, golfing, mountain biking, picnicking, bird watching, hunting, off-highway vehicle use, horseback riding, snowshoeing, cross country skiing, and snowmobiling. Most activities take place in the summer, but some, such as snow or ice-dependent activities, take place in the winter (North Dakota Tourism Division 2022).

The Theodore Roosevelt National Park (TRNP) is located approximately 7 miles southeast of the Project area. TRNP is the only national park that offers outdoor recreational opportunities within the socioeconomic study area. The TRNP encompasses 70,446 acres that spans approximately 110 miles of land in three sections: the North Unit, the South Unit, and the Elkhorn Ranch Unit. The Little Missouri River flows through all three units of TRNP and is home to multiple fish species. Hiking trails, bike trails, and horse trails allow for abundant opportunities for bird watching, animal watching and other outdoor recreational activities (NPS 2022).

Hunting and fishing are major recreation and tourist activities throughout northwestern North Dakota. The area contains abundant waterfowl, upland game birds, big-game species, and game fishing. The hunting seasons for most game species occur in the fall or winter months (September through January) with a peak in the late fall (October and November) (NDGFP 2022, NDTD 2022).

5.1.2.5 Tax Revenues

Table 5.1.2.5-1 shows tax revenue by source for the state of North Dakota. Tax revenues are typically used by local and state governments for infrastructure improvements to meet other community needs. From 2019 to 2021, 49.1 percent of all tax collection in North Dakota came from the Oil and Gas Production Tax and Oil Extraction Tax. Most of these tax revenues are used to fund schools, roads, infrastructure, law enforcement and other priority needs (Energy of North Dakota 2022). WBI Energy will be required to pay property taxes to the county that hosts the pipeline and aboveground facilities. McKenzie county will receive property taxes based on the taxable assessment values attributable to the Project facilities.

TABLE 5.1.2.5-1
2023 Line Section 27 Expansion Project
North Dakota State General Fund Revenues by Tax Source [a]

Revenue Source	Projected 2019 to 2021 Biennium ($ million)
Sales & Use Taxes[a]	2,008.4
Individual Income Tax	821.9
Corporate Income Tax	240.6
Oil & Gas Taxes	3,640.4
Coal Taxes[b]	71.9
Motor Fuel Taxes[c]	367.3
All Other Taxes & Fees[d]	737.4
Total Revenues	7,887.9

Source: North Dakota Office of State Tax Commissioner, 2021.
[a] Includes sales and use tax, motor vehicle excise tax.
[b] Includes coal severance tax and coal conversion facilities privilege tax.
[c] Includes motor vehicle fuel and special fuel taxes.
[d] Includes taxes on cigarettes, tobacco, estates, financial institutions, local sales, city local occupancy, music and composition, motor fuel cash bonds, fuel dealers & inspection fees, electric generation, non-game wildlife fund, centennial tree trust fund, organ transplant support fund, local restaurant and lodging, miscellaneous remittances, veteran's postwar trust, provider assessment, telecommunications, wholesale liquor, airline, local motor vehicle rental, and prepaid wireless fees.

5.1.3 Housing

The United States Census Bureau defines a housing unit as a house, apartment, group of rooms, or single room occupied or intended for occupancy as separate living quarters. Oil and gas industry growth over the past several years has imposed strains on housing availability in the socioeconomic study area. The study area is predominately rural, but there are population centers within the Project vicinity (see Table 5.1.1-1). New construction is not alleviating North Dakota's tight housing market (NDHFA 2020a). Housing affordability is also a concern across the region as increased market demand drives up housing costs. A shortage of qualified laborers, high housing construction costs, and aging housing stock has impeded new housing development across North Dakota (NDHFA 2020b). Results from the 2020 Census place the vacant housing in McKenzie County at 29.3 percent, over double of the state as a whole (13 percent; United States Census Bureau 2022b). The census numbers do not currently reflect available temporary housing, only vacancies in general. As a result, the numbers of available and affordable housing for the Project workforce are likely to be lower.

There are approximately 12 hotels and motels totaling 953 rooms in the largest population center (Watford City) within the study area (NDTD 2022). These existing businesses could provide temporary accommodation to non-resident workers. Additional rooms are located in the surrounding area; however, many communities are not within the immediate vicinity of the proposed Project or have limited or no hotel and motel facilities.

5.1.4 Transportation

The North Dakota Department of Transportation (NDDOT) is responsible for development, operation, and maintenance of surface transportation in the state. As of 2017, there were 106,202 total road miles

(NDDOT 2022) and 4,285 bridges in North Dakota (American Road and Transportation Builders Association 2022). Of the total road miles, about 3,720 miles are on the National Highway System including 571 miles of interstate. U.S. Highway 85 is the major U.S. Highway in the socioeconomic study area. In 2020, there were over 500,000 licensed drivers and over 1 million vehicles registration renewals in North Dakota.

State and federal funds support almost all public transport in North Dakota. In 2020, over 2.8 million rides were provided by 334 buses and vans. Because most of the state is rural (areas with a population of less than 50,000), the NDDOT provides grants for rural transportation programs to provide access to people in non-urbanized areas (NDDOT 2021b).

Highway 85 is the primary roadway corridor within the study area. Other roads along the Project route are paved or unpaved county, local, and private roads. In addition, some roads will be used to provide access to the Project during construction. Project route maps depicting the access roads are provided in Appendix II – B.

5.2 SOCIOECONOMIC IMPACT ANALYSIS AND MITIGATION

5.2.1 Population

WBI Energy anticipates that the maximum workforce for construction of the proposed Project will be about 110 people at its peak. Construction of the compressor facility and valve setting will be accomplished using one or two construction spreads with an average of approximately 30 people. The workforce will consist primarily of employees who will temporarily relocate to the Project area. Modifications to aboveground facilities will require a temporary workforce of about 25 additional people. WBI Energy is still evaluating operational staffing needs but anticipates one new hire to assist in the operation and maintenance of the new facilities.

Construction of the Project will result in a temporary increase in the population of the Project area. A portion of the construction workforce will be non-local, skilled workers that will reside in the Project area during construction and then move out of the area once construction is complete. Pending receipt of the necessary permits and approvals, WBI Energy anticipates that the Project construction period will be from the spring of 2023 to the fall of 2023 and the facilities will be placed into service in November 2023. There will not be long-term significant impacts on populations resulting from the Project.

5.2.2 Economy and Employment

WBI Energy expects the construction workforce will consist primarily of temporary workers relocated to the Project area. Their projected employment is anticipated to last for the period of construction (approximately 8 months). Although there may be local or regional workers brought on for the Project, the majority of the workforce will be temporarily relocating. WBI Energy expects that the hiring of local or regional workers for construction will have minimal impact on the overall unemployment rates for the region given the short-term nature of the work.

WBI Energy is still evaluating operational staffing needs but anticipates one new hire to assist in the operation and maintenance of the new facilities. The effect of this one new permanent hire on the unemployment rate will be negligible.

The majority of land crossed by the Project is rural in nature and few businesses (other than farming operations and energy operations) are in close proximity to the Project. Construction will have a

temporary impact on the landowner whose croplands are crossed by the Project, but the Project is not anticipated to have direct impact on non-agricultural businesses. No displacement or removal of residences or businesses is anticipated due to Project construction or operation. Should construction or operation of the Project result in any unplanned impacts on residences or businesses, WBI Energy will work with the individual property or business owner to mitigate the concerns on a case-by-case basis.

5.2.3 Tourism

The Project does not cross any public recreational lands or pass through any significant tourist attraction areas. Impacts on tourism may be increased due to the timing of the construction scheduled. While construction will coincide with spring, summer, and fall activities such as hunting and fishing, impacts will be short term and localized. The Project is not expected to affect the revenues of the tourism industry at the state or local levels.

5.2.4 Housing

The influx of construction workers for the Project will temporarily increase the demand of housing in the area. WBI Energy is not proposing to construct temporary work camps to accommodate non-local workers. Based on the short duration of construction and sufficient availability of temporary housing options, the Project is expected to have a temporary, short term, and localized impact on housing. The potential additional permanent employee who may be hired for operation and maintenance of the Project facilities will have a negligible long-term effect on housing demand.

5.2.5 Government Services

Impacts on government services (i.e., police, fire, and medical services) will generally correspond to the movement of construction through a given area. Impacts associated with the Project are expected to be temporary and localized. Local government services are adequate in the study area to support the temporary addition of construction workers in the area. WBI Energy will coordinate with these local services to verify that they are adequately equipped to respond in the unlikely event of a major incident during Project construction.

There are three educational facilities near the Project area. Due to the short duration and transient nature of construction, WBI Energy anticipates that most non-local workers will not be accompanied by their families. Therefore, local schools are not expected to be affected by the temporary influx of non-local workers.

5.2.6 Economy and Tax Revenue

Some of the construction payroll earnings for the Project are expected to be spent locally/regionally. In addition, it is expected that some portion of non-local payroll earnings will be spent locally for the purchase of items such as fuel, food, and entertainment. Construction personnel hired directly or through third party will have a positive impact on local tax revenues through payroll spending on housing, food, utilities, entertainment, and luxury items.

Project construction will result in positive short-term benefits through increased state and local sales tax revenues associated with increased payroll spending by the construction workforce. Positive indirect impacts include increased sales for businesses that specifically service construction activities. WBI Energy will pay the required environmental and construction permit fees, which will generate a small amount of revenue for the county.

In addition, property taxes result in long-term benefits to local and regional economies. Property tax revenues will depend on the length or footprint of the Project facilities in McKenzie County and will be paid over the life of the Project. Property tax revenues are typically used by local and state governments for infrastructure improvements such as roads, schools, and health facilities and to meet other community needs.

5.2.7 Transportation

The movement of construction equipment, materials, and construction personnel will cause a temporary increase in traffic volumes along area roadways. However, impacts from construction-related traffic will be short term and personnel will travel to and from the Project area primarily during early morning and late evening hours. Additionally, construction contractors will comply with local weight limitations and restrictions on area roadways and will remove any soil that falls onto roadway surfaces.

Existing local, county and township roads will be used to transport construction equipment and materials to the Project area. Vehicles will include stringing trucks, welding rigs, water trucks, fuel trucks, mechanic trucks, front-end loaders, hydrostatic equipment trucks, backhoes, and construction personnel and environmental inspector vehicles. WBI Energy anticipates that some workers will carpool to the construction area, thus reducing passenger vehicle load on local roads. During construction, vehicles will be distributed across the Project area according to the specific phase of construction. In addition, vehicles involved in construction are anticipated to travel between the storage yard and the construction workspace approximately one to two times per day. Construction activities will generally occur Monday through Saturday from 7:00am to 7:00pm and typically avoid peak commuting periods. Certain construction-related activities such as hydrostatic testing and tie-ins may occur at unspecified times and outside of the normal workday. WBI Energy will attempt to schedule these activities in such a way (e.g., outside of peak traffic hours) to minimize impacts on local commuter traffic. The Project may create a minor temporary increase in traffic on county and township roads during active construction, but major traffic delays are not anticipated.

5.2.8 Agriculture

Construction of the proposed Project will result in the short-term loss of cropland within the construction right-of-way and construction of the aboveground facility sites will result in temporary and permanent impacts on agricultural lands (see Resource Report 8).

5.3 ENVIRONMENTAL JUSTICE

Executive Order 12898 on Environmental Justice recognizes the importance of using the National Environmental Policy Act process to identify and address, as appropriate, any disproportionately high and adverse health or environmental effects of its programs, policies, and activities on minority and low-income populations. Consistent with Executive Order 12898, the Center for Environmental Quality called on federal agencies to actively scrutinize the following issues with respect to environmental justice (CEQ 1997).

- The racial and economic composition of affected communities;
- Health-related issues that may amplify project effects on minority or low-income individuals; and
- Public participation strategies, including community or tribal participation in the process.

In accordance with federal guidelines, this environmental justice assessment utilizes demographic and poverty-level data from the geographical area potentially affected directly by the Project to determine if minority and low-income populations are present. The United States Census Bureau 2020 Decennial Census data were used as the source for this information.

Individuals who identify as any race other than white and/or list their ethnicity as Hispanic or Latino are considered minority (EPA 2019). According to federal guidelines, an area where the minority population exceeds 50 percent of the total population or where the minority population percentage is "meaningfully greater" than the minority population of an appropriate unit of geographic analysis – referred to as a reference population – is determined to be an environmental justice population (CEQ 1997). Low income is defined by the EPA as households where the income is less than or equal to twice the federal poverty level (EPA 2019). The designation of a low-income environmental justice community is contingent on the poverty levels for the community being equal to or higher than the poverty level of a reference population.

None of the communities affected by the Project meet the definition of an environmental justice community using the EPA's meaningfully greater analysis method or low-income analysis.

TABLE 5.3-1

Environmental Justice Demographic Indicators of Census Blocks Crossed by the Project [a]

State/County	White Alone Not Hispanic or Latino (percent)	African American or Black (percent)	Native American/Alaska Native (percent)	Asian (percent)	Native Hawaiian or Other Pacific Islander (percent)	Some Other Race (percent)	Hispanic or Latino (percent)	**Total Minority [b] (percent)**	Below Poverty Level [c] (percent)
McKenzie County	**74.3**	**2.3**	**9.7**	**1.2**	**>0.1**	**1.4**	**11.00**	**25.7**	**7.5**

Source: U.S. Census Bureau, 2020

[a] Data represents census populations within the county

[b] Minority refers to people who reported their ethnicity and race as something other than non-Hispanic white. Totals may not sum to 100 due to rounding.

[c] Poverty level is set by the U.S. Census bureau based on family size and composition; poverty status is determined based on pre-tax income excluding capital gains

[d] Value represents the census tract; data for individual block groups is not available

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RESOURCE REPORT 6

6.0 GEOLOGICAL RESOURCES

Resource Report 6 describes the geological setting of WBI Energy Transmission, Inc.'s (WBI Energy) proposed 2023 Line Section 27 Expansion Project (Project), identifies potential mineral resources within the Project area, discusses geologic hazards that may impact the Project, and details measures to avoid or mitigate the impact on geological resources and from potential geological hazards. Resource Report 1 provides a detailed Project description.

6.1 GEOLOGICAL SETTING

6.1.1 Physiography and Topography

The proposed Project is located in McKenzie County, North Dakota in the northwestern portion of the state within the Missouri Plateau Section of the Great Plains Province (Carlson, 1985). Topography of North Dakota generally slopes to the northeast, and is characterized by rolling hills, small lakes, flatlands, and badlands (Bluemle, 1977a). More specifically, McKenzie County is located near the center of the Williston Basin and is characterized by low relief and gentle slopes interrupted by ridges and buttes. Major waterbody drainages within McKenzie County include the Little Missouri, Missouri, and Yellowstone Rivers. The surficial deposits in the county are primarily silt, sand, gravel, clay, and glacial till which are typical given the glacial history of the region. The southern and southwestern portions of the county lie outside the limit of glaciation (Carlson, 1985).

Elevations in the county range from 1,825 feet in the pools of Lake Sakakawea to about 2,820 feet in the buttes of the Golden Valley Formation (Carlson, 1985). Elevation within the Project area is approximately 2,300 feet.

6.1.2 Surficial and Bedrock Geology

The Project area is completely underlain by Sentinel Butte Formation, which lies in the upper part of the Fort Union Group and is Cenozoic in age (Bluemle 1988). The Sentinel Butte Formation ranges from 0 to 600 feet in thickness and consists of interbedded sand, silt, mudstone, carbonaceous shale, and lignite. Ironstone nodule zones in the silt and mudstone and petrified wood in the lignite and carbonaceous shale are characteristic of this formation. The Sentinel Butte Formation is characterized by many 1 to 3-foot-thick lignite beds with few locations where beds are as thick as 10 feet (Carlson, 1985). The majority of bedrock units within the Sentinel Butte Formation are overlain by the glacial deposits with the exception of those exposed in small, localized outcrops (Bluemle, 1977b).

6.1.3 Mineral Resources

Due to the geologic history and structural features in the Williston Basin, the geologic units underlying the Project area host significant oil and gas resources. In addition, the area hosts exploitable deposits of coal and lignite. Glacial sediments cover much of North Dakota and contain sand and gravel that is mined for industrial and commercial purposes.

Oil and Gas Production

McKenzie County ranks first in the state for oil production, averaging approximately 11million barrels (BBLs) per month, and ranks first in the state for natural gas, producing 45.7 million cubic feet (MMCF) (ShaleXP, 2022). There are 10 oil and gas wells within 1,500 feet of the Project Area. The closest oil or gas well (Sondrol 30-21H) is located approximately 467 feet from the Demicks Lake III Valve Setting. No impacts to oil or gas wells are anticipated.

Table 6.1.3-1

Oil & Gas Wells within 1,500' of the Project Area

Well Name	Well Status	Well Type	TWP/RNG/Section	Approximate Distance from Project Area	Nearest Project Workspace
J.W. Westergaard 1	P & A	Oil and Gas	T151N, R96W, S20	676	Demicks Lake Plant Receipt Station
W.C. Dodge Trust B 1	Dry	Oil and Gas	T151N, R96W, S20	941	Demicks Lake Plant Receipt Station
Dimmick Lake SWD 1	Active	Saltwater Disposal	T151N, R96W, S20	1215	Demicks Lake Plant Receipt Station
Sondrol 30-21H	Active	Oil and Gas	T149N, R98E, S30	467	Demicks Lake III Valve Setting
Norman 21-30H	Active	Oil and Gas	T149N, R98E, S30	300	Demicks Lake III Valve Setting
Marlene 21-30HU	Active	Oil and Gas	T149N, R98E, S30	279	Spring Creek Interconnect ATWS
Smokey 3-30-18-3HA	Active	Oil and Gas	T149N, R98E, S30	991	Demicks Lake III Valve Setting
Smokey 3-30-31-15H3	Active	Oil and Gas	T149N, R98E, S30	963	Demicks Lake III Valve Setting

Smokey 3-30-18-3H3	Active	Oil and Gas	T149N, R98E, S30	932	Demicks Lake III Valve Setting
Smokey 3-30-18-2H3	Active	Oil and Gas	T149N, R98E, S30	1019	Demicks Lake III Valve Setting
*P & A = Plugged and Abandoned					
Source: MBOGC 2015					

Insert Figure 6.1.3-1 Oil and Gas Resources Overview

Coal Resources

Aside from oil and gas production, lignite and coal can be found in the Sentinel Butte Formation. Currently, there are six operations mining 32 million tons of coal annually in western North Dakota (Murphy 2019a). There are currently no active coal mining operations in McKenzie County.

Sand and Gravel Resources

A majority of North Dakota is covered in glacial sediments that contain sand and gravel as either outwash or as isolated lenses of sand and gravel within till. Grain size and the quality of sand and gravel are limiting factors which determine whether a sand and gravel deposit is developed (Murphy 2019b). The U.S. Geological Survey (USGS) Mineral Resources Data System was queried to determine sand and gravel resources within the vicinity of the Project area. The closest sand and gravel resource to the Project area is Fitzgerald Ranch Sand Pit located approximately 7.2 miles north of the of the Project area. Fitzgerald Ranch Sand Pit produces sand and gravel for construction purposes (USGS 2011). Approximately 0.8 miles southwest of the Project area is a private scoria pit owned by Sondrol's (EPA 2022). Sand and gravel resources will not be affected by the proposed Project.

6.1.4 Blasting

WBI Energy will not complete blasting activities as part of the proposed Project.

6.1.5 Geologic Hazards

Geological hazards include geologic conditions capable of causing damage or loss of property and life. Such conditions include seismic events and earthquakes, liquefaction, mass wasting (avalanches, landslides, and slump/debris/mud flows), and land subsidence/collapse. There are very few geologic hazards in the vicinity of the Project area. Potential geological hazards in the region are described below.

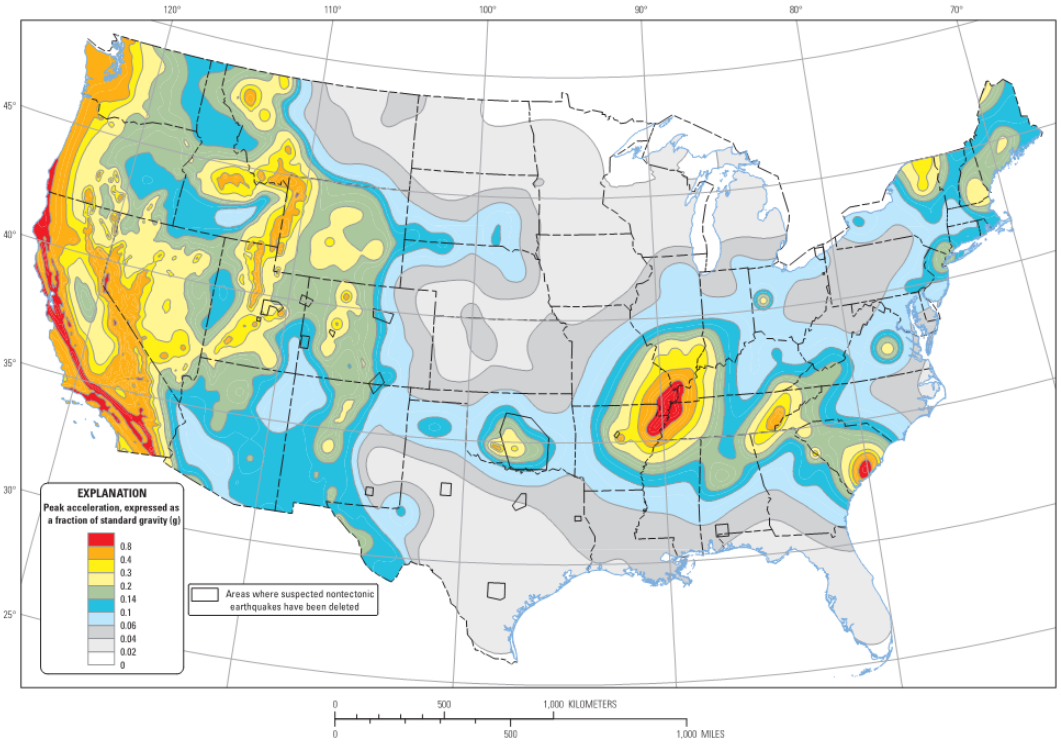
6.1.5.1 Seismic Hazards and Faults

Seismicity refers to the frequency, intensity, and distribution of earthquakes within a given area. Earthquakes generally occur when two sides of a fault suddenly slip past each other and the movement creates ground motion, which can damage property and structures if the motion is sufficiently intense. Most earthquakes occur along the boundaries of tectonic plates.

The risk of seismic-related events in or near the Project area is very low according to the United States Geological Survey's (USGS) Seismic Hazards mapping program, which produces maps of the probability of exceeding a certain amount of ground shaking, or ground motion, in 50 years. The hazard depends on the magnitudes and locations of likely earthquakes, how often they occur, and the properties of the rocks and sediments through which earthquake waves pass. The peak ground acceleration, or the force caused by the shaking, is expressed as a percentage of gravity (g). Low percentage g values reflect low ground acceleration and are generally associated with low seismic risk. Figures 6.1.5.1-1 and 6.1.5.1-2 below show that for the Project area, the earthquake peak ground acceleration that has a 2 percent chance of being exceeded in 50 years has a value of 0.02g, and the peak ground acceleration that has a 10 percent chance of being exceeded in 50 years has a value of 0.01g (USGS 2014a & 2014b). Figure 6.1.5.1-3 further classifies North Dakota as a low-hazard area (USGS 2018). The closest recorded earthquake to the Project area occurred in 2012 in the city of Williston, approximately 35 miles northwest of the Project, which had a magnitude of 3.3 (Anderson, 2016). Additionally, there are no Quaternary

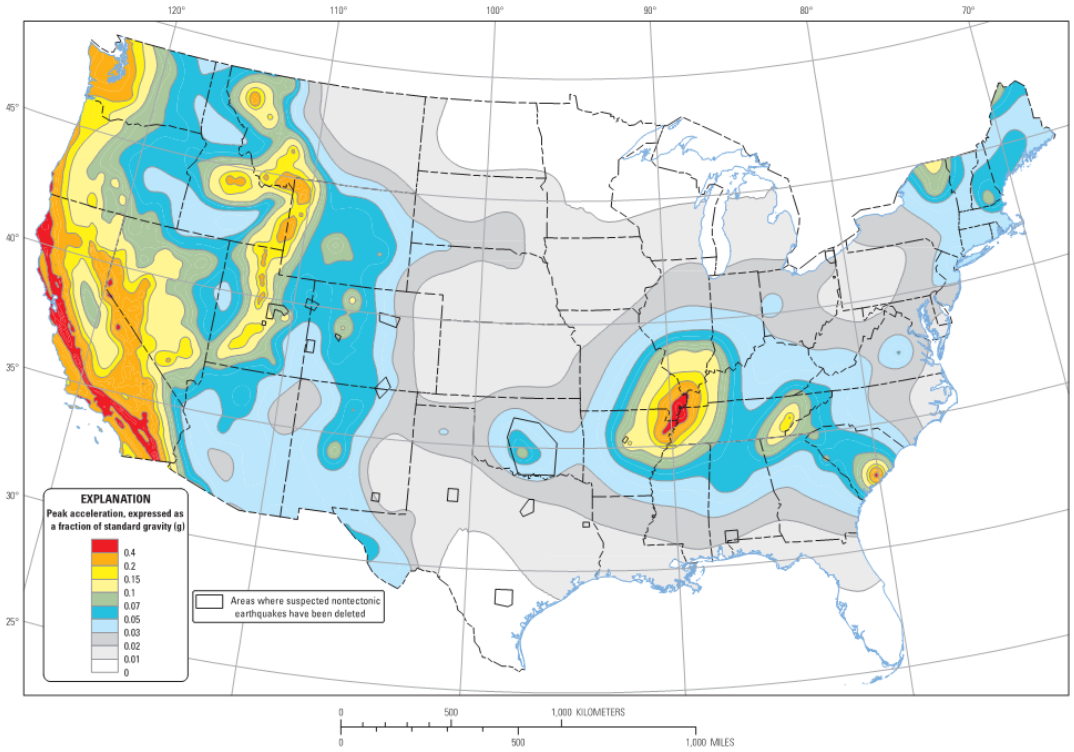
faults or Quaternary fault areas mapped within North Dakota (USGS 2022a). No seismic hazards are anticipated.

Figure 6.1.5.1-1: 2 Percent Probability of Exceedance in 50 Years of Peak Ground Acceleration

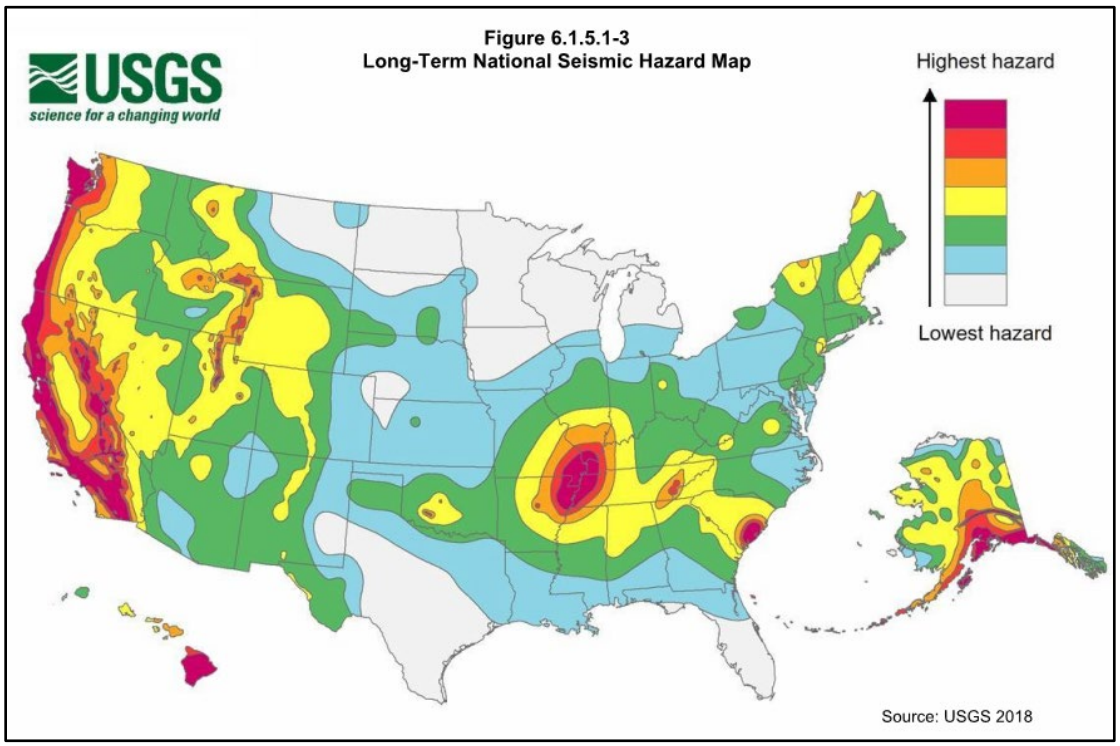


Source: USGS 2014a

Figure 6.1.5.1-2: 10 Percent Probability of Exceedance in 50 Years of Peak Ground Acceleration



Source: USGS 2014b



6.1.5.2 Liquefaction

Soil liquefaction takes place when loosely packed, saturated sediments at or near the ground surface lose their strength in response to strong ground shaking. Liquefaction occurring beneath structures can cause damage during earthquakes (USGS 2022b). Areas susceptible to liquefaction include soils that are generally sandy or silty and are generally located along rivers, streams, lakes, and shorelines or in areas with shallow groundwater. The proposed Project is within an area with extremely low potential for a seismic event that would cause a strong and prolonged ground shaking; therefore, the potential for soil liquefaction is low and not expected to have impact on the proposed Project (Bluemle, 2005).

6.1.5.3 Landslides

Landslides involve the down-slope movement of earth materials under the force of gravity due to natural or human-made causes and most commonly occur in areas of steep slope. Based on the USGS Landslide Susceptibility data (Environmental Systems Research Institute, 2022) the entire Project area is within a region of moderate susceptibility and low incidence for landslides. According to the U.S. Landslide Inventory Web Application, the nearest recorded landslide occurred approximately 8.6 miles south of the Project area (USGS 2022d).

Topography in the Project area generally consists of gently rolling slopes. Terrain characteristics and low incidence of landslides that have occurred in the region indicate a low risk of landslides during construction.

6.1.5.4 Subsidence

Land subsidence is the gradual settling or sinking of the earth's surface due to subsurface movement of earth materials. The principal causes include aquifer-system compaction associated with groundwater withdrawals, drainage of organic soils, underground mining, and natural compaction or collapse. More than 80 percent of known land subsidence in the US is a consequence of ground water use (USGS 2022c).

Ground subsidence can affect pipelines and aboveground facilities by causing a loss of support that will bend or possibly rupture a pipeline or weaken the foundations of the aboveground facilities. The presence of karst terrain in North Dakota is very low and not located near the proposed Project area. No underground mining occurs near the proposed Project and while oil and gas development is common in McKenzie County it is not known to be a significant influencer in the occurrence of subsistence. Therefore, subsidence hazards are not expected for the proposed Project.

6.1.6 Flash Flooding

Flash flooding may occur during heavy rainfall events or following spring snowmelt. The Federal Emergency Management Agency (FEMA) coordinates the federal government's role in preparing for, preventing, mitigating, responding to, and recovering from flooding.

FEMA Flood Insurance Rate Maps depict flood hazard areas as Special Flood Hazard Areas. Special Flood Hazard Areas are areas that will be inundated by the flood event having a 1-percent chance of being equaled or exceeded in any given year. Based on the information available from the FEMA, the Project area is located within an area of minimal flood hazard (FEMA 2022). WBI Energy will consult with McKenzie County floodplain managers and obtain approvals as necessary prior to construction

within any flood zones that are crossed by the Project. Construction and operation of the Project will not affect flood storage or floodplain elevations.

6.2 PALEONTOLOGICAL RESOURCES

As described in section 6.1.2, the Project is within the Sentinel Butte Formation, a geologic formation in the Williston Basin. The Sentinel Butte Formation is known for containing fossils including mollusks, petrified wood, and lignite (Bluemle 1980). These paleontological resources may be discovered by excavation or surface-disturbing activities during construction.

The entirety of the Project area is within the Sentinel Butte Formation. The sandstones and shales of the Sentinel Butte Formation were deposited 65 million years ago on a flat, sometimes swampy plain, similar to current coastal plains of southeastern United States. Sediments were carried to western North Dakota from the newly risen Rocky Mountains and deposited in rivers, floodplains, lakes, and swamps. The lignite formed where plant debris accumulated in swamps that were not reached by the silty floodwaters (Bluemle 1980). This subtropical, swampy lowland contained habitat for many types of vertebrates including turtles, alligators, crocodiles, champsosaurs (crocodile-like reptiles), and fish inhabiting the area. Invertebrates such as insects, snails, clams, and minute crustaceans lived in aquatic habitats. Exotic plants grew in lush forests and were consumed by insects and birds. Mammals were beginning to become established during this time after the extinction of the last of the dinosaurs a few million years earlier (Hoganson 2006).

If paleontological resources are discovered during construction of the Project, they will be treated in accordance with WBI Energy's *Plan for Unanticipated Discovery of Paleontological Resources during Construction*, which is contained in Appendix II-I.

6.3 IMPACTS AND MITIGATION

Project activities may result in temporary impacts to geological resources. Main impacts will involve temporary soil disturbances during construction. To minimize impacts, best management practices (BMPs) will be installed during and following construction for erosion and sediment control. These BMPs will be installed, maintained, and inspected in accordance with the Project SWPPP and FERC Plan and Procedures. An EI will be present onsite to inspect and maintain BMPs on a regular basis. Following construction, all disturbed areas will be restored to original contours and seeded with an approved seed mix. BMPs will remain in place until final stabilization has been achieved.

Construction and operations of the proposed Project are not anticipated to have a significant impact on mineral resources, including oil and natural gas production and industrial sand and gravel production. Construction activities will be limited to only approved access roads and defined workspace areas. All disturbed areas will be restored to original conditions following construction.

Potential impacts from geologic hazards will be minimized by installing facilities in accordance with the U.S. Department of Transportation's standards found in Title 49 CFR Part 192, Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards. WBI Energy will obtain all applicable permits prior to construction, and construction will be stopped during heavy precipitation events until the EI has determined that site conditions are acceptable to proceed. All disturbed areas will be restored to original conditions following construction.

To mitigate any potential impacts to paleontological resources, WBI Energy has prepared a *Plan for Unanticipated Discovery of Paleontological Resources during Construction*, which is contained in

Appendix II-I. If paleontological resources are discovered, the EI and contract personnel will follow the steps and procedures outlined in this plan including stopping work in the immediate area to protect the integrity of the find.

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RESOURCE REPORT 7

7.0 SOIL RESOURCES

Resource Report 7 describes existing soil resources within the Project area, potential effects of the proposed Project on soil resources, and mitigation measures that will be implemented to avoid or minimize these impacts. Soil characterization information was obtained primarily from review and analysis of the U.S. Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS) Web Soil Survey data, and from published NRCS soil surveys of McKenzie County, North Dakota. Please refer to Resource Report 1 for a detailed description of proposed Project activities.

7.1 EXISTING SOIL RESOURCES

Soil characteristics of the Project area were assessed using the NRCS Web Soil Survey and are depicted on exhibits in Appendix II-Q and table 7.1-1 below. Soil interpretations at the broadest scale in the United States are based on Major Land Resource Areas (MLRA). MLRAs are geographically associated land resource units delineated by the NRCS and characterized by physiography, geology, climate, water, soils, biological resources, and land use. The Project is in the Rolling Soft Shale Plain MLRA 54 (NRCS 2006).

Physiography in the Rolling Soft Shale Plain MLRA is characterized by an old moderately dissected, rolling plain with some local badlands, buttes, and isolated hills. Terraces are adjacent to broad floodplains along most of the major drainages. The dominant soil orders in this MLRA are Mollisols and Entisols. The soils in the area dominantly have a frigid soil temperature regime, an ustic soil moisture regime, and mixed or smectitic mineralogy. They are shallow to very deep, generally somewhat excessively drained to moderately well drained, and loamy or clayey (NRCS 2006).

The dominant soil map units located within the Project area consist of Zahl-Williams loams, 9 to 15 percent slopes (E3555D) and Farnuf loam, 0 to 2 percent slopes (E2120A). Zahl-Williams loams cover approximately 10.75 acres of the Project area, and Farnuf loam covers approximately 10.07 acres of the Project area. These well-drained soils are characterized by loamy surface textures and are derived from the slope alluvium derived from sandstone shale and fine-loamy till (NRCS 2022d).

Table 7.1-1: **Selected Physical and Interpretive Characteristics of the Soil Map Units within the Project Area**

Map Unit Symbol	Map Unit Name	Surface Texture	Drainage	Permeability	Parent Material	Landform	Acres	% of Project Area
Pipeline Facilities						**Total Acres: 0.69**		
E2120A	Farnuf loam, 0 to 2 percent slopes	Loam	Well Drained	MH to H	Slope alluvium derived from sandstone and shale	Terraces, hillslopes	0.11	15.94
E3555D	Zahl-Williams loams, 9 to 15 percent slopes	Loam	Well Drained	MH to H	Fine-loamy till	Ridges, hills	0.58	84.06
Aboveground Facilities							**Total Acres: 27.37**	
Demicks Lake Plant Receipt Station							**Total Acres: 0.46**	
E0447B	Daglum-Belfield Complex, 0 to 6 percent slopes	Clay Loam	Moderately Well Drained	VL to L	Clayey alluvium	Alluvial fans	0.41	1.50
E1025B	Regent – Savage silty clay loams, 3 to 6 percent slopes	Silty Clay Loam	Well Drained	VL to MH	Residuum weathered from shale and siltstone	Hillslopes	0.05	0.18
Cherry Creek Valve Setting							**Total Acres: 1.83**	
E1865B	Tally-Parshall fine sandy loams, 2 to 6 percent slopes	Fine Sandy Loam	Well Drained	MH to VH	Coarse-loamy alluvium derived from sedimentary rock	Alluvial Fans	1.83	6.69
Spring Creek Interconnect							**Total Acres: 9.17**	
E3541C	Williams – Zahl Loams. 6 to 9 percent slopes	Loam	Well Drained	ML to MH	Fine-loamy till	Knolls	2.53	9.24
E3555D	Zahl-Williams loams, 9 to 15 percent slopes	Loam	Well Drained	MH to H	Fine-loamy till	Ridges, hills	6.42	23.46
E3609F	Zahl-Cabba-Maschetah complex, 6 to 70 percent slopes	Loam	Well Drained	ML to MH	Fine-loamy till	Ridges	0.22	0.80
Demicks Lake III Valve Setting							**Total Acres: 0.92**	
E3555D	Zahl-Williams loams, 9 to 15 percent slopes	Loam	Well Drained	MH to H	Fine-loamy till	Ridges, hills	0.92	3.36

Spring Creek Compressor Station							**Total Acres: 14.99**	
E2120A	Farnuf loam, 0 to 2 percent slopes	Loam	Well Drained	MH to H	Slope alluvium derived from sandstone and shale	Terraces, hillslopes	9.35	34.16
E3555D	Zahl-Williams loams, 9 to 15 percent slopes	Loam	Well Drained	MH to H	Fine-loamy till	Ridges, hills	2.26	8.26
E2120B	Farnuf loam, 2 to 6 percent slopes	Loam	Well Drained	MH to H	Slope alluvium derived from sandstone and shale	Hillslopes	3.38	12.35
Storage Yard							**Total Acres: 22.16**	
Franz Yard								
E1865C	Tally-Parshall fine sandy loams, 6 to 9 percent slopes	Fine Sandy Loam	Well Drained	H to VH	Coarse-loamy alluvium derived from sedimentary	Hills, Ridges	3.68	16.61
E1865B	Tall-Parshall fine sandy loams, 2 to 6 percent slopes	Fine Sandy Loam	Well Drained	MH to VH	Coarse-loamy alluvium derived from sedimentary	Alluvial Fans	6.09	27.48
E1423F	Flasher-Vebar-Parshall complex, 9 to 35 percent slopes	Loamy Fine Sand	Somewhat excessively drained	ML to MH	Residuum weathered from sandstone	Hillslopes	4.12	18.59
E3703B	Dooley-Zahl complex, 3 to 6 percent slopes	Fine Sandy Loam	Well Drained	ML to MH	Coarse-loamy eolian deposits over fine-loamy till	Rises	8.28	37.36
Access Roads							**Total Acres: 4.48**	
E0447B	Daglum-Belfield Complex, 0 to 6 percent slopes	Clay Loam	Moderately Well Drained	VL to L	Clayey alluvium	Alluvial fans	0.69	15.4
E1025B	Regent – Savage silty clay loams, 3 to 6 percent slopes	Silty Clay Loam	Well Drained	VL to MH	Residuum weathered from shale and siltstone	Hillslopes	0.33	7.37

E3541C	Williams – Zahl Loams. 6 to 9 percent slopes	Loam	Well Drained	ML to MH	Fine-loamy till	Knolls	0.45	10.04
E3555D	Zahl-Williams loams, 9 to 15 percent slopes	Loam	Well Drained	MH to H	Fine-loamy till	Ridges, hills	0.57	12.72
E1865B	Tall-Parshall fine sandy loams, 2 to 6 percent slopes	Fine Sandy Loam	Well Drained	MH to VH	Coarse-loamy alluvium derived from sedimentary	Alluvial Fans	0.63	14.06
E4139A	Korchea – Fluvaquents complex, channeled, 0 to 2 percent slopes, frequently flooded	Loam	Somewhat poorly drained	MH to H	Stratified fine-loamy alluvium derived from sedimentary rock	Floodplains	0.63	14.06
E4137A	Korchea loam, 0 to 2 percent slopes, occasionally flooded	Loam	Well Drained	MH to H	Stratified fine-loamy alluvium derived from sedimentary rock	Floodplain steps	0.30	6.7
E2120A	Farnuf loam, 0 to 2 percent slopes	Loam	Well Drained	MH to H	Slope alluvium derived from sandstone and shale	Terraces, hillslopes	0.61	13.62
E0515B	Rhoades – Daglum complex, 0 to 6 percent slopes	Loam	Moderately Well Drained	VL to ML	Alluvium derived from shale and siltstone	Hillslopes	0.13	2.9
E3703B	Dooley-Zahl complex, 3 to 6 percent slopes	Fine Sandy Loam	Well Drained	ML to MH	Coarse-loamy eolian deposits over fine-loamy till	Rises	0.14	3.13

VL: Very Low – ML: Moderately Low – MH: Moderately High – H: High
NRCS 2022e

7.2 CONSTRUCTION IMPACTS AND MITIGATION

Soils within the Project workspace were evaluated to identify major soil characteristics that could affect construction. Table 7.2-1 below provides a summary of the significant soil characteristics that will be affected by the proposed Project. Principal soil characteristics of concern include farmland of statewide importance, water erodibility, and revegetation concerns. Project facility type, individual soil characteristics, and potential mitigation measures that will be employed for each characteristic are discussed separately in the sections below.

TABLE 7.2-1
Line Section 27 Expansion Project
Acres of Soil Characteristics Affected by Construction of the Proposed Pipeline [a, b, c]

Facility Type	Total Acres Impacted	Prime Farmland [d]	Farmland of Statewide Importance [d]	Hydric Soils [d]	Compaction Prone [e]	Highly Erodible		Revegetation Concerns [h]	Stony/ Rocky [i]	Shallow to Bedrock [j]
						Water [f]	Wind [g]			
Pipeline Facilities [k]	0.69	0	0.11	0	0	0.58	0	0.58	0	0
Aboveground Facilities	27.37	0	14.62	0	0	6.90	0	9.82	0	0.05
Access Roads	4.48	0	2.14	0	0.63	0.57	0	2.02	0	0.33
Storage Yard	22.16	0	14.37	0	0	7.79	4.12	4.12	0	4.12
Total	**54.7**	**0**	**31.24**	**0**	**0.63**	**23.32**	**4.12**	**16.54**	**0**	**4.5**

[a] Pipeline acres includes all extra workspaces. The soils data in the table does not include areas of open water.
[b] The numbers in this table have been rounded for presentation purposes.
[c] The values in each row do not add up to the total acreage for the Project because soils may occur in more than one characteristic class or may not occur in any class listed in the table.
[d] As designated by the NRCS.
[e] Includes soils in somewhat poor to very poor drainage classes with surface textures of sandy clay loam and finer.
[f] Land in capability subclasses 4E through 8E and soils with an average slope greater than or equal to 9 percent.
[g] Soils with a wind erodibility group (WEG) classification of 1 or 2.
[h] Soils with a surface texture of sandy loam or coarser and are moderately well to excessively drained and soils with an average slope greater than or equal to 9 percent.
[i] This group includes soils with a cobbley, stony, bouldery, shaly, very gravelly, or extremely gravelly modifier to the textural class of the surface layer, have a surface layer that contains greater than 5 percent by weight stones larger than 3 inches, and/or contains a layer in the subsoil meeting one of the preceding criteria.
[j] Soils identified as containing bedrock at a depth of 5 feet or less from the surface, all of which is paralithic and rippable with standard construction equipment.
[k] Pipeline facilities include the permanent right-of-way, additional temporary workspaces, and water uptake area.

7.2.1 Pipeline Facilities

Pipeline construction activities that have the potential to affect soils and revegetation efforts include clearing of vegetation, topsoil stripping, grading, trenching, backfilling, and restoration. Potential impacts include loss of soil due to erosion, reduction of soil quality by mixing of topsoil and subsoil materials, soil compaction from construction equipment, rutting, and disruption of surface and subsurface drainage systems. Potential spills or leaks during construction or abandonment activities have the potential to impact soils through contamination. In addition, the presence of certain conditions along the pipeline route could result in poor revegetation of the right-of-way, which has the potential to increase invasive plant species. WBI Energy will minimize

impacts by conducting construction activities in accordance with the FERC Plan and Procedures, the Project SPCC Plan (Appendix II-G), and the *Plan for Unanticipated Discovery of Contaminated Media* (Appendix II-J).

Prime Farmland/Farmland of Statewide or Local Importance

Prime farmland is defined as land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is also available for these uses. Prime farmland has the soil quality, growing season, and moisture supply needed to produce economically sustained high yields of crops. No prime farmland occurs in the Project area. Farmland of statewide importance includes land other than prime farmland that is of statewide or local importance and generally consists of soils that nearly meet prime farmland requirements. Farmland of local importance includes lands not identified as having national or statewide importance that are identified by local agencies to be important for the production of food, fiber, forage, and oilseed crops (NRCS 2022c). Approximately 0.11 acres of farmland of statewide importance (Soil Map Unit 2120A) are located within the pipeline workspace area, detailed in Table 7.2-1.

Impacts to farmland of statewide importance will be minimized by stripping the entire topsoil layer and maintaining separation of topsoil and subsoil materials during construction to ensure successful reclamation. WBI Energy will work directly with landowners to resolve potential issues that may arise during construction. All disturbed areas outside permanent aboveground facility boundaries will be restored to pre-disturbance condition and function following construction.

Hydric Soils

Hydric soils are soils that have been formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper profile (NRCS 2022b). WBI Energy classified hydric soils within the pipeline workspace area as delineated wetlands and waterbodies crossed by the pipeline workspace area, as well as the "Water" soil map unit. No hydric soil occurs within the pipeline workspace area.

Erosion Potential

Soil erosion involves the breakdown, detachment, transport, and redistribution of soil particles by forces of water, wind, or gravity. The most common causes of erosion are typically from wind and water forces (NRCS 2022a). Water erosion hazards consist of soil map units with a land capability classification of 4E through 8E, or soils with an average slope greater than or equal to 9 percent. Approximately 0.58 acres of soils within the pipeline workspace area have high water erosion potential, as detailed in Table 7.2-1. Wind erosion hazards consisted of soil map units within wind erodibility groups 1 through 3. No soils within the pipeline workspace area have high wind erosion potential.

WBI Energy will minimize impacts by installing Best Management Practices (BMPs) in accordance with the Project Storm Water Pollution Prevention Plan (SWPPP) and FERC Plan and Procedures to stabilize soils. BMPs may include (but are not limited to) temporary sediment barriers (silt fence or straw wattles), temporary and permanent slope breakers, trench breakers, erosion control blankets and equipment mats. These erosion control devices will be inspected regularly and repaired as soon as possible during active construction and post construction until final

stabilization is achieved. An Environmental Inspector (EI) will be present onsite to provide BMP installation recommendations and inspect/repair BMPs as needed during construction. Ground disturbance will be limited to only the minimum workspace needed to complete construction. WBI Energy will complete restoration activities as soon as possible following construction, weather and soil conditions permitting.

Compaction Prone

Soil compaction occurs when soil particles are pressed together, reducing pore spaces between particles. This increases the weight of solids per unit volume of soil (bulk density). Soils may be either naturally compacted (heavy clay soil or saturated soil) or compaction may be caused by management activities (equipment travel over soil surfaces). Compacted soils may result in root growth restrictions and decreased infiltration through the soil profile, leading to poor plant growth and increased runoff and erosion (NRCS 2012). Compaction prone soils within the pipeline workspace area consisted of soil map units with a sandy clay loam or finer surface texture. No compaction prone soils are located within the pipeline workspace area.

Revegetation Concerns

Soils with an NRCS Web Soil Survey land capability classification of 4 or greater were included in this limitation category. Approximately 0.58 acres of soils with revegetation limitations are present within the pipeline workspace area, as detailed in Table 7.2-1.

Revegetation concerns will mainly result from potential mixing of topsoil and subsoil materials during construction, drought conditions, and weed infestations. WBI Energy will minimize impacts and increase the potential for successful revegetation by stripping the entire topsoil layer and clearly separating topsoil materials from subsoil materials to ensure successful reclamation (except in saturated soils). The soil surface will be de-compacted prior to seeding. WBI Energy will consult with the appropriate land managing agency and local soil conservation service to determine a recommended native seed mix and conduct seeding within recommended seeding windows. Vegetation establishment will be monitored during regular inspections in accordance with the SWPPP and the FERC Plan and Procedures. The Project will not meet final stabilization criteria until successful revegetation is achieved. Noxious and invasive weeds will be monitored and recorded during routine inspections, and chemical or mechanical treatment will be applied as needed. All disturbed areas outside permanent aboveground facility boundaries will be restored to pre-disturbance condition and function following construction.

Rocky and Shallow-to-Bedrock Soils

Soils with one or more horizons that have a cobbley, stony, boulder, channery, flaggy, or gravelly modifier to the textural class or soils identified as containing bedrock at a depth of 5 feet or less from the surface were considered “rocky” and “shallow-to-bedrock” soils. There are no rocky or shallow-to-bedrock soils located within the pipeline workspace area.

7.2.2 Aboveground Facilities

The proposed Project will require construction of one greenfield compressor station (Spring Creek Compressor Station) and valve setting, modifications to existing facilities, and expansion of the Spring Creek Interconnect. Modifications to the Demicks Lake Plant Receipt Station will take

place within fenced boundaries on soil that has previously been disturbed. New soil disturbance is associated with construction of the Spring Creek Compressor Station and Demicks Lake III Valve Setting, modifications to Cherry Creek Valve Setting, and expansion of the Spring Creek Interconnect. Temporary soil impacts may include compaction from equipment operation and vehicular traffic, spills or equipment leaks that may lead to soil contamination, and mixed topsoil and subsoil materials that may decrease soil quality and impact revegetation success. Aboveground facility soil characteristics of concern include farmland of statewide importance, water erodible soils, revegetation concerns, and rocky/shallow-to-bedrock soils, further detailed below. WBI Energy will minimize impacts by conducting construction activities in accordance with the FERC Plan and Procedures, the Project SWPPP and SPCC Plan, and the *Plan for Unanticipated Discovery of Contaminated Media*.

Prime Farmland/Farmland of Statewide or Local Importance

Approximately 14.62 acres of farmland of statewide importance will be impacted during aboveground facility construction, as detailed in Table 7.2-1. Impacts to farmland of statewide importance will be minimized by stripping the entire topsoil layer and clearly segregating topsoil from subsoil materials throughout all phases of construction. BMPs will be installed during and following construction to minimize erosion and stabilize soils until final stabilization is achieved. WBI Energy will conduct restoration activities as soon as possible following construction, and disturbed areas will be routinely monitored during site inspections and visits. All workspaces outside permanent aboveground facility boundaries will be restored to pre-disturbance condition and function following construction.

Erosion Potential

Approximately 6.9 acres of soils within aboveground facility workspace areas have high water erosion potential, as detailed in Table 7.2-1. WBI Energy will minimize impacts by installing BMPs in accordance with the Project SWPPP and FERC Plan and Procedures. BMPs may include (but are not limited to) temporary sediment barriers (silt fence or straw wattles), erosion control blankets and equipment mats. These erosion control devices will be inspected regularly and repaired as soon as possible during active construction and post construction until final stabilization is achieved. An Environmental Inspector (EI) will be present onsite to provide BMP installation recommendations and inspect/repair BMPs as needed during construction. Ground disturbance will be limited to only the minimum workspace needed to complete construction. WBI Energy will complete restoration activities as soon as possible following construction, weather and soil conditions permitting. Disturbed areas outside permanent fenced aboveground facility boundaries will be seeded with a native seed mix in accordance with local conservation service recommendations.

Revegetation Concerns

Approximately 9.82 acres of soils with revegetation concerns are located within the aboveground facility workspace area, as detailed in Table 7.2-1. Revegetation concerns may result from mixing of topsoil and subsoil materials during construction, drought conditions, and weed infestations. WBI Energy will minimize impacts by stripping the entire topsoil layer and maintaining separation of topsoil and subsoil materials. All areas outside permanent aboveground facility boundaries will be restored to pre-disturbance condition and function following construction. WBI Energy will consult with the appropriate land managing agency and local soil conservation service to obtain

a recommended native seed mix for disturbed areas outside permanent facility boundaries. Vegetation establishment will be monitored during routine inspections during and following construction until final stabilization is achieved. Noxious and invasive weeds will be monitored and recorded during onsite inspections/visits and chemical or mechanical treatment will be applied as needed.

Rocky and Shallow-to-Bedrock Soils

Approximately 0.05 acres of shallow-to-bedrock soils (soil map unit E1025B) are located within the aboveground facility workspace area, as detailed in Table 7.2-1. To minimize impacts, WBI Energy will conduct construction activities in accordance with the FERC Plan to ensure that if shallow bedrock is encountered, it is managed appropriately. Rock excavated from the trench may be used to backfill the trench only to the top of the existing bedrock profile. Rock that is not returned to the trench shall be considered construction debris, unless otherwise approved for an alternate use by the landowner or EI. Excess rock will be removed from at least the top 12 inches of soil in all cultivated or rotated cropland, managed pastures and hayfields, or other areas per landowner request. The size, density, and distribution of rock shall be similar to adjacent undisturbed areas. WBI Energy will restore all disturbed areas outside permanent aboveground facility boundaries to original condition following construction.

7.2.3 Access Roads

WBI Energy will utilize new and existing access roads to access the Project area. Road improvements (such as grading, widening, adding gravel, replacing/installing culverts, or equipment mat placement) may be needed to facilitate equipment and vehicular traffic during construction. The use of existing dirt (two-track) access roads could cause minimal disturbance to soils; however, these soils are already disturbed, and no additional impacts are expected. Potential soil impacts to existing access roads may result from spills or equipment leaks that may lead to soil contamination. WBI Energy is proposing to construct two new permanent access roads to the Spring Creek Compressor Station and the Demicks Lake III Valve Setting. Soil impacts resulting from construction of new permanent access roads will include decreased soil infiltration, which may lead to increased runoff.

Approximately 2.14 acres of farmland of statewide importance, 0.63 acres of compaction prone soils, 0.57 acres of water erodible soils, 2.02 acres of soils with revegetation limitations, and 0.33 acres of rocky/shallow-to-bedrock soils are present along existing access roads, as detailed in Table 7.2-1. To minimize impacts to soil resources, WBI Energy will install BMPs as necessary along access roads to maintain natural flow and drainage patterns across the landscape. Equipment will be routinely inspected for leaks and spills, and dust conditions and tracking will be continuously monitored during active construction. Only approved access roads will be utilized during construction, and these approved access roads will be clearly marked in the field. An EI will be present throughout all phases of construction to monitor road conditions and ensure proper maintenance. Road conditions will be maintained and monitored during routine site visits. WBI Energy will conduct construction activities in accordance with the FERC Plan and Procedures, the Project SWPPP and SPCC Plan, and the *Plan for Unanticipated Discovery of Contaminated Media*.

7.2.4 Storage Yard

WBI Energy is proposing to utilize one storage yard to store pipe, materials, and equipment during construction. The Franz Yard is an existing, developed storage yard that will be restored and reseeded following construction.

Approximately 14.37 acres of farmland of statewide importance, 7.79 acres of water erodible soils, 4.12 acres of wind erodible soils, 4.12 acres of soils with revegetation concerns, and 4.12 acres of rocky/shallow-to-bedrock soils are located within storage yard workspace areas, as detailed in Table 7.2-1. The Franz Yard will be returned to preconstruction conditions. WBI Energy will minimize impacts to soil resources by installing BMPs to minimize erosion during and following construction. An EI will be present throughout all phases of construction to ensure compliance. Construction activities will be conducted in accordance with the FERC Plan and Procedures, the Project SWPPP and SPCC Plan, and the *Plan for Unanticipated Discovery of Contaminated Media*.

7.3 REFERENCES

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RESOURCE REPORT 8

8.0 LAND USE, RECREATION, AND AESTHETICS

Resource Report 8 addresses land use affected by construction and operation of the proposed Project through characterization and quantifying land use types and identifying recreational and visual resources. Impacts to these resources are analyzed, along with mitigation measures implemented to minimize these impacts. Land use data in this report was compiled using a variety of sources, including environmental field surveys, aerial imagery, U.S. Geological Survey (USGS) national land cover data and quadrangle maps. Please refer to Resource Report 1 for a detailed Project description.

8.1 EXISTING LAND USE

Land uses crossed by the proposed Project were classified based on information obtained through biological field surveys and review of current digital aerial photography. The land use categories evaluated in this report are classified by primary vegetation cover type and/or predominant land use. Land use types within the Project area were divided into the following categories:

- Agricultural land – actively cultivated cropland, working areas within farms, and adjacent hedge rows;
- Open land – non-forested areas such as grassland and shrubland (some of which may be used for grazing or hay), isolated stands of trees, emergent wetlands, and shrub/scrub wetlands; and
- Developed land – lands that contain existing aboveground facilities, existing aboveground or belowground utilities, paved roadways, gravel, or two-track roads.

The land use categories listed above, and potential impacts are discussed in greater detail in the sections below. See Table 1.2-1 of Resource Report 1 for information about the overall land requirements for this Project, Resource Report 2 for information on water resources, and Resource Report 3 for information about vegetation.

8.2 LAND USE IMPACTS BY PROJECT FACILITY

Existing land uses within the construction and operational footprints of the Project, including the permanent pipeline right-of-way, additional temporary workspace (ATWS), aboveground facilities, pipe yard/staging area, water up-take areas, and access roads, are summarized in Table 8.2-1. More detailed discussions of land use impacts and mitigation measures within the Project area are discussed in sections 8.3.1 through 8.3.3.

Table 8.2-1
Land Affected by Construction and Operation of the Project (acres)

Facility Type	Ag. Land		Open Land		Dev. Land		Total	
	Const.	Oper.	Const.	Oper.	Const.	Oper.	Const.	Oper.
Pipeline								
Pipeline[a]	0.69	0.51	0	0	0	0	0.69	0.51
Subtotal	0.69	0.51	0	0	0	0	0.69	0.51
Aboveground Facilities								
Spring Creek Compressor Station	14.99	8.0	0	0	0	0	14.99	8.0
Demicks Lake III Valve Setting	0.92	0.92	0	0	0	0	0.92	0.92
Spring Creek Interconnect	6.94	3.11	0	0	2.23	2.23	9.17	5.34
Cherry Creek Valve Setting	0	0	0.25	0	1.58	1.58	1.83	1.58
Demicks Lake Plant Receipt Station	0	0	0	0	0.46	0.46	0.46	0.46
Subtotal	22.85	12.03	0.25	0	4.27	4.27	27.37	16.3
Staging Areas								
Franz Yard	0	0	0	0	22.16	0	22.16	0
Subtotal	0	0	0	0	22.16	0	22.16	0
Access Roads								
Existing Access[b]	0	0	0	0	2.81	2.67	2.81	2.67
New Access	1.67	1.67	0	0	0	0	1.67	1.67
Subtotal	1.67	1.67	0	0	2.81	2.67	4.48	4.34
Total Impacts	25.21	14.21	0.25	0	29.24	6.94	54.7	21.15

[a] Pipeline construction area includes additional temporary workspaces for installation of the pipeline.
[b] Existing access roads have an approximate road width of 20 feet.

8.2.1 Pipeline Facilities

Pipeline Right-of-Way

Pipeline construction will entail excavation of an approximate 3-foot-wide by 8-foot-deep trench to install the pipeline using conventional open-ditch methods. ATWS will be required for equipment/materials storage. WBI Energy will implement a 100-foot-wide construction right-of-

way, and following construction, for each pipeline a 50-foot-wide permanent easement will be used for pipeline operations and maintenance. The construction right-of-way will be seeded and restored to preconstruction conditions.

As shown in Table 8.2-1, construction of the proposed pipeline facilities will require approximately 0.69 acres of agricultural land. Following construction, the construction right-of-way and the permanent right-of-way easement will revert to pre-construction condition and use. The general location aerial and topographic exhibits included in Appendix II-B and Appendix II-C detail pipeline workspace areas.

8.2.2 Aboveground Facilities

Aboveground facilities will consist of a new greenfield compressor station (Spring Creek Compressor Station) and valve setting, modifications to existing facilities, and expansion of the Spring Creek Interconnect. Construction activities to install/upgrade aboveground facilities will affect approximately 22.85 acres of agricultural land, 4.27 acres of developed land, and 0.25 acres of open land. All disturbed areas outside the permanent facility footprint will be restored to pre-disturbance conditions in accordance with the FERC Plan and landowner agreements.

Operations of aboveground facilities will require 12.03 acres of agricultural land to be converted to developed land. All other aboveground facility work will occur on land already classified as developed land. Aboveground facility plot plans are included in Appendix II-E and Appendix III-B.

8.2.3 Access Roads

Existing public access roads will be utilized to access pipeline construction areas and existing aboveground facilities. Standard-maintenance public roads will be used for access without modification or improvement. Approximately 2.81 acres of developed land will be impacted to utilize existing access roads for the Project. All existing access roads will be restored to their original condition or better following construction. Approximately 0.14 acres of developed land associated with the Franz Yard access will be reclaimed to pre-disturbance conditions following construction.

New permanent access roads are proposed to be constructed to gain access to the Spring Creek Compressor Station and the Demicks Lake III Valve Setting. Both permanent access roads are located entirely within agricultural land. Approximately 1.67 acres of agricultural land will be impacted by the proposed access roads. New access roads will be maintained and regularly inspected during routine site visits.

8.2.4 Staging Areas

One temporary storage yard is proposed for the Project. The Franz yard impacts approximately 22.16 acres of developed land. Following construction, the area will be restored to pre-disturbance conditions in accordance with the FERC Plan and landowner agreements.

8.3 LAND USE IMPACTS AND MITIGATION

Construction and operation of the Project may result in temporary impacts on land use. All land associated with the temporary and permanent pipeline right-of-way will be restored to pre-disturbance conditions. Construction of new aboveground facilities and modifications at existing facilities will result in permanent conversion of existing land use to developed land. WBI Energy will conduct restoration activities in accordance with the FERC Plan and Procedures to minimize potential impacts. Specific land use impacts are detailed below, along with mitigation measures to be implemented.

8.3.1 Agricultural Land

Agricultural land within the Project area includes land currently harvested for crops. Approximately 25.21 acres of land will be temporarily impacted during construction with 14.21 acres permanently impacted by operation of pipeline facilities, aboveground facilities, and access roads. Agricultural land along the proposed pipeline corridor and outside permanent aboveground facility boundaries will revert to original use and condition following construction, and WBI Energy will work with landowners to minimize impacts. The pipeline will be installed with a minimum cover depth of 48 inches. This increased depth of cover will allow for continued, uninhibited tillage operations in agricultural fields following construction. Care will be taken to strip the entire topsoil layer (up to 12 inches) and clearly segregate topsoil material from subsoil materials during construction to preserve soil quality and ensure that soil fertility and quality is restored following construction. BMPs will be installed in accordance with the Project SWPPP and FERC Plan and Procedures during and following construction to stabilize soils until final stabilization is achieved.

8.3.1.1 Prime Farmland

The U.S. Department of Agriculture (USDA) defines prime farmland as “land that is best suited to food, feed, fiber, and oilseed crops” (NRCS 2022). No Prime Farmland is crossed by the Project. A total of 31.24 acres of Farmland of Statewide Importance are crossed by the Project. Impacts to Farmland of Statewide Importance are further detailed in Resource Report 7.

8.3.1.2 Agricultural Drain Tiles

There are no known agricultural drain tile systems located within the Project area. If drain tile systems are identified, WBI Energy will work with landowners and drain tile experts to move, restructure, or replace existing tiles and minimize impacts.

8.3.2 Open Land

Approximately 0.25 acres of open land will be temporarily impacted by pipeline construction activities. Potential impacts to open land will be minimized by restoring disturbed areas to original conditions following construction. Extra care will be taken to adequately strip topsoil and maintain topsoil and subsoil segregation. Only approved access roads and workspaces will be utilized. Temporary and permanent erosion and sediment controls will be installed in accordance with the Project SWPPP and site conditions will be monitored through routine inspections to identify issues in accordance with applicable regulatory requirements. WBI Energy will consult with the local soil conservation service and landowners, and adhere to recommended seeding methods, rates, and

timeframes to ensure successful reclamation. Reclamation will be monitored until final stabilization and desired vegetation establishment is achieved.

8.3.3 Developed Land

In general, developed land includes lands that contain existing aboveground facilities, existing aboveground or belowground utilities, and paved, gravel, or two-track roads. Developed land within the Project area primarily consists of existing aboveground facilities and existing access roads. Approximately 29.24 acres of developed land will be impacted during construction activities. Of this, approximately 6.94 acres will be retained for ongoing operations of aboveground facilities. The remaining 22.3 acres is associated with the Franz Yard. Upon completion of the Project, the Franz Yard, including the access road, will be reclaimed and converted to open land.

Operation and maintenance of the Project facilities will not affect traffic flow on any of the roads or highways in the Project area. Required periodic maintenance and inspection procedures along the pipeline route will involve a low frequency of light vehicle movement on and off roadways; therefore, no impacts are expected.

8.4 PLANNED RESIDENTIAL OR COMMERCIAL AREAS

There are no planned residential or commercial areas within the Project area. The nearest commercial facility is the ONEOK facility located approximately 0.07 miles north of the Spring Creek Compressor Station. The nearest residential area is located approximately 0.39 miles west of the station. If planned residential or commercial developments are discovered within the Project area, WBI Energy will work with affected parties to resolve any potential issues that may arise.

8.5 PUBLIC LAND, RECREATION, AND OTHER DESIGNATED AREAS

WBI Energy reviewed a variety of digital datasets and maps to identify recreational and special interest areas within or in the immediate vicinity (i.e., within 0.25 mile) of the Project area. There are no public lands, state recreation areas, scenic byways, state parks, national parks, or hiking trails within the Project area. Theodore Roosevelt national Park, located 12 miles south, and Missouri State Park, located 27 miles southeast, are the closest parks to the Project area. (NPS 2022 & NDTD 2022).

WBI Energy assessed sensitive habitat within the vicinity of the Project. Located approximately 17 miles southeast of the Project area is the Killdeer Mountains Wildlife Management Area (NDGF 2022). Lake Ilo National Wildlife Refuge is located approximately 35 miles southeast of the Project area in Dunn County, North Dakota (USFWS 2022).

Due to the limited nature of Project activities and the distance of the Project from the recreational areas described in this section, no impacts are anticipated. As noted in Section 3.3.3 of Resource Report 3, impacts to wildlife habitat will be minimized by restoring construction workspaces to previous use and condition and ensuring successful revegetation of disturbed areas. No impacts to historical or culturally significant areas are anticipated as none were encountered during field surveys. WBI Energy will implement measures in the *Plan of Unanticipated Discovery of Historic Properties or Human Remains during Construction* in the event potential cultural resources are uncovered during construction.

8.6 LANDFILLS AND HAZARDOUS WASTE SITES

WBI Energy reviewed the U.S. Environmental Protection Agency's (EPA's) EnviroFacts website in an effort to identify hazardous waste sites, landfills, or other sites with the potential for soil or groundwater contamination. The McKenzie County Landfill is located approximately 8.5 miles northwest of the Project area.

If contaminated sites are encountered on the pipeline route or work areas during construction, WBI Energy and construction personnel will implement measures identified in the *Unanticipated Discovery of Contaminated Environmental Media*, which is included in Appendix II-J. WBI Energy will avoid impacts by limiting construction to only approved workspaces and access roads and conducting construction activities in accordance with the FERC Plan and Procedures and adhering to the SPCC Plan in the event of a spill. An EI will be present onsite to ensure compliance with environmental commitments and regulations.

8.7 VISUAL RESOURCES

The visual character of the existing landscape is defined by historic and current land uses such as agricultural, open land, and development. The visual qualities of the landscape are further influenced by existing linear installations such as highways, railroads, pipelines and electrical transmission and distribution lines. The proposed Project will affect primarily agricultural lands.

Visual impacts from the construction of aboveground facilities are anticipated to be minimal. The construction of the Spring Creek Compressor Station and Demicks Lake III Valve Setting are located near existing energy facilities in the area. These facilities will change the landscape, but overall, no significant changes to the existing visual character of the area are anticipated. The Spring Creek Interconnect, Cherry Creek Valve Setting, and Demicks Lake Plant Receipt Station are all expansions of existing facilities; therefore, no impacts on the existing visual character of the locations are anticipated.

Most visual and aesthetic impacts associated with the Project will be limited to the period of active construction as a result of construction equipment, personnel, and disturbed soil. After pipeline construction is complete, the landscape will be re-contoured to pre-construction conditions. Any disturbed areas will be restored and requested vegetation species planted; therefore, the Project will have no long-term visual impacts.

8.8 REFERENCES

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RESOURCE REPORT 9

9.0 AIR QUALITY AND NOISE

Resource Report 9 describes the existing air and noise environment that will be affected by the Project. The report addresses potential impacts of the Project on the existing air and noise environment and measures that will be implemented to mitigate these impacts. A detailed Project description is provided in Resource Report 1.

9.1 AIR QUALITY

9.1.1 Local Climate

North Dakota has a continental climate characterized by large annual, daily and day-to-day temperature changes and light to moderate precipitation, which tends to be irregular in time and coverage. The average annual temperature is 37 degrees Fahrenheit in the northern part of the state and 43 degrees Fahrenheit in the south. Average annual precipitation ranges from 13 to 20 inches each year (North Dakota Fish and Game Department, 2019).

9.1.2 Existing Air Quality

The Clean Air Act of 1970 (CAA) requires that the Environmental Protection Agency (EPA) establish ambient air quality standards for pollutants considered harmful to human health and the environment. These standards are known as the National Ambient Air Quality Standards (NAAQS). The EPA establishes NAAQS for six pollutants, known as criteria air pollutants. The six criteria air pollutants include: sulfur dioxide (SO_2), carbon monoxide (CO), nitrogen dioxide (NO_2), inhalable particulate matter (PM; includes particulate matter with an aerodynamic diameter less than or equal to 10 microns [PM_{10}] and less than or equal to 2.5 microns [$PM_{2.5}$]), lead (Pb), and ozone (O_3). The EPA also establishes primary and secondary standards for NAAQS. Primary standards provide protection to public health and the health of sensitive populations such as asthmatics, children, and the elderly. Secondary standards provide protection for vegetation, wildlife, soils, and other aspects of public welfare (EPA 2022b).

The EPA also identifies areas of the country that meet and do not meet the NAAQS for the six criteria air pollutants. Attainment areas meet the NAAQS and nonattainment areas do not meet the NAAQS. Areas that are not defined under these standards are called “unclassifiable areas.” The Project is located within an attainment area, meeting the NAAQS for all six criteria air pollutants (EPA 2022c, 2022g).

The ambient air quality monitoring program in the state is administered by the North Dakota Department of Environmental Quality (DEQ) Division of Air Quality. The Air Quality Monitoring branch ensures that the ambient air quality in North Dakota is better than the levels required by the state per Chapter 33.1-15-02 and by the National Ambient Air Quality Standards. To address this responsibility, the Department owns and operates a network of eight ambient air quality monitoring sites stationed throughout the state. In addition to the DEQ monitoring sites, the National Park Service (NPS) has installed an ambient monitoring site at Theodore Roosevelt National Park – South Unit in which the DEQ operates and monitors on their behalf (NDDEQ 2022a). Details of this monitoring program and its practices are included in the program’s *Air*

Quality Monitoring Network Plan/Assessment with Data Summary 2020 (NDDEQ 2020). The nearest monitoring station to the Project area is TRNP-NU (RFNA-1289-074) site located 8 miles south of the Project area. This station monitors NO_2 levels (EPA 2022a).

In April 2007, the United States Supreme Court ruled that greenhouse gases (GHG) fall within the CAA's definition of "air pollutant". The EPA identified the following six well-mixed GHGs in the atmosphere: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons, perfluorocarbons; and sulfur hexafluoride.

Some gases have a higher warming effect on the atmosphere than other gases. For each GHG, a Global Warming Potential (GWP) has been calculated to reflect how long it remains in the atmosphere, on average, and how strongly it absorbs energy. Gases with a higher GWP absorb more energy per pound than gases with a lower GWP and, thus, contribute more to warming the Earth. The term carbon dioxide equivalent (CO_2e) is used to compare the emissions from various GHGs on the basis of their GWP by converting the amounts of other gases to the equivalent amount of CO_2.

9.1.3 Regulatory Requirements

The CAA is the basic federal statute governing air quality. The provisions of the CAA that are potentially applicable to construction and operation of the Project are:

- New Source Review (State and Federal)
- Federal Class I Area Protection
- State and Title V Operating Permit Programs
- New Source Performance Standards
- National Emission Standards for Hazardous Air Pollutants
- State Regulations
- General Conformity
- Mandatory Greenhouse Gas Reporting

9.1.3.1 New Source Review (State and Federal)

The CAA requires that all new and modified stationary sources of air pollution obtain a preconstruction permit. The New Source Review (NSR) permitting process is required in both nonattainment areas, where national ambient air standards have been exceeded, as well as attainment and unclassified areas where air quality is currently acceptable. North Dakota's NSR is administered by the DEQ permitting program-specifically through the issuance of Permits to Construct (PTCs). The PTC process provides for the review of proposed sources or proposed modifications to existing sources of air contaminants. A construction permit is issued only if it is expected that the proposed source or modification will comply with the applicable rules.

All facilities being constructed or modified for the Project are considered sources of minor significance and do not require PTC's per Subdivision 33-15-14-02.13.n of the North Dakota Air Pollution Control Rules. However, in complying with the DEQ official policy titled Permitting of Electric-driven Compressor Stations, a complete construction permit application will be submitted for the Spring Creek Compressor Station, and construction will not proceed without concurrence from NDDEQ that the station is indeed a source of minor significance. (NDDEQ 2012)

9.1.3.2 Federal Class I Area Protection

The Regional Haze rule requires that states, in coordination with the EPA, NPS, United States Fish and Wildlife Service, and other interested parties develop and implement air quality protection plans to reduce the pollution that causes visibility impairment. This rule mandates gradual progress toward restoring "natural" visibility conditions by the year 2064 at designated national parks, wilderness areas, monuments, forests, seashores, and wildlife refuges, collectively referred to as Class I areas. If a proposed source is a new major source or major modification under the Prevention of Significant Deterioration (PSD) program, the source must undergo an analysis to determine its impact on Class I areas (NDDEQ 2022c). The source is required to notify the appropriate federal land manager for the nearby Class I area. The nearest Class I area in Norther Dakota is the Theodore Roosevelt National Park located 8 miles south of the Project.

There are no major PSD sources associated with the Project; therefore, emissions associated with Project-related facilities are not expected to impact any Class I areas.

9.1.3.3 Title V Operating Permit Program

Title V of the 1990 Clean Air Act Amendments required states to establish an air operating program in an effort to standardize air permits across the United States. The Title V permit program (40 CFR Part 70) requires major sources of air pollutants to obtain operating permits. The operating permits set operational and emission limits, monitoring, record-keeping, and reporting requirements for sources of air emissions. Major sources emit or have the potential to emit at or above the major source threshold for any criteria pollutant or hazardous air pollutant (HAP). These threshold levels are 100 tons per year (tpy) for criteria pollutants, 10 tpy of any single HAP, or 25 tpy of any combination of HAPs in aggregate (EPA 2022i).

None of the aboveground facilities to be constructed or modified for the Project are considered major sources of air pollutants requiring operating permits. A Title V permit will not be required for Project facilities.

9.1.3.4 New Source Performance Standards

Section 111 of the CAA authorizes the EPA to develop technology-based standards which apply to specific categories of stationary sources. The standards are referred to as New Source Performance Standards (NSPS) (EPA 2022f). The NSPS in 40 CFR 60 established emission limits and other requirements for certain new, modified, or reconstructed emission sources. The potentially applicable NSPS are described below:

40 CFR 60 Subpart OOOOa (Subpart OOOOa) – Standards of Performance for Crude Oil and Natural Gas Facilities for which Construction, Modification or Reconstruction Commenced After September 18, 2015

Subpart OOOOa regulates both volatile organic compound (VOC) and GHG emissions from specific sources within the oil and natural gas industry which include compressors, pneumatic controllers, pneumatic pumps, well completions, fugitive emissions from well sites and compressor stations, and equipment leaks at natural gas processing plants that are constructed, modified, or reconstructed after September 18, 2015. The Project includes installation of new

compressors and fugitive emissions sources at the Spring Creek Compressor Station that will be subject to Subpart OOOOa. WBI Energy will comply with the applicable requirements for affected sources within the Spring Creek Compressor Station.

9.1.3.5 National Emission Standards for Hazardous Air Pollutants

The EPA has established National Emission Standards for Hazardous Air Pollutants (NESHAP) for specific pollutants and industries in 40 CFR 61. The Project may involve the removal of asbestos containing materials in the form of pipe wrap on pipe in locations where Project facilities are tied into the existing pipeline system. Subpart M of 40 CFR 61 contains standards for asbestos projects. WBI Energy and its contractors will treat the material as asbestos containing unless laboratory analysis is completed to confirm the absence of asbestos. All potential asbestos containing material will be handled and disposed of in accordance with the Federal asbestos NESHAP and in accordance with the North Dakota Administrative Code (Chapter 33.1-15-13).

At 40 CFR 63, EPA has established NESHAP for various stationary source categories (EPA 2022e). The Project does not include installation of any sources subject to a standard in Part 63. Therefore, no NESHAP requirements apply to the Project facilities.

9.1.3.6 State Regulations

In addition to the federal regulations described above, North Dakota has state-specific air quality regulations administered by the DEQ. Subject to EPA oversight, the DEQ manages the statewide air permitting, compliance, and enforcement programs. North Dakota air emissions are regulated by the NDDEQ Division of Air Quality under North Dakota Administrative Code (NDAC) 33-15. Listed below are the applicable air quality regulations from the NDAC that apply to the Project, as well as required air impact reviews (NDDEQ 2022d).

- NDAC 33.1-15-01 sets the general provisions pertaining to all state-level regulations, including definitions of terms used by the regulations.

- NDAC 33.1-15-03 restricts emissions of visible air contaminants. This regulation applies to both point sources and fugitive sources of visible emissions. WBI Energy will maintain equipment to not exceed opacity standards and perform construction to minimize dust. Appendix II-K contains the Project *Fugitive Dust Control Plan*.

- 33.1-15-07-02 sets requirements for organic compound gas disposal. No person may cause or permit the emission of organic compounds, gases, and vapors, except from an emergency vapor blowdown system or emergency relief system, unless these gases and vapors are burned by flares or an equally effective control device. Organic compounds may be present in the event of a pipeline blowdown. WBI Energy will comply with the applicable requirements of this regulation during Project construction and operation.

- NDAC 33.1-15-17 restricts fugitive emissions from any source, including emissions of particulates (dust) and various gaseous emissions such as those subject to an AAQS or PSD increment, an odorous substance, or those subject to the restrictions of a visible air contaminant. WBI Energy will comply with the applicable requirements of this regulation during Project construction and operation. Information regarding

specific techniques for the control of fugitive dust during construction is included in the Project's *Fugitive Dust Control Plan*.

9.1.3.7 General Conformity

General conformity regulations in 40 CFR 93, subpart B, are intended to ensure that actions from a federal agency that occur in nonattainment and maintenance areas do not interfere with a state's ability to comply with NAAQS (EPA 2022h). The Project is in an area that is in attainment with the NAAQS; therefore, a general conformity determination is not required for the proposed Project.

9.1.3.8 Mandatory Greenhouse Gas Reporting

The mandatory greenhouse gas (GHG) reporting rule (40 CFR Part 98) establishes reporting thresholds and requirements for emission sources of CO_2, CH_4, N_2O and each fluorinated GHG. The GHG reporting rule establishes a reporting threshold of 25,000 actual metric tpy of CO_2e emissions. (EPA 2022d). 40 CFR 98 Subpart W establishes the reporting requirements for Petroleum and Natural Gas Systems. Source categories that potentially could be required to report under Subpart W include onshore natural gas transmission compression and onshore natural gas transmission pipeline.

GHG emissions at the proposed Spring Creek Compressor Station are not expected to exceed the reporting threshold. WBI Energy will monitor and calculate actual GHG emissions from the station per rule requirements and report GHG emissions if they exceed the reporting threshold.

A transmission pipeline facility is the total U.S. mileage of natural gas transmission pipeline as defined in 40 CFR 98.238. WBI Energy currently reports GHG emissions from its transmission pipeline system. The pipeline mileage associated with the Project will be included as part of the pipeline affected facility and associated emissions reported as required once construction is finalized.

9.1.4 Air Emissions Impacts and Mitigation

9.1.4.1 Construction Emissions

Construction activities may temporarily result in air emissions from diesel/gasoline-powered equipment or fugitive dust emissions from soil disturbance and vehicular traffic. Large earth-moving equipment are potential sources of combustion-related emissions, including criteria pollutants, GHGs, and small amounts of HAPs. Emissions from construction equipment will be temporary and limited to the immediate vicinity of the construction area. Impacts from construction equipment exhaust emissions will be mitigated through use of equipment that meets EPA design standards for diesel and gasoline-fueled equipment and use of fuel that meets federal and state fuel standards. Fugitive dust emissions from construction activities (ground clearing, grading, excavation, and backfilling) and vehicle travel on unpaved roads will be continuously monitored, and water trucks will be available onsite to minimize impacts. These emission sources are not expected to have a significant impact on ambient air quality concentrations in the Project area.

Table 9.1.4-1 below summarizes peak construction emissions from operation of construction equipment and motor vehicles, and fugitive dust emissions from construction activities and vehicular traffic on unpaved surfaces. Fugitive dust emissions from construction activity were calculated based on estimated area of disturbance during construction. Combustion related emissions were determined based on estimates of typical construction equipment required to complete work and the time equipment is anticipated to operate. The combined estimated area of disturbance taking place at the pipeline, pipe yard, access roads, and aboveground facility locations totaled approximately 54.7 acres. Construction activity calculations were conservatively estimated and assumed all activities were continuous throughout construction with no fugitive dust control. Appendix II-P provides detailed emission calculations.

TABLE 9.1.4-1
2023 Line Section 27 Expansion
Total Project Construction Emissions (tons)

	Criteria Pollutants							GHG [a]
	PM_{10}	$PM_{2.5}$	NO_X	CO	SO_2	VOC	HAP	CO_2e
Off-Road Construction Equipment	0.85	-	6.40	5.07	0.008	0.62	0.03	1,110
On-Road Motor Vehicles	0.01	0.01	0.11	0.12	0.001	0.02	-	64
Construction Activities	7.18	2.18	-	-	-	-	-	-
Unpaved Vehicle Travel	11.36	1.66	-	-	-	-	-	-
Total Construction Emissions	**19.40**	**3.85**	**6.51**	**5.19**	**0.009**	**0..64**	**0.03**	**1,174**

[a] Metric tons per year

Acronyms:

PM_{10} particulate matter less than 10 microns in diameter
$PM_{2.5}$ particulate matter less than 2.5 microns in diameter
NO_x oxides of nitrogen
CO carbon monoxide
SO_2 sulfur dioxide
VOC volatile organic compound
GHG greenhouse gases
CO_2e carbon dioxide equivalents

WBI Energy will conduct construction activities in accordance with the Fugitive Dust Control Plan (Appendix II-K). Dust suppression measures will be employed as necessary to control fugitive dust emissions and maintain compliance with applicable regulations. Water trucks will be readily available to spray disturbed areas or dirt/gravel roads with water. Only approved access roads

will be utilized and speed limits on paved and unpaved roads will be enforced. WBI Energy will comply with the applicable EPA mobile source emissions performance standards by using well-maintained vehicles, and equipment will be shut down when not in use to minimize idling emissions.

9.1.4.2 Operational Emissions

The construction of the new greenfield Spring Creek Compressor Station, Demicks Lake III Valve Setting, modifications to existing facilities, and expansion of the Spring Creek Interconnect do not include the installation of combustion sources. Potential operating emissions include GHG emissions from compressor blowdowns and fugitive emissions. Table 9.1.4-2 summarizes annual operational emissions for the 2023 Line Section 27 Expansion Project. Appendix II - P provides detailed emission calculations for operation of the new equipment and the pipeline. Potential operating emissions from the newly installed facilities are expected to be insignificant.

TABLE 9.1.4-2
2023 Line Section 27 Expansion Project
Annual Operational Emissions (tons per year)

	Pollutants									
	PM Total	**PM 10/2.5 (Filt.)**	**PM Cond.**	**SOx**	**NOx**	**CO**	**VOC**	**CH4**	**CO2**	**CO2e**
Spring Creek Compressor Station	0.068	0.017	0.051	0.005	0.90	0.75	1.51	86.27	1073.7	3231.0
Demicks Lake III Valve Setting	-	-	-	-	-	-	0.004	0.25	-	6.23
Spring Creek Interconnect	-	-	-	-	-	-	0.06	3.63	0.001	90.66
Demicks Lake Plant Receipt Station	-	-	-	-	-	-	-	-	-	-
Cherry Creek Valve Setting	-	-	-	-	-	-	0.001	0.05	-	1.37
Pipeline Facilities	-	-	-	-	-	-	-	0.02	-	0.52
Total	**0.068**	**0.017**	**0.051**	**0.005**	**0.90**	**0.75**	**1.52**	**90.22**	**1073.7**	**3329.8**

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Acronyms:		CO	carbon monoxide
PM Total	total particulate matter	VOC	volatile organic compound
PM 10/2.5 (filt.)	filterable particulate matter at 10 and 2.5 microns	CH4	methane
		CO2	carbon dioxide
PM Cond.	condensable filterable material	CO_2e	carbon dioxide equivalent
SOx	oxides of sulfur		
NOx	oxides of nitrogen		

9.2 NOISE

9.2.1 Principles of Noise

The ambient sound level of a region is defined by the total noise generated within the specific environment, and usually comprises natural and man-made sounds. At any location, both the magnitude and frequency of environmental noise may vary considerably over the course of a day and throughout the year. This variation may be caused in part by changing weather conditions and seasonal changes in vegetative cover.

Sound levels, measured in decibels (dB), are perceived differently, depending on length of exposure and time of day. Two measurements used to relate the time-varying quality of environmental noise to its known effects on people are the equivalent sound level (L_{eq}) and the day-night sound level (L_{dn}). L_{eq} is a sound level over a specific time period corresponding to the same sound energy as measured for an instantaneous sound level, assuming it is a constant noise source. L_{dn} is a sound level that takes into account the duration and time the noise is encountered. Specifically, in the calculation of the L_{dn}, late night (after 10:00 p.m.) and early morning (prior to 7:00 a.m.), noise levels are penalized by adding 10 dB to account for people's greater sensitivity to sound during nighttime hours. To account for the human ear being less sensitive to low and high frequencies than to mid-range frequencies, dB levels are corrected using the A-weighted scale (dBA). A 3 dB change of sound level is threshold of a perceptible change by the human ear. A 6 dB change of sound level is considered clearly noticeable, and a 10 dB change is perceived as if the sound level has doubled or halved.

9.2.2 Applicable Noise Guidelines

In 1974, the EPA published its document entitled "Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin on Safety." This publication evaluated the effects of environmental noise with respect to health and safety. As set forth in that publication, the EPA has determined that noise levels should not exceed a day-night sound level (L_{dn}) of 55 A-weighted decibels (dBA), which is the level that protects the public from indoor and outdoor activity interference. No other known state or local noise regulations are applicable to the proposed Project (EPA 1974).

In addition to the EPA publication, WBI Energy's proposed compressor station must comply with the Federal Energy Regulatory Commission's (FERC) noise regulations for interstate pipelines at 18 CFR 380.12(k)(4)(v). These regulations state the following.

- The noise attributable to any new compressor station, compression added to an existing station, or any modification, upgrade, or update of an existing station, must not exceed a L_{dn} of 55 dBA at any pre-existing Noise Sensitive Area (NSA). NSAs include but are not limited to residences, schools and day-care facilities, hospitals, long-term care facilities, places of worship, and libraries. NSAs may also include campgrounds, parks, and wilderness areas valued specifically for their solitude and tranquility.
- New compressor stations or modifications of existing stations shall not result in a perceptible increase in vibration at any NSA.

9.2.3 Existing Ambient Noise Levels

Ambient noise surveys were performed on July 14, and 27, 2022, at NSAs within a 1-mile radius of the proposed Spring Creek Compressor Station. The resulting Pre-Construction Noise Survey and Noise Impact Analysis (Noise Analysis Report) is included as Appendix II-R. The Ldn at each NSA was calculated using the following formula:

$$L_{dn} = 10 * \log\left(\frac{15 * 10^{\frac{L_{eq\ day}}{10}} + 9 * 10^{\frac{L_{eq\ night}+10}{10}}}{24}\right)$$

The proposed Spring Creek Compressor Station is located in an area of active oil and gas production and pipeline transmission activities. There are six NSAs within 1 mile of the compressor station site. As shown in Appendix A of the Noise Analysis Report, the nearest NSA to the compressor station is a residence approximately 2,050 feet to the northwest. Table 9.2.3-1 lists the nearest NSAs, their proximity to the compressor station, and ambient noise survey results.

Table 9.2.3-1
Line Section 27 Project
Baseline Sound Results for the Spring Creek Compressor Station

NSA	Distance/Direction from Station	Surveyed Ambient L_d (dBA)	Surveyed Ambient L_n (dBA)	Surveyed Ambient L_{dn} (dBA)
NSA 1 (House)	1,995 feet W	64.4	61.0	68.1
NSA 2 (House)	3,175 feet NE	52.8	52.5	59.0
NSA 3 (House)	4,155 feet NNW	70.8	68.5	75.3
NSA 4 (House)	4,650 feet S	61.6	63.7	69.9
NSA 5 (Temporary Camp)	3,650 feet NNE	55.9	48.8	57.2
NSA 6 (Temporary Camp)	3,525 feet NE	55.8	43.6	55.1

As seen in table 9.2.3-1, the ambient L_{dn} at all of the NSAs was above 55 dBA during the preconstruction noise survey. Noise sources that contributed to the elevated baseline noise included heavy vehicle traffic on adjacent roadways and noise from nearby oil and gas operations.

9.2.4 Construction Noise Impacts and Mitigation

Noise sources will primarily result from construction equipment operation. The type of construction equipment will vary depending on the specific phase of construction (clearing and grading; pipe stringing, bending and welding; trenching; lowering-in and backfilling; hydrostatic testing; final tie-in; commissioning; and right-of-way cleanup and restoration). Aboveground equipment installations and modifications at new and existing facilities will also require excavation equipment. Standard heavy equipment such as track-excavators, backhoes, or bulldozers will be utilized during construction. Blasting is not expected to be required for this Project.

Construction activities will generally occur during daytime hours and will not have an impact on night (10 p.m. to 7 a.m.) sound levels; however, as noted in Resource Report 1, limited construction activities may occur 24 hours a day until completed. Project construction activities are temporary in nature, with no adverse or long-term impacts anticipated. Noise mitigation measures will include limiting construction to daytime hours to the extent possible, ensuring equipment is in good maintenance, and notifying adjacent landowners or stakeholders prior to construction, as necessary.

9.2.5 Operational Noise Impacts and Mitigation

Spring Creek Compressor Station

WBI Energy proposes to install compression and other associated facilities at the Spring Creek Compressor Station. Project activities include the installation of two compressor units, 4,000 horsepower (hp) each. The following equipment is expected to be potential noise contributors:

- Two Ariel KBZ/4 compressors and 4,000 hp Hyundai EMD electric-driven engines, and
- Two compressor package gas coolers.

To mitigate noise impacts at the nearby NSAs, the following noise control measures will be implemented:

- The compressors and engines will be housed inside a building with 22-gauge aluminum walls and a 22-gauge aluminum roof, both with R-12 fiberglass wall insulation and R-20 fiberglass roof insulation, with a vapor barrier throughout.
- Compressor units will be installed and maintained according to manufacturer specifications, which will minimize vibration and result in no perceptible vibration at nearby NSAs.

As noted in the Noise Analysis Report and in Table 9.2.5-1 below, the Spring Creek Compressor Station is not anticipated to increase ambient noise levels at nearby NSAs. WBI Energy will conduct a noise survey within 60 days of placing the compressor station into service to verify that noise attributable to the station has not increased ambient noise level above acceptable limits.

Table 9.2.5-1
2023 Line Section 27 Project
Operational Noise Estimates for the Spring Creek Compressor Station

NSA	Distance/Direction of NSA	Surveyed Ldn (dBA)	Estimated Ldn of Station (dBA) at NSA	Station Ldn Plus Ambient Ldn (dBA)	Potential Increase Above Ambient (dB)
NSA 1	1,995 feet W	68.1	41.5	68.1	0
NSA 2	3,175feet NE	59.0	37.7	59.0	0
NSA 3	4,155 feet NNW	75.3	35.5	75.3	0
NSA 4	4,650 feet S	69.9	34.1	69.9	0
NSA 5	3,650 feet NNE	57.2	36.6	57.2	0
NSA 6	3,525 feet NE	55.1	36.9	55.2	0.1

Another potential source of noise at the compressor station is blowdown events. Blowdown events of varying duration will occur at the compressor station during startup and commissioning, annual operation, and emergencies. The sound levels associated with high-pressure gas venting are a function of the blowdown pressure, the diameter and type of blowdown valve, and the diameter and arrangement of downstream piping. Blowdown sound levels are loudest at the beginning of the blowdown event, and they decrease as the blowdown pressure decreases. WBI Energy anticipates 2 full station blowdowns and 5 compressor unit blowdowns per unit will occur during startup and commissioning of the station. During annual operation there will be one emergency shutdown full station blowdown test and up to 24 compressor unit blowdowns per compressor unit.

A blowdown noise analysis was completed and presented in the Noise Analysis Report. For the analysis, a sound power level of 108 dB was used, based on measurements taken at a compressor station of similar size. The results of the analysis are presented in Table 9.2.5-2 and calculations are provided in the Noise Analysis Report. Based on the analysis, blowdown activities will result in only slight increases above ambient noise levels at nearby NSAs. The short term and infrequent nature of these activities further reduces the likelihood that they will impact nearby NSAs.

Table 9.2.5-2
Line Section 27 Project
Noise Quality Analysis for Blowdown Events at the Spring Creek Compressor Station

NSA	Distance/Direction of NSA	Surveyed Ambient Ldn	Estimated Ldn of Station Blowdown	Station Blowdown Ldn Plus Ambient Ldn	Potential Increase Above Ambient
NSA 1	1,995 feet W	68.1	58.6	68.6	0.5
NSA 2	3.175 feet NE	59.0	55.0	60.4	1.4
NSA 3	4,155 feet NNW	75.3	52.7	75.3	0
NSA 4	4,650 feet S	69.9	51.3	70.0	0.1
NSA 5	3,650 feet NNE	57.2	53.8	58.8	1.6
NSA 6	3,525 feet NE	55.1	54.2	57.7	2.6

Interconnects, Receipt Stations and Valve Settings

The Spring Creek Interconnect and Demicks Lake III Valve Setting are in close proximity to the Spring Creek Compressor Station, approximately 450' and 373' north, respectively. Only NSA 1 is within 0.5 miles of these facilities. Modifications to the Spring Creek Interconnect will require the installation of a control valve; however, noise generated from the control valve is anticipated to be significantly less than noise generated at the Spring Creek Compressor Station. Based on the analysis described above, installation of this equipment is not anticipated to impact ambient noise levels.

Upgrades to the Demicks Lake Plant Receipt Station, Cherry Creek Valve Setting, and construction of the Demicks Lake III Valve Setting are required to accommodate incremental volumes associated with the Project. No noise generating equipment is being installed at the receipt station and valve settings; therefore, no impacts at nearby NSAs were analyzed.

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RESOURCE REPORT 10

10.0 ALTERNATIVES

Resource Report 10 describes the alternatives WBI Energy evaluated to determine whether they would be reasonable and environmentally preferable to the proposed Project. These alternatives included: (1) taking no action, (2) 16-inch diameter pipeline loop alternative, (3) 20-inch diameter and 24-inch diameter pipeline replacement alternative, and (4) connection to the 24-inch North Bakken Expansion pipeline alternative. Please refer to Resource Report 1 for a detailed Project description.

No Action Alternative

Under the no-action alternative, WBI Energy would not construct any component of the proposed Project and no additional environmental impacts from WBI Energy's construction or operations would occur. However, WBI Energy would not be able to satisfy the request for additional firm transportation service from the Demicks Lake Plant for which WBI Energy has an executed precedent agreement. Because taking no action would not satisfy the request of the customer for firm transportation service, this alternative was not selected.

16-inch Diameter Pipeline Loop Alternative

As an alternative to the proposed Project, WBI Energy examined installing a new 16" diameter pipeline loop from the Demicks Lake Plant Receipt Station to the existing interconnect with Northern Border at the Spring Creek Interconnect. The new pipeline loop would follow existing pipeline R/W where possible, although approximately 24 miles of new ROW would be required. Due to the increased environmental impact and cost associated with installing 24 miles of new pipeline loop, this alternative was not selected.

20-inch Diameter and 24-inch Diameter Pipeline Replacement Alternative

WBI Energy also examined replacing certain existing pipeline segments on the system with new, larger diameter segments in order to increase capacity. This alternative would include replacing approximately 12.3 miles of 20" diameter pipeline from the Demicks Lake Plant Receipt Station to the Cherry Creek Valve Setting with 24" diameter pipeline and approximately 11.7 miles of 16" diameter pipeline from the Cherry Creek Valve Setting to Spring Creek Interconnect with 20" diameter pipeline. In total, WBI Energy would install 24 miles of new pipeline on existing ROW. This alternative would be more costly, involve more ground disturbance, and require an extended interruption of service for the ONEOK Demicks Lake Plant during construction. Due to the increased environmental impact associated with the length of pipeline, the greater cost, and the greater impact to service during construction, this alternative was not selected.

Connection to 24-inch North Bakken Expansion Pipeline Alternative

Another alternative that WBI Energy examined was to connect the Demicks Lake Plant Receipt Station to the existing 24" diameter North Bakken Expansion pipeline that lies approximately 9

miles west of the Demicks Lake Plant Receipt Station. This alternative would require the installation of approximately 9.6 miles of 16-inch diameter pipeline from the Demicks Lake Plant Receipt Station to a new tie-in with the North Bakken Expansion pipeline, a new measurement station for gas delivered to the new pipeline, and the installation of an additional compressor unit at the existing Elkhorn Creek compressor station. The additional compressor unit for this alternative was estimated to be approximately 3750 HP. This alternative will have a greater environmental impact and greater project costs due to the length of the new pipeline required. The amount of compression installed with this option is less than the proposed Project; however, this does not offset the additional impact and cost of the pipeline required in this alternative. For these reasons, this alternative was not selected.

RESOURCE REPORT 11

11.0 RELIABILITY AND SAFETY

A Resource Report 11 on Reliability and Safety is not required unless the project involves construction of new LNG facilities, recommissioning of existing LNG facilities, or for pipeline projects where significant safety concerns have been raised in prefiling consultations. The 2023 Line Section 27 Expansion Project does not meet these criteria. Therefore, Resource Report 11 is not required.

RESOURCE REPORT 12

12.0 PCB CONTAMINATION

Resource Report 12 addresses replacement, abandonment by removal, or abandonment in place of pipeline facilities determined to contain liquids having concentrations of polychlorinated biphenyls (PCBs) of more than 50 parts per million (ppm). No pipeline or facilities will be removed or abandoned as part of the 2023 Line Section 27 Expansion Project; therefore, no PCB contamination is anticipated.