CenterPoint Energy Bakken Crude Services, LLC
Bear Den Project

Plan of Development

Prepared for:

BUREAU OF LAND MANAGEMENT

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1.0 INTRODUCTION

This Plan of Development (POD) has been prepared in accordance with the Bureau of Land Management (BLM) *Manual 2884, Applying for a MLA Grant or TUP, section 10, part D and illustration 3, Plans of Development* and describes specific construction activities that will be undertaken by CenterPoint Energy Bakken Crude Services, LLC (CEBCS) during construction of the Bear Den Project (Project). This POD summarizes the methods and procedures to be used by CEBCS and its contractors during the construction, operation, and maintenance of the Project.

The Project would be constructed and operated by CEBCS, which is a wholly owned subsidiary of CenterPoint Energy Field Services, LP (CEFS). CEBCS was created as a subsidiary to pursue crude oil gathering opportunities in the Bakken Shale region.

1.1 PROJECT DESCRIPTION

The proposed Project includes the construction and operation of a crude oil and produced water gathering system that will service multiple existing and/or proposed wells in Dunn and McKenzie Counties, North Dakota. The subject wells are currently serviced through a system of temporary on-site storage, with transportation accomplished by tanker truck via public and lease roads. Figure 1.1-1 depicts the general Project location. Appendix B contains the facility plot plans and typical right-of-way cross sections and Appendix C contains construction typical drawings associated with this Project.

Specifically, the Project pipeline system will receive crude oil at the subject wells and transport it to an aboveground facility for temporary storage and transfer to an outlet pipeline. Additionally, water produced at the subject wells will be transported to a third-party injection well for disposal. The project pipelines will generally be installed within a common right-of-way, with approximately 58.9 miles of right-of-way housing dual, collocated pipelines and approximately 10.2 miles of right-of-way housing a single crude or produced water pipeline.

Specifically, the project entails construction and operation of various pipeline and aboveground facilities, including:

- approximately 68.0 miles of 3- to 8-inch-diameter welded steel pipeline (i.e., the crude oil gathering pipeline system);
- approximately 0.5 mile of 8-inch-diameter welded steel pipeline (i.e., the crude oil delivery lateral pipeline; Line AR-16) that would extend from the storage/transfer facility and terminate at an interconnect with a third-party outlet pipeline (i.e., the BakkenLink Pipeline);
- approximately 59.4 miles of 3- to 6-inch diameter composite pipeline (i.e., the produced water gathering pipeline system);
- approximately 68.0 miles of fiber optic cable to be laid concurrently with the pipeline facilities and within the excavated pipeline trenches;

- a storage/transfer facility located at the terminus of Line AR, which would entail a fenced and graveled, approximately 40-acre site that would house:
    - an office building;
    - a shop/warehouse building;
    - an operations building containing control room, motor control center, and process equipment;
    - a heater/generator building;
    - various tanks, including
        - two, 20,000 barrel (bbl) crude oil storage tanks;
        - two, 500 bbl slop oil tanks;
        - two, 500 bbl tanks for storage of tank bottom water;
        - one, 10,000 bbl fire safety water storage tank;
    - metering facilities for the measurement of incoming and outgoing crude oil;
    - a pig receiver and associated filter/separators for the crude oil gathering pipeline;
    - a pig launcher and three, approximately 50-horsepower (hp) electric pumps for the crude oil delivery lateral;
    - a 398-hp, diesel powered backup generator;
    - a 282-hp, diesel powered generator/pump set for the fire safety water system;
    - block valves for all pipelines; and
    - yard piping;
- a pig receiver assembly at the terminus of the crude oil delivery lateral pipeline (Line AR-16), which would be sited and constructed on a lot owned and developed by the third-party outlet pipeline;
- automated wellhead facilities at each of the 31 well pad sites to be serviced by the Project, with each wellhead facility typically including:
    - a Lease Automatic Custody Transfer (LACT) unit, which consists of oil measurement/metering and an electric, 100-hp pump (with provision for the addition of a future booster pump if system hydraulics and pressures dictate);
    - produced water measurement/metering and a 25-hp electric pump (with provision for the addition of a future booster pump if system hydraulics and pressures dictate);

- pig launchers for both the crude oil and produced water gathering pipelines;
- block valves for each pipeline; and
- yard piping;

- a pig launcher and receiver site (Line AR at MP 0.0), which would entail a fenced and graveled, approximately 1.0-acre lot that would house:
  - pig launchers/receivers for the crude oil and produced water gathering pipelines;
  - automated block valves for the crude oil and produced water gathering pipelines; and
  - two skid-mounted meter houses (each measuring approximately 10-feet by 20-feet);
- an automated block valve site (Line AR-30 at MP 11.0), which would entail a fenced and graveled, approximately 1.0-acre lot that would house:
  - automated block valves for the crude oil and produced water gathering pipelines.
- 35 lateral pipeline interconnect sites at each of the gathering pipeline lateral interconnects, with each site being either fenced or barred, and including:
  - pig launchers/receivers for the crude oil and produced water gathering pipelines;
  - block and check valves for the crude oil and produced water gathering pipelines; and
  - a metering facility (located only at the interconnect of Line AR-29 [MP 2.2] and Line AR-30 [MP 5.5]), which will include two skid-mounted meter houses, each measuring approximately 10-feet by 20-feet;
- intermediate block valve sites (located at Line AR at MP 7.0, Line AR-14 at MP 0.4, and Line AR-30 at MP 1.2), with each fenced and graveled site measuring approximately 50- by 50-feet to 100- by 100-feet, and including automated block valves for the crude oil and produced water gathering pipelines; and
- associated ancillary facilities (e.g., cathodic protection test leads and ground beds, pipeline markers, etc.).

In addition to these facilities, CEBCS would also contract with a third-party electric service provider to obtain delivery of metered electric power to the storage/transfer facility. Although existing electric power lines adjoin the western side of the facility lot, it would be necessary to construct approximately 300 feet of buried electric distribution line to provide power to the facility.

Communications between the master control center and the various automated valves and measurement points along the gathering system would be accomplished via installation of

fiber optic communications equipment, which would entail the installation of approximately 68 miles of fiber optic communication line and associated infrastructure to allow for remote monitoring and control of the pipeline system. Use of fiber optic technology would eliminate the need for the installation of communications tower/s in association with the Project.

The fiber optic communication line would extend from the various well pad facilities to the control center at the storage/transfer facility. Installation of the fiber optic lines would not require additional excavation activities or land requirements, as the fiber optic lines would be laid concurrent with the pipeline facilities and within the excavated pipeline trenches. Armored fiber optic line would preferentially be laid within the produced water pipeline trench, but would be laid within the crude oil pipeline trench where only a single crude oil pipeline would be installed. At horizontal directional drill (HDD) locations a 1.5-inch-diameter polyvinyl chloride (PVC) conduit would be pulled through the bore along with the produced water pipeline (or crude oil line where only a single pipeline would be installed). Following conduit installation, the fiber optic line would be blown into place though the conduit. Small, aboveground fiber optic junction boxes would be installed at communication and splice points in the line, and these would be located at the planned aboveground facility locations (valve sites, lateral pipeline interconnects, etc.).

Produced water would generally flow south and east, terminating at a disposal well located approximately 0.5 miles south of AR-32 at MP 0.7. The injection/disposal well (Pelton 2-1 SWD) is wholly owned and operated by XTO Energy, Inc. and is a Class II injection well regulated by the North Dakota Industrial Commission, Department of Mineral Resources, Oil and Gas Division. The well was originally in oil and gas production service, but it was converted to an injection/disposal well on February 26, 2011.

Tables 1.1-1, 1.1-2, and 1.1-3 summarize the temporary and permanent land requirements associated with the construction and operation of the Project's pipeline, aboveground facilities, and access roads.

TABLE 1.1-1

Bear Den Project
Temporary and Permanent Land Requirements Associated with the Project's Pipeline Facilities

	Location		Land Requirements			
Facility/ Segment	Milepost In	Milepost Out	Temporary Workspace	Permanent Workspace	Additional Temporary Workspace	Landowner
AR/ARW	0.0	3.9	29.6	23.5	0.2	Private
AR	3.9	4.4	1.9	1.3	0.1	U.S. Forest Service (USFS)
AR	4.4	5.6	0.0	7.1	0.0	Private
AR	5.6	6.4	2.6	2.1	0.1	USFS
AR	6.4	6.4	0.0	0.0	0.0	Private
AR	6.4	7.0	4.2	2.2	0.0	State
AR	7.0	12.6	32.4	34.3	0.6	Private
AR-1/ARW-1	0.0	0.0	0.0	0.0	0.0	Private
AR-2/ARW-2	0.0	0.0	0.2	0.1	0.0	Private
AR-3/ARW-3	0.0	0.0	0.0	0.2	0.0	USFS
AR-4/ARW-4	0.0	0.1	0.6	0.4	0.0	Private
AR-5/ARW-5	0.0	0.1	1.2	0.8	0.0	Private
AR-6/ARW-6	0.0	0.2	1.0	0.9	0.0	Private
AR-7/ARW-7	0.0	0.2	1.2	0.9	0.0	Private
AR-8/ARW-8	0.0	0.2	1.0	1.0	0.0	Private
AR-9/ARW-9	0.0	0.2	1.5	1.0	0.0	Private
AR-10/ARW-10	0.0	0.2	1.7	1.2	0.0	Private
AR-11/ARW-11	0.0	0.2	0.7	1.2	0.0	USFS
AR-12/ARW-12	0.0	0.2	1.9	1.3	0.0	Private
AR-13/ARW-13	0.0	0.2	0.0	1.3	0.0	Private
AR-14/ARW-14	0.0	0.4	3.2	2.2	0.0	Private
AR-15/ARW-15	0.0	0.5	3.1	2.9	0.1	Private
AR-16	0.0	0.5	2.4	3.1	0.1	Private
AR-17/ARW-17	0.0	0.6	2.4	3.5	0.1	Private
AR-18/ARW-18	0.0	0.3	1.1	1.9	0.0	USFS
AR-18/ARW-18	0.3	0.9	5.0	3.4	0.0	Private
AR-19/ARW-19	0.0	1.0	7.0	5.8	0.1	Private
AR-20/ARW-20	0.0	0.0	0.0	0.1	0.0	Private
AR-20/ARW-20	0.0	0.3	0.4	1.8	0.2	Bureau of Land Management (BLM)
AR-20/ARW-20	0.2	0.2	0.0	0.0	0.4	Private
AR-20/ARW-20	0.3	1.0	4.4	4.3	1.3	Private
AR-21/ARW-21	0.0	0.5	3.4	2.9	0.1	Private
AR-21/ARW-21	0.5	0.6	0.6	0.8	0.0	BLM
AR-21/ARW-21	0.6	1.1	3.7	2.6	0.0	Private
AR-22/ARW-22	0.0	0.3	0.3	1.3	0.4	State

TABLE 1.1-1 (cont'd)

Bear Den Project
Temporary and Permanent Land Requirements Associated with the Project's Pipeline Facilities

	Location		Land Requirements			
Pipeline Segment	Milepost In	Milepost Out	Temporary Workspace	Permanent Workspace	Additional Temporary Workspace	Landowner
AR-22/ARW-22	0.3	1.2	5.7	5.2	0.5	Private
AR-23/ARW-23	0.0	11.8	10.9	7.5	0.0	Private
AR-24/ARW-24	0.0	1.3	2.4	7.7	0.8	USFS
AR-25/ARW-25	0.0	0.4	3.5	2.3	0.0	Private
AR-25/ARW-25	0.4	0.9	1.6	3.2	0.4	USFS
AR-25/ARW-25	0.9	1.4	4.2	3.2	0.1	Private
AR-25/ARW-25	1.4	1.5	0.4	0.7	0.0	USFS
AR-25/ARW-25	1.5	1.5	0.1	0.0	0.0	Private
AR-25/ARW-25	1.5	2.1	4.4	2.3	0.1	State
AR-25/ARW-25	2.1	2.4	2.7	1.0	0.0	State
AR-25/ARW-25	2.4	2.7	4.1	1.5	0.0	State
AR-25/ARW-25	2.7	2.9	0.6	0.8	0.0	Private
AR-25/ARW-25	2.9	3.1	0.8	1.7	0.1	USFS
AR-26/ARW-26	0.0	0.7	5.3	2.9	0.0	State
AR-26/ARW-26	0.7	1.7	8.1	5.9	0.1	Private
AR-27/ARW-27	0.0	1.1	9.6	6.7	0.1	Private
AR-27/ARW-27	1.1	2.9	6.1	10.7	1.5	USFS
AR-27/ARW-27	1.2	1.2	0.0	0.0	0.0	Private
AR-28/ARW-28	0.0	4.1	35.1	24.7	0.3	Private
AR-29/ARW-29	0.0	0.3	2.1	1.7	0.1	Private
AR-29/ARW-29	0.3	0.5	0.9	1.6	0.0	BLM
AR-29/ARW-29	0.5	2.2	11.5	9.7	0.1	Private
AR-29/ARW-29	1.9	1.9	0.1	0.0	0.0	BLM
AR-30/ARW-36	0.0	2.1	15.4	13.0	0.2	Private
AR-30/ARW-36	2.1	2.8	6.6	2.6	0.1	State
AR-30/ARW-36	2.8	3.5	5.7	2.7	0.3	State
AR-30/ARW-30/36[a]	3.5	6.9	19.3	20.2	0.4	Private
AR-30/ARW-36	3.5	3.5	0.0	0.0	0.0	BLM
AR-30/ARW-30	6.9	6.9	0.0	0.0	0.0	BLM
AR-30/ARW-30	6.9	7.0	0.0	0.2	0.0	BLM
AR-30/ARW-30	7.0	7.7	1.3	4.4	0.2	Private
AR-30/ARW-30	7.7	8.2	6.2	2.2	0.0	State
AR-30/ARW-30	7.7	7.7	0.0	0.0	0.9	State
AR-30/ARW-30	8.2	8.9	7.7	2.8	0.0	State
AR-30/ARW-30	8.9	9.0	0.3	0.2	0.0	Private
AR-30/ARW-30	9.0	9.3	1.2	1.8	0.0	BLM
AR-30/ARW-30	9.3	11.8	17.7	15.4	0.1	Private

TABLE 1.1-1 (cont'd)

Bear Den Project
Temporary and Permanent Land Requirements Associated with the Project's Pipeline Facilities

	Location		Land Requirements			
Pipeline Segment	Milepost In	Milepost Out	Temporary Workspace	Permanent Workspace	Additional Temporary Workspace	Landowner
AR-31/ARW-37	0.0	4.2	13.3	25.2	1.6	USFS
AR-31/ARW-31	4.2	4.4	0.8	1.5	0.0	Private
AR-31/ARW-31	4.4	4.9	1.7	3.1	0.1	USFS
AR-31/ARW-31	4.9	5.2	1.5	1.8	0.1	Private
AR-31/ARW-31	5.2	5.8	5.5	2.2	0.0	State
AR-31/ARW-31	5.8	6.3	5.4	2.0	0.0	State
AR-31/ARW-31	6.3	7.3	8.3	6.1	0.0	Private
AR-31/ARW-31	7.3	7.5	1.3	1.3	0.0	BLM
AR-31/ARW-31	7.5	8.2	5.5	4.3	0.0	Private
AR-31/ARW-31	8.2	9.3	7.1	6.7	0.0	Private
AR-31/ARW-31	9.3	9.5	1.4	1.5	0.0	BLM
AR-31/ARW-31	9.5	10.0	4.3	3.0	0.0	Private
AR-32/ARW-32	0.0	0.1	1.4	0.5	0.0	State
AR-32/ARW-32	0.1	2.9	24.2	16.6	0.1	Private
AR-33/ARW-33	0.0	0.0	0.1	0.2	0.0	USFS
AR-34/ARW-34	0.0	3.0	23.3	17.9	0.6	Private
AR-35/ARW-35	0.0	1.0	2.1	6.3	0.3	USFS
AR-35/ARW-35	1.0	2.1	9.5	6.6	0.0	Private
AR-35/ARW-35	2.1	2.9	2.6	4.9	0.0	USFS
ARW-39	0.0	0.5	3.1	3.1	0.0	Private
Pipeline Total			**442.7**	**398.6**	**13.1**	

[a] Produced water pipeline ARW-36 extends from MP 0.0 to MP 5.5

TABLE 1.1-2

Bear Den Project
Temporary and Permanent Land Requirements Associated with the Project's Aboveground Facilities

Lots and Yards	Location	Temporary Workspace	Permanent Workspace	Additional Temporary Workspace	Landowner
Bice Pipe Storage/Contractor Yard	Not applicable	5.02	0.00	0.00	Private
Dennis Pipe Storage/Contractor Yard	Not applicable	5.00	0.00	0.00	Private
Storage/Transfer Facility	AR-16 at MP 0	0.00	39.89	0.00	Private
Pig Launcher/Receiver Site	AR at MP 2.1	0.00	0.15[a]	0.00	Private
Line AR Intermediate Block Valve Site	AR at MP 7.0	0.00	0.03	0.00	Private
Line AR 14 Intermediate Block Valve Site	AR-14 at MP 0.4	0.00	0.00	0.00	Private
Line AR 30 Intermediate Block Valve Site	AR-30 at MP 1.2	0.00	0.00	0.00	Private
Block Valve Site	AR-30 at MP 11.0	0.00	0.41[a]	0.00	Private
Lots and Yards Total		**10.02**	**40.48**	**0.00**	

[a] Acreage for permanent workspace is in addition to the 50-foot permanent easement associated with the pipeline(s). This acreage is already included as part of land requirements identified in Table

TABLE 1.1-3
Bear Den Project
Temporary and Permanent Land Requirements Associated with the Project's Access Roads

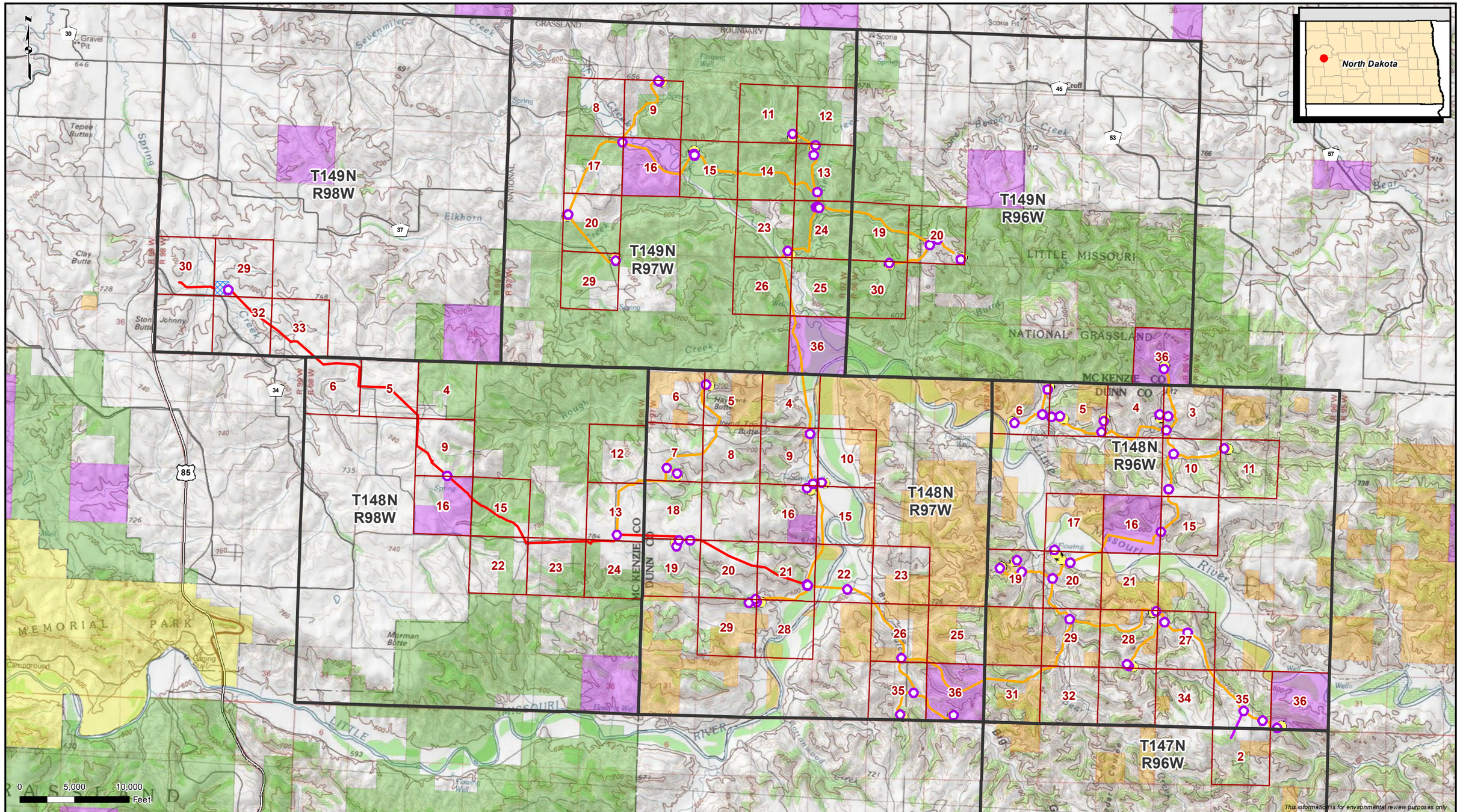
Access Road[a]	Location	Temporary Workspace	Permanent Workspace	Length	Landowner
CA1-AR	AR at MP 8.2	0.6	0.0	915	Private
CA2-AR	AR at MP 6.9	0.2	0.0	305	Private
PA1-AR-15	AR-15 at MP 0.4	0.0	0.1	131	Private
CA1-AR-19	AR-19 at MP 0.5	0.3	0.0	455	Private
CA1-AR-22	AR-22 at MP 0.5	0.3	0.0	384	Private
PA1-AR-23	AR-23 at MP 0.7	1.0	2.1	*4,491*	Private
PA1-AR-28	AR-28 at MP 4.1	0.0	0.1	110	Private
PA1-AR-30	AR-30 at MP 6.4	0.4	0.7	1,555	Private
PA2-AR-30	AR-30 at MP 4.5	0.1	0.1	275	Private
PA3-AR-30	AR-30 at MP 4.1	0.2	0.4	831	Private
PA4-AR-30	AR-30 at MP 2.4	0.2	0.4	877	Private
PA5-AR-30	AR-30 at MP 1.7	0.6	1.3	2,769	Private
PA1-AR-31	AR-31 at MP 7.3	0.0	0.1	157	Private
CA1-AR-31	AR-31 at MP 7.6	0.2	0.0	353	Private
CA1-AR-34	AR-34 at MP 2.4	0.6	0.0	812	Private
CA2-AR-34	AR-34 at MP 1.7	0.2	0.0	228	Private
CA3-AR-34	AR-34 at MP 0.5	0.1	0.0	185	Private
CA1-AR-35[b]	AR-35 at MP 2.1	1.6	0.0	2,378	U.S. Forest Service
Access Roads Total		**6.7**	**5.1**		

TABLE 1.1-3
Bear Den Project
Temporary and Permanent Land Requirements Associated with the Project's Access Roads

Access Road[a]	Location	Temporary Workspace	Permanent Workspace	Length	Landowner

[a] Note: Road labeled as CA are temporary construction access; roads labeled as PA are for construction and permanent access to the Project.

[b] Use of road does not require construction or upgrades on USFS land. Timber mats would be placed over existing trail to facilitate temporary use.



Block Valves
Service Wells
Dual Pipes
Proposed Crude Line (only)
Proposed Produced Water Line (only)
North Dakota State Land
Bureau of Land Management Land
United States Forest Service Land
National Park Service Land

CenterPoint Energy

Figure 1
Project Overview
Bear Den Project
McKenzie County and Dunn County, North Dakota

NATURAL RESOURCE GROUP

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DRAWN BY: MLindholm

2.0 PURPOSE AND NEED

The Secretary of the Interior is authorized to grant rights-of-way (ROW) on public lands for pipelines to transport oil and gas under the authority of Section 28 of the Mineral Leasing Act of 1920 (MLA), as amended and supplemented (30 United States Code [U.S.C.] 181 et seq.), and prescribed in 43 CFR Parts 2880 and 3160. The Need for this Proposed Action is established by the Bureau of Land Management's (BLM) responsibility under MLA to respond to CEBCS' request to construct the pipeline on public lands.

The purpose and need for this action is to respond to an MLA right-of-way application submitted by CEBCS to construct, operate, maintain, and decommission crude oil and produced water pipelines and ancillary facilities on public lands administered by the U.S. Forest Service (USFS) and the BLM in North Dakota, including an environmental assessment of the proponent's proposal and a reasonable range of alternatives to the proposal.

As oil production in the Bakken Shale has exceeded 600,000 barrels per day (bbl/d), new infrastructure is required to provide safe and reliable transport of crude oil from oil wells to larger outlet pipelines. The purpose of the Project is to construct a gathering pipeline system to eliminate tanker truck activity on public and private roads in the Project area. Currently, the subject wells are serviced through a system of temporary on-site storage, with transportation of crude oil, and produced water accomplished by tanker truck via public and lease roads. Relative to continued trucking, gathering, and transportation via pipeline is more efficient, reliable, economic and environmentally conscious (i.e., transport via pipeline will reduce air emissions and minimize the potential for inadvertent releases). The crude oil pipeline system would have a total capacity of approximately 14,000 bbl/d, and the produced water pipeline system would have a total capacity of approximately 3,500 bbl/d.

Although the Project is currently designed and scoped to service the transportation needs of a single production company, it is possible that connections with additional or third-party wells could also be pursued in the future, which could result in the need for expanded or additional facility components. However, should future components be added to the system, CEBCS would first consult with and obtain the necessary permits and approvals from applicable local, state and federal agencies.

2.1 GOVERNMENT AND AGENCY INVOLVEMENT

A Right-of-Way Grant Application for the Project was submitted to the BLM, North Dakota Field Office, for transportation and utility systems and facilities on federal lands on July 17, 2012. The proposed project crosses approximately 10.7 miles of public land managed by the BLM North Dakota Field Office and the U.S. Forest Service (USFS) McKenzie Ranger District (Little Missouri National Grassland).

The Applicant-prepared Environmental Assessment (EA) for the Project is being prepared under the direction of the BLM, which is serving as the lead agency in compliance with the National Environmental Policy Act of 1969 (NEPA) per the Mineral Leasing Act (MLA) of 1920, as amended. The USFS and U.S. Fish and Wildlife Service (FWS) are cooperating agencies. The document follows the guidelines promulgated by the Council on Environmental Quality (CEQ) for implementing the procedural provisions of NEPA (40 Code of Federal Regulations [CFR] 1500-1508, BLM's NEPA Handbook [H-1790-1] U.S., Department of Interior (USDI) requirements (Department Manual 516, Environmental Quality), guidelines in the BLM NEPA handbook H-1790-1 (BLM, 1988), the subsequent interim guidelines (BLM, 1999a), and the BLM NEPA guidebook (BLM, 1999b). Additionally, CFR 1506.3(a) allows the cooperating agency (USFS) to adopt a NEPA document prepared by the lead federal agency (BLM).

In order to issue an easement for a proposed activity, the USFS would independently evaluate and verify the information and analysis undertaken in the EA and would take full responsibility for the scope and content contained herein, even though, per the MLA, the BLM would issue the right-of-way (ROW) Grant for all federal lands crossed.

The Project would be designed, constructed, and operated in accordance with CFR 49 Part 195, Transportation of Hazardous Liquids by Pipeline. These regulations are administered by the U.S. Department of Transportation (USDOT) Pipeline and Hazardous Materials Safety Administration (PHMSA).

Within 90 days of completion, CEBCS will submit to the BLM Authorized Officer (AO), as-built drawings and a certification of construction verifying that the facility has been constructed (and tested) in accordance with the design, plans, specifications, and applicable laws and regulations.

The proposed Project will be consistent with and will comply with applicable federal, state, and local laws, regulations, and plans (see Table 2.1-1). Appendix D contains the permits and consultations for the Bear Den Project.

TABLE 2.1-1

Bear Den Project
Environmental Permits, Approvals, and Consultations

Agency	Permit/Approval/Consultation/Concurrence	Need
Federal		
Bureau of Land Management	Permit	Right-of-Way Grant
	Consultation and Concurrence	National Environmental Policy Act analysis, Project consistency with North Dakota Field Office Resource Management Plan
	Approval	Decision Document for National Environmental Policy Act analysis
U.S. Forest Service (USFS)	Consultation and Concurrence	National Environmental Policy Act analysis, Project consistency with USFS 2001 revised Land and Resource Management Plan for the Dakota Prairie Grasslands Northern Region
U.S. Army Corps of Engineers – Omaha District	Permit	Permit for the discharge of dredge or fill material into waters of the United States under Section 404 of the Clean Water Act, and for activities affecting navigable waters under Section 10 of the Rivers and Harbors Act
U.S. Fish and Wildlife Service – Region 6 – North Dakota Field Office	Consultation and Concurrence	Consultations for impacts on federally listed threatened and endangered species and critical habitat under Section 7 of the Endangered Species Act (ESA), the Migratory Bird Treaty Act, the Bald and Gold Eagle Protection Act, and the Fish and Wildlife Coordination Act
U.S. Department of Agriculture, Natural Resources Conservation Service – North Dakota	Consultation	Recommendations for revegetation/seed mixes on private and state lands
North Dakota		
North Dakota Department of Health, Division of Air Quality	Permit	Minor source operating permit
North Dakota Department of Health, Division of Water Quality	Permit	General Permit for Construction Stormwater Discharge under the National Pollutant Discharge Elimination System
	Permit	General Permit for Construction Dewatering and Discharge of Hydrostatic Test Water under the National Pollutant Discharge Elimination System
	Permit	Water Quality Certificate under Section 401 of the Clean Water Act
North Dakota State Water Commission	Permit	Navigable Water Crossing Permit under North Dakota Century Code Chapter 61-33 (Sovereign Lands)
	Permit	Water appropriation permit for any project-related surface water withdrawals
North Dakota Department of Game and Fish	Consultation	Consultation for impacts on fisheries and wildlife
State Historical Society of North Dakota	Consultation and Concurrence	Consultation for impacts on historic properties under Section 106 of the National Historic Preservation Act
North Dakota Department of Transportation	Permit	Right-of-Way Occupancy permit for state roadway crossings
North Dakota Department of Trust Lands, Board of University and School Lands	Permit	Right-of-Way Grant to cross state lands
Local		
Dunn County	Permit	Right-of-way permit to cross roads
McKenzie County	Permit	Right-of-way permit to cross roads

2.2 LANDS AND RESOURCE MANAGEMENT ISSUES AND CONCERNS

Resources considered include critical elements of the human environment (BLM, 1988, 1999a), as well as those additional resources that may possibly be affected by the proposed Project, or those that will be identified during the public scoping period. CEBCS completed biological and cultural field surveys for the proposed Project in August, September, and October

2012, and will complete Paleontological surveys prior to construction to identify and address potential environmental issues.

A summary of the project's potential to impact BLM-recognized critical elements of the human environment, as well as other resource issues identified through scoping and our review is provided in Table 2.2-1.

TABLE 2.2-1

Bear Den Project
Bureau of Land Management Critical Elements of the Human Environment

Critical Element	No Impact	May Impact	Not Present	Comments
Air Quality		X		Construction-related combustion emissions, the construction and use of unpaved access roads, and operational and maintenance activities may affect air quality. .
Active Surface Mines	X			No effect on nearby active surface mines anticipated.
Areas of Critical Environmental Concern	X			No areas identified.
Cultural Resources		X		Historical Properties identified in the project area during Class I and Class III Cultural Resource Inventories
Environmental Justice	X			No issues identified.
Farmlands, Prime or Unique	X			No areas identified.
Fisheries	X			No areas identified.
Floodplains		X		Floodplains associated with the Little Missouri River identified.
Paleontology		X		Paleontological surveys will be conducted in Spring 2013
Recreation		X		Pipeline construction would have little to no impacts on recreational activities.
Invasive and Non-native Weed Species		X		Invasive and non-native weed species identified along the Project route.
Native American Concerns		X		Conducted government-to-government consultations with 17 tribes In accordance with NEPA and NHPA.
Threatened & Endangered Flora/Fauna		X		FWS identified 5 endangered species, 1 threatened species, and candidate species; avoidance/mitigation plans to be implemented.
BLM and USFS Sensitive Species		X		BLM and USFS identified sensitive wildlife and sensitive plant species; avoidance/mitigation plans to be implemented.
Fire Management	X			BLM fire prevention plan to be implemented.
Visual Sensitive Resources	X			There are no visually sensitive resources identified in the USFS DPG LRMP for the project area.
Compatibility with BLM and USFS Resource Management Plans		X		Review of current BLM Field Office Resource Management Plans and USFS DPG LRMP indicates compatibility.
Water Quality Surface/Ground		X		56 surface waterbodies identified; No springs identified; waterbody construction Best Management Practices to be implemented.
Wastes, Hazardous or Solid		X		Project would require storage and handling of fuels and other hazardous materials; spill prevention, containment, and control plan to be implemented.
Wetlands/Riparian		X		68 wetlands identified (63 PEM, 2 PSS, 3 PFO wetlands) in the project area; wetland construction Best Management Practices to be implemented.
Wild and Scenic Rivers	X			No areas identified.
Wilderness Study Areas	X			No areas identified.
Migratory Bird Species		X		Potential habitat for migratory birds identified.
Raptors		X		Surveys for historic raptor nest locations to be performed.
National Forest System Inventoried Roadless Areas(IRA)	X			Project is located 4.25 to 4.5 miles northeast of an IRA where road construction or reconstruction is allowed. Project is not within an IRA where road construction is not allowed or an IRA recommended wilderness area.

2.3 RIGHT-OF-WAY LOCATION

The Project will entail the crossing of Federal lands under the management of the BLM and the USFS, McKenzie Ranger District, in the following locations:

Bureau of Land Management

- Township 148 North, Range 96 West, Section 19
- Township 148 North, Range 96 West, Section 21
- Township 148 North, Range 96 West, Section 28
- Township 148 North, Range 96 West, Section 31
- Township 148 North, Range 97 West, Section 22
- Township 148 North, Range 98 West, Section 25
- Township 148 North, Range 98 West, Section 26
- Township 148 North, Range 98 West, Section 9

U.S. Forest Service

- Township 148 North, Range 98 West, Section 15
- Township 148 North, Range 98 West, Section 23
- Township 148 North, Range 98 West, Section 24
- Township 149 North, Range 96 West, Section 19
- Township 149 North, Range 96 West, Section 20
- Township 149 North, Range 96 West, Section 30
- Township 149 North, Range 97 West, Section 11
- Township 149 North, Range 97 West, Section 12
- Township 149 North, Range 97 West, Section 13
- Township 149 North, Range 97 West, Section 14
- Township 149 North, Range 97 West, Section 15
- Township 149 North, Range 97 West, Section 17
- Township 149 North, Range 97 West, Section 20
- Township 149 North, Range 97 West, Section 23
- Township 149 North, Range 97 West, Section 24
- Township 149 North, Range 97 West, Section 26
- Township 149 North, Range 97 West, Section 29
- Township 149 North, Range 97 West, Section 8
- Township 149 North, Range 97 West, Section 9

3.0 RESOURCE VALUES AND ENVIRONMENTAL CONCERNS

3.1 LAND USE PLANS

The document directing management of USFS-administered lands within the Project area is the Land and Resource Management Plan (LRMP) for the Dakota Prairie Grasslands (DPG), amended 2001, and management of BLM-administered lands is the North Dakota Resource Management Plan (1988). The 1988 North Dakota Resource Management Plan provides land use guidance for development of oil and gas reserves, including transmission of products to distribution points by pipelines. The 2001 LRMP consists of goals, objectives and management requirements (standards and guidelines) for all resource management activities on the DPG and were taken into consideration for this project (LRMP, 2001). The DPG were newly

organized in 1998 from National Forest System lands formerly administered by the Custer National Forest (LRMP, 2001). The lands administered by the DPG include the Grand River National Grasslands in South Dakota and Cedar River National Grassland, the Little Missouri National Grassland (LMNG), and the Sheyenne National Grassland in North Dakota. The project crosses the LMNG within the McKenzie District; the Project does not cross any other lands administered by the DPG. The LMNG encompasses about 1.0 million acres in the western region of North Dakota (LRMP, 2001).

3.2 RESOURCE VALUES, ENVIRONMENTAL CONCERNS, AND PUBLIC NEEDS

3.2.1 Waterbodies, Wetlands, and Riparian Areas

CEBCS conducted field surveys for waterbodies and wetlands in September and October 2012. The pipeline was routed to avoid waterbody and wetland crossings where feasible. Waterbodies and wetlands that cannot be avoided would be crossed using open cut methods or Horizontal Directional Drill (HDD) methods. Standard wetland construction mitigation measures will include reducing the construction right-of-way to 75 feet (60 feet where a single pipeline is proposed) and limiting equipment working in wetlands to that essential for clearing, excavating the trench, fabricating and installing the pipeline, backfilling the trench, and reclaiming the right-of-way. In areas where access to the right-of-way is only available through the wetland area, non-essential equipment would be allowed to travel through wetlands only if the ground is firm enough, or has been stabilized, to avoid rutting. If rutting is anticipated prefabricated mats would be utilized.

Refer to Appendix E, *Construction, Reclamation, and Monitoring Plan* (CRMP) for specific mitigation proposed for wetland and riparian areas. Appendix F contains the *Storm Water Pollution Prevention Plan*. Appendix G contains the *Horizontal Directional Drill and Contingency Plan*.

3.2.2 Rangeland Standards / Livestock Management

CEBCS, in constructing and operating the proposed pipeline, will adhere to practices that will not degrade rangelands. This will include practices to prevent soil erosion; to encourage water infiltration to provide for optimal plant growth and minimal surface runoff; to protect riparian areas; to encourage diverse plant communities in upland habitats; to contribute to a balanced and diverse economy; to manage natural resources in harmony with history, culture, and social development; to maintain water quality; and to maintain air quality.

Refer to the CRMP for specific mitigation proposed for rangelands such as seed mixes and restoration timing.

3.2.3 Wildlife Resources

The vegetation communities in the project area support wildlife resources including big game, raptors, upland game birds, migratory and non-migratory bird species, and other vertebrate species. Only minor impacts on wildlife species in the proposed Project area are expected, and no impacts on wildlife at a community or regional level are anticipated as a result of the proposed project. Impacts to wildlife resources may include temporary and long-term impacts to habitat along the proposed right-of-way and human disturbance during construction. Although individuals of some wildlife species could be affected, the proposed project would not

result in a major alteration to ecosystems or biodiversity, or impact the composition of the wildlife communities in the general project area.

No general wildlife specific restoration methods are planned.

3.2.4 Migratory Birds and Raptors

Migratory raptor, game, and songbird species are protected under the Migratory Bird Treaty Act of 1918, as amended (MBTA). 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 taking of any migratory bird, their parts, nests, or eggs except as permitted by regulation. Further, sage grouse, burrowing owls, several songbirds, bald eagles, and other raptors are afforded additional protections due to their federal or BLM/USFS sensitive status.

Conservation and mitigation measures to protect migratory birds and raptors can be found in CEBCS' *Migratory Bird Impact Assessment, Mitigation, and Compliance Plan* (Appendix H).

3.2.5 Big Game Crucial Game Ranges

The Project will directly impact designated bighorn sheep lambing habitats on USFS and BLM lands. Project construction is anticipated to begin June 2013 and be completed and in-service by October 2013; this schedule partially overlaps the lambing schedule for bighorn sheep (April 1 – June 15). Direct impacts resulting from construction activity may include mortality to individuals due to construction traffic on roads through portions or bighorn sheep habitat on federal and non-federal land.

Efforts to reduce disturbance near lambing areas in order to prevent a change in bighorn distribution, abandonment of suitable habitat, or alterations in activity patterns include:

- CEBCS will avoid the majority of bighorn sheep habitat on federal land, or has co-located their pipeline with other infrastructure (primarily roads) within bighorn sheep habitat on federal lands;
- CEBCS will maintain a 220-yard buffer (the minimum threshold at which human disturbance becomes significant) between construction activities and known lambing areas on federal land during the lambing season; these areas will be determined prior to construction;
- CEBCS will conduct aerial surveys to assess pipeline integrity outside the lambing period from April through June; and
- the right-of-way will be promptly reclaimed within bighorn sheep habitat on federal land as outlined in the CRMP.

3.2.6 Threatened, Endangered, and Sensitive Species

Federally Listed Species

The USFWS has identified six federally protected species and four candidate species that could occur within the Project area. The interior least tern (*Sterna antillarum*), the whooping

crane (*Grus americana*), the pallid sturgeon (*Scaphirhynchus albus*), and the gray wolf (*Canis lupus*) are federally listed as endangered. The piping plover (*Charadrius melodus*) is listed as federally threatened. The black-footed ferret (*Mustela nigripes*) is listed as an experimental population, non-essential. The Sprague's pipit (*Anthus spragueii*), greater sage-grouse (*Centrocercus urophasianus*), Dakota skipper (*Hesperia dacotiae*), and the Poweshiek skipperling (*Oarisma poweshiek*) are federally listed as candidate species and USFS/BLM Sensitive Species.

A Biological Assessment (BA) will be prepared to address potential impacts to endangered, threatened, and two candidate species, Sprague's pipit and Dakota skipper, because suitable habitat for these two candidate species occurs within the Project area. Two federal candidate species, the greater sage-grouse and Poweshiek skipperling, were eliminated from analysis in the BA because the Project is located outside of their known range and suitable habitat. The BA will also include any species-specific mitigation measures that may be required by the USFWS to minimize or avoid impacts to these species.

Bureau of Land Management/U.S. Forest Service Sensitive Species

A Biological Evaluation (BE) will be prepared to address potential impacts to the February 2011 Region 1 USFS Regional Forester's Sensitive Species List for those species known to occur within the DPG and that may occur within or adjacent to the Project (USFS, 2011, 2011a, 2011b). During a pre-survey meeting held in Dickinson, North Dakota on February 13, 2013 the BLM agreed with using the USFS Sensitive Species lists on BLM lands. Therefore, the USFS Sensitive Species identified for review and analysis for the Project area were reviewed for potential impacts on BLM lands and will be referred to as USFS Sensitive Species. Two federal candidate species, the greater sage-grouse (*Centrocercus urophhasianus*) and Poweshiek skipperling (*Oarisma Poweshiek*), which were eliminated from analysis in the BA, will be covered in the BE, as well as a single watch list plant species that was identified during botanical project surveys. The BE will address the potential impacts to 33 USFS sensitive species (19 USFS sensitive animals and 14 USFS sensitive plants) and one watch list plant species that was identified for this Project. The BE will also include any species-specific mitigation measures that may be required by the BLM/USFS to avoid or minimize impacts to these species.

3.2.7 Air Quality

The primary pollutant in the vicinity of the proposed pipeline route is particulate matter, occurring as fugitive dust from natural sources, paved and unpaved roads, and surface disturbances associated with construction, recreation, and livestock grazing. The proposed project will generate air emissions through short-term construction, operation, and maintenance activities. All vehicles and construction equipment will be properly maintained to minimize exhaust emissions and will be properly muffled to minimize noise. Emissions from operations at the storage/transfer facility (e.g., tanks and backup generators) will be subject to applicable state and federal air regulations. Additional aboveground facilities will not have any permitted emissions associated with their operation.

Fugitive dust from both access roads and the construction right-of-way itself will be controlled during construction. Water application, using a rear spraying water truck or other suitable means, will be the primary method of controlling dust on the access roads and right-of-way. Every effort will be made to complete initial reclamation and cleanup of a disturbed area within 20 days after backfilling. Seeding will typically occur within 6 days following restoration.

If project completion and reclamation is completed outside of the seeding window, temporary soil stabilization may need to be employed until seeding can be accomplished during the approved time period(s).

All visibly dry disturbed access roads and disturbed soil surface areas shall be watered as necessary to control dust emissions. The frequency of water application will largely depend on weather conditions. The Environmental Inspector will direct application of additional dust controls as necessary. The quantities of water used for dust suppression will be documented and made available to the BLM upon request.

3.2.8 Cultural Resources

In the fall of 2012, a Class I Inventory (file search) and Class III Inventory (pedestrian survey) was conducted of the area of potential effect (APE) to identify and evaluate the National Register of Historic Places (NRHP)-eligibility of all cultural resources that could be impacted by Project construction. The Class I file search involved a review at the North Dakota State Historic Preservation Office (SHPO) of site files and survey reports within a 1-mile-wide corridor centered on the proposed pipeline centerline. The file search identified a total of 107 previously recorded cultural resources, including 27 prehistoric sites, 24 historic sites (18 of which are farm/farmsteads and other site types suggesting architecture), 41 prehistoric isolated finds (IFs), 6 historic IFs, and nine IFs of unknown cultural or temporal affiliation.

The Class III cultural resources Inventory involved an intensive-level pedestrian survey of the proposed pipeline and facilities. The inventory resulted in the identification of 17 cultural resources, including eight sites and nine IFs/site leads. The cultural resources include two historic properties, a historic homestead (32MZ718) and a prehistoric artifact scatter (32MZ487/32DU1285). A rock cairn of indeterminate age and cultural affiliation (IF 32MZx1282) remains unevaluated for the NRHP and is located within the APE. It will be avoided by the Project and it will be flagged and monitored by an archaeologist who meets the Secretary of the Interior's Historic Preservation Professional Qualifications Standards (SOI qualified archaeologist) during construction.

The following measures will be used to mitigate or reduce adverse effects to two historic properties. The Project would cross through historic property 32MZ487/32DU1285. The construction workspace will be narrowed to the width of the permanent ROW (50 feet) and construction monitoring by an SOI qualified archaeologist will be conducted during all ground-disturbing activities inside and within 30 meters of the site boundary.

The Project would also cross historic property 32MZ718. The historic property would be avoided through the use of the horizontal directional drilling (HDD) method to install the pipeline underneath the property. The exact depth of the HDD is yet to be determined, but will be installed no less than 15 feet below the ground surface. The existing two-track road which bisects the site is proposed for construction-related use to access other parts of the project area. Impacts to the site by use of the road will be mitigated by fencing the site and monitoring by an SOI qualified archaeologist during construction activities, placing mats on the road if access is required during weather conditions where rutting of the road is likely to occur, and preparing Level II documentation of the site in order to permanently record the historic homestead prior to the use of the two-track road as a project access route.

The Class III survey report was reviewed by the BLM and forwarded to the North Dakota SHPO for comment on March 7, 2013. In a letter dated April 5, 2013, the SHPO concurred with the BLM's determination and recommendations.

The Project has adopted a *Plan for Unanticipated Discovery of Cultural Resources or Human Remains During Construction* (Appendix I), which will be implemented during construction. The plan discusses the procedures to be implemented for monitoring onsite areas and for discoveries found during the construction of the Project. The plan contains procedures for mitigating cultural resource discoveries identified by the Project archaeologists during construction. The plan also includes procedures for the initial treatment of discoveries, the evaluation and treatment of eligible discoveries, and the treatment of human remains.

3.2.9 Paleontological Resources

The BLM has adopted the Potential Fossil Yield Classification (PFYC) system to identify and classify fossil resources on federal lands (BLM, 2011). Paleontological resources are closely tied to the geologic units (i.e., formations, members, or beds) that contain them. The probability for finding paleontological resources can be broadly predicted from the geologic units present at or near the surface. Therefore, geologic mapping can be used for assessing the potential for the occurrence of paleontological resources.

Utilizing the PFYC system, the CEBCS will conduct pre-construction paleontological surveys of sensitive formations (PFYC 3, 4 and 5) and report findings to the BLM. Additionally, the Project has developed a *Plan for Unanticipated Discovery of Paleontological Resources During Construction,* (Appendix J) that identifies by MP and geologic formation areas where monitoring is required during construction.

3.2.10 Floodplains

The Bear Den Project crosses the Little Missouri River floodplain. No floodplain specific mitigation measures are proposed.

3.2.11 Tribal Treaty Rights and Interests As the lead federal agency, BLM has conducted government-to-government consultation with Native American tribes that requested to consult on the project to determine the Project's effect on traditional cultural properties, sacred sites, or other sites of religious or cultural importance, as well as other resources, such as water. On October 29, 2012, the BLM sent letters of invitation to participate in consultation to 17 Tribes who have tribal treaty interests in, and/or traditional connections to, western North Dakota. These tribes are the Lower Sioux Tribe, Lower Brule Sioux Tribe, Northern Cheyenne Tribe, Fort Peck Tribes, Sisseton-Wahpeton Oyate Tribe, Three Affiliated Tribes: Mandan, Hidatsa, and Arikara, Flandreau Santee Sioux Tribe, Yankton Sioux Tribe, Spirit Lake Sioux Tribe, Fort Belknap Tribes, Oglala Sioux Tribe, Santee Sioux Tribe, Cheyenne River Sioux Tribe, Rosebud Sioux Tribe, Crow Creek Sioux Tribe, Standing Rock Sioux Tribe, and the Turtle Mountain Band of Chippewa.Noxious Weeds and Non-Native Invasive Species

The North Dakota Century Code (NDCC) §4.1-47-01(6) defines noxious weeds as any plant propagated by either seed or vegetative parts which is determined by the commissioner, a county weed board, or a city weed board, after consulting with the North Dakota State University Extension Service, to be injurious to public health, crops, livestock, land, or other property.

Currently, there are eleven species or species groups (some include more than one species and/or cultivars) in North Dakota (North Dakota Administrative Code §7-06-01-02). Pursuant to NDCC 4.1-47 the control and the spread of noxious and invasive weeds is mandatory, and dissemination of noxious weeds must be prevented.

As part of the initial environmental survey effort, CEBCS conducted weed surveys along the Bear Den Project corridor in September and October 2012. Noxious and invasive weed species were identified along the Project and are likely to invade and become established on disturbed portions of the right-of-way. Sources of invasive and noxious weeds are existing pipeline rights-of-way, roadsides, reclaimed well pads, and other disturbed areas in the vicinity of the proposed project that have established populations of invasive species and noxious weeds. To limit the success of invasive species, CEBCS will re-contour, stabilize, and revegetate the construction right-of-way immediately after pipeline construction. CEBCS' CRMP requires all disturbed soils to be seeded within 6 working days of final grading, weather and soil conditions permitting. If project completion and reclamation is completed outside of the seeding window, temporary soil stabilization may need to be employed until seeding can be accomplished during the approved time period(s).

Consistent with EO 13112 and state laws, CEBCS will also minimize the spread of noxious and invasive weeds by adhering to the measures identified in CEBCS' CRMP, and will comply with local weed ordinances, if applicable. CEBCS will also require that all equipment be free of soil, debris, and plant matter before traveling to the Project area. To assist in identification and control of noxious and invasive weeds during construction, CEBCS will include information regarding noxious and invasive weeds as a part of the environmental training given to all contractors.

CEBCS' *Weed Management Plan* (Appendix K) identifies the specific location of weed populations and specific measures that will be implemented to manage noxious and invasive weeds during and after construction based on recommendations from the BLM, USFS, NRCS, and local weed control authorities. Herbicides, if used, will be applied in accordance with CEBCS' CRMP and *Weed Management Plan* in compliance with applicable regulations and manufacturer recommendations.

3.2.12 Hazardous or Solid Wastes

Hazardous materials used during pipeline construction will include petroleum products typically required for heavy equipment operations (e.g., gasoline, diesel fuel, lubricants, and coolants) that contain several hazardous and extremely hazardous materials identified in the Environmental Protection Agency's *Consolidated List of Chemicals Subject to Reporting Under Title III of the Superfund Amendments and Reauthorization Act of 1986* and 40 CFR 355. Project construction and maintenance operations will comply with all relevant federal and state laws regarding hazardous materials.

CEBCS will hire a contractor to provide an adequate number of portable toilets at the construction site and will ensure that sanitary wastes are removed and disposed of at an approved facility in accordance with state and local laws.

Waste materials such as pipe coating, spent welding rods, containers, cans, lunch wrappers, used engine oil, and other wastes from construction activities will be collected daily, placed in containers, properly accumulated, and disposed of at an approved landfill and/or waste disposal site. Contractors will also provide trash barrels or dumpsters to collect

construction site trash (e.g., lunch wrappers), and solid wastes will routinely be removed and disposed of at an approved facility.

3.2.13 Water Quality

Surface Water Resources

The Project conducted waterbody and wetland surveys from August until October 2012. Sixty-eight wetlands and 56 waterbodies were identified along the proposed Project route. The primary perennial streams along the proposed Project route include Bear Creek, the Little Missouri River, Cherry Creek, and Spring Creek. A number of named and unnamed intermittent streams also would be crossed by the proposed Project route. The majority of wetlands were palustrine emergent wetlands.

Water quality reporting requirements under Sections 305(b) and 303(d) of the CWA require states to assess the extent to which lakes, reservoirs, rivers, and streams are meeting water quality standards applicable to their waters, including beneficial uses as defined in their state water quality standards. North Dakota's water quality standards provide for four stream classes: I, IA, II, and III, but excludes wetlands. The North Dakota Department of Health (NDDH) collects water quality data on major water bodies including the Lower Little Missouri River which is designated a Class II stream (NDDH, 2011). The water quality for this class of use "shall be the same as the quality of Class I streams, except that additional treatment may be required to meet the drinking water requirements of the department. Streams in this classification may be intermittent in nature, which would make these waters of limited value for beneficial uses such as municipal water, fish life, irrigation, bathing, or swimming" (North Dakota Administrative Code 33-16-02.1-09).

The other tributaries along the proposed Project route are designated as Class III streams (NDDH, 2011). The water quality for this class of use "shall be suitable for agricultural and industrial uses. Streams in this class generally have low average flows with prolonged periods of no flow. During periods of no flow, they are of limited value for recreation and fish and aquatic biota. The quality of these waters must be maintained to protect secondary contact recreation uses" (e.g., wading), fish and aquatic biota, and wildlife uses" (North Dakota Administrative Code 33-16-02.1-09).

In compliance with the United States Environmental Protection Agency (USEPA) requirements promulgated through the CWA, the NDDH issues a bi-annual integrated report on surface water quality in the state. Under Section 303(b) of the act, waterbodies with known water quality characteristics that fail to support designated uses are listed as impaired. Within the Project area, impaired waters and those with water quality characteristics that threaten the support of designated uses include the Little Missouri River from U.S. Highway 85 downstream to its confluence with Cherry Creek in McKenzie and Dunn counties (due to fecal coliform) (McCain and Associates, Inc., 2011a; NDDH, 2010).

Groundwater Resources

An evaluation of hydrogeologic resources in the Project area was conducted by CEBCS through review of publications and public Geographic Information System databases provided by the USEPA, the USGS, the NRCS, and the NDDH.

There are three glacial drift aquifers (Little Missouri River, Cherry Creek, and Tobacco Garden,) underlying the Lower Little Missouri River sub-basin. Thirteen production areas are located in the sub-basin: two in Dunn County and eleven in McKenzie County.

No sole-source aquifers have been designated in North Dakota. Aquifers in or near the Project Area occur within unconsolidated glacial and alluvial deposits and porous sedimentary bedrock. Major ancient alluvial or glacial outwash aquifers potentially crossed or adjacent to the proposed Project route include the Little Missouri River aquifer in southeastern McKenzie County. In addition to these features, less extensive surficial aquifer zones occur in recent alluvial deposits along the wider streams and rivers.

In McKenzie County, the Little Missouri River Aquifer is a narrow deposit consisting mainly of glacial outwash in the river valley. The aquifer consists of buried sand and gravel deposits approximately 0.75 mile wide. Thickness of the water bearing zone generally is 150 feet. The aquifer generally is considered to be approximately 22 feet deep under surficial silt loams, silts, and clays.

Deeper bedrock aquifers in McKenzie County include the Late Cretaceous Fox Hills and basal Hell Creek system, which underlies all of McKenzie County and extends into adjoining counties. This aquifer system generally is 1,100 to 1,800 feet below land surface.

Spills of hazardous materials during construction could affect water quality. To protect surface and groundwater resources from inadvertent releases of fuel and other mechanical fluids, CEBCS will adhere to its *Spill Prevention, Control, and Countermeasures Plan* (SPCC Plan) (Appendix L). The SPCC Plan describes measures to be implemented by CEBCS personnel and contractors to prevent and, if necessary, control any inadvertent spill of hazardous materials such as fuels, lubricants, and solvents that could affect water quality. By implementing the SPCC Plan, the project's short- and long-term impact on groundwater and surface water resources will be greatly reduced or eliminated.

3.2.14 Visual Resources

Currently the Little Missouri National Grasslands does not have visual quality objectives and the BLM's Resource Management Plan does not address Visual Resource Management for North Dakota lands.

Effects on visual resources from construction of the proposed Project facilities will be limited primarily to alteration of the vegetation and the temporary use of heavy construction equipment on the ROW. During construction, open trenches and spoil piles will result in color changes to the landscape and heavy equipment will create tracks, compress vegetation, and expose soil within the authorized construction corridor. Such effects will be limited to the duration of construction and therefore will be temporary.

CEBCS will minimize visual impacts where feasible by locating portions of the new ROW directly adjacent to existing permanent ROWs. Additionally, due to the lack of vegetation that often requires clearing for operation (e.g., forest) the potential impacts on rangeland will be brief because these areas will be restored to pre-construction conditions after construction and not require long-term vegetative maintenance.

The only long-term visual impacts would be those associated with permanent aboveground facilities, which with the exception of the storage/transfer facilities, will be minor in scope. To help minimize the visual impact, facilities on federal lands will be painted to blend into the existing landscape per the BLM's Gold Book 2007 guidance. Otherwise, existing land uses of oil and gas development, grazing, utility corridors, and wildlife habitat will continue with negligible impacts, generally limited to the time of construction.

3.2.15 Vegetation

The Project area is located entirely within the Northwestern Great Plains ecoregion encompassing the Missouri Plateau section of the Great Plains of west-central North Dakota. The landscape consists of a semi-arid rolling plain of shale, siltstone, and sandstone, punctuated by agriculture and rolling plains topography with isolated sandstone buttes and badland formations and minimal wetland basins. The Project is situated within the Badlands Geographic Area and the Rolling Prairie Geographic Area (LRMP, 2011). The dominant vegetation within the Badlands Geographic Area includes riparian cottonwood (*Populus spp.*) forests along the Little Missouri River, hardwood draws of green ash (*Fraxinus pennsylvanica*) and chokecherry (*Prunus virginiana*), uplands of western wheatgrass (*Pascopyrum smithii*) and needle and thread grass (*Hesperostipa comata*), rolling grasslands of western wheatgrass and prairie Junegrass (*Koeleria macrantha*), rocklands of common juniper (*Juniperus communis*) and creeping juniper also known as creeping cedar (*Juniperus horizontalis*), terraces of buffaloberry also known as matrimony vine (*Lycium barbarum*) and silver sagebrush (*Artemisia cana)*, savanna of ponderosa pine (*Pinus ponderosa*) and green needlegrass (*Stipa viridula*), upland breaks of big sage (*Artemisia tridentata*) and skunkbrush (*Rhus trilobata*), river breaks of Rocky Mountain juniper (*Juniperus scopulorum*) and silver sagebrush , and toe slopes of western wheatgrass and prickly pear (*Opuntia spp.*) (LRMP, 2011). The dominant vegetation within the Rolling Prairie Geographic Area includes hardwood draws of green ash and chokecherry, uplands of blue grama (*Bouteloua gracilis*) and little bluestem (*Schizachyrium scoparium*), rolling grasslands of western wheatgrass and prairie Junegrass, and terraces of buffaloberry and silver sagebrush (LRMP, 2011)..

Within the Project Area, the six dominant vegetation communities that occur along the proposed pipeline right-of-way and associated infrastructure include grassland, agriculture, shrubland, woodland, wetland/waterbody, and developed lands. Native prairie is of special concern where crossed by the Project. Revegetation and right-of-way reclamation plans are included in the CRMP.

3.2.16 Soil

Water erosion is the detachment and movement of soil by water. Natural erosion rates depend on inherent soil properties, slope, soil cover, and climate. Approximately 68 percent of the soils crossed by the Project route are highly erodible to water. Wind erosion is the physical wearing of the earth's surface by wind. Wind erosion removes and redistributes soil. Small blowout areas may be associated with adjacent areas of deposition at the base of plants or behind obstacles, such as rocks, shrubs, fence rows, and roadbanks (Soil Quality Institute, 2001). Wind erodible soils comprise approximately 4 percent of the soils crossed by the Project route.

Soil compaction occurs when soil particles are pressed together and the pore spaces between them are reduced and bulk density is increased. Moist fine textured soils are most susceptible to severe compaction. Approximately 2 percent of the soils crossed by the Project route are compaction prone.

Soils that are droughty have physical characteristics that may limit plant growth due to low water holding capacity. In addition, the success of stabilization and restoration efforts in these areas may be limited unless additional treatments and practices are employed to offset the adverse physical characteristics of the soils. Approximately 4 percent of the soils crossed by the Project route are considered droughty.

Hydric soils are soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part of the soil profile. These soils are commonly associated with floodplains, lake plains, basin plains, riparian areas, wetlands, springs, and seeps. Approximately one percent of the soils crossed by the Project route have at least one component of the map unit that is hydric. Smaller areas of hydric soils may exist but may not be captured due to the scale of mapping.

Soils with a shallow depth to bedrock include those that have lithic (hard) unweathered bedrock and paralithic (soft) weathered bedrock less than 60 inches from the soil surface. These conditions can be an important consideration for trenching techniques and/or the need for blasting. Approximately 54 percent of the soils crossed by the Project route have a shallow depth to bedrock, primarily of the paralithic type.

During construction, the effectiveness of temporary erosion control devices, including pocks, interceptor diversions, and sediment filter devices (e.g., hay bales and silt fences), will be monitored by CEBCS' Environmental Inspectors (EIs). The effectiveness of revegetation and permanent erosion control devices will be monitored by CEBCS' operating personnel during the long-term operation and maintenance of the pipeline system. Erosion control devices will be maintained until the right-of-way is revegetated successfully. Following successful revegetation of construction areas, temporary erosion control devices will be removed. An *Environmental Inspection and Compliance Monitoring Plan* is included as Appendix M.

4.0 CONSTRUCTION OF THE FACILITY

4.1 MAJOR FACILITIES

Pipeline construction will begin as soon as all permits and rights-of-way have been secured and Notices to Proceed (NTPs) have been issued by the BLM, weather conditions permitting. Construction is expected to start by July 2013, with all Project facilities completed and in-service by October 2013. Construction will occur in a planned and orderly sequence of operations along the right-of-way. CEBCS will conduct all activities associated with the construction, operation, and reclamation within the authorized limits of the right-of-way, facility sites, and additional temporary workspaces. CEBCS will notify BLM's AO and all other surface owners 24 hours prior to commencing construction. Construction will involve the following steps (see Figure 1 of Appendix C):

One of CEBCS' objectives during pipeline route selection was to collocate the Project route to the maximum extent practicable with existing road and utility rights-of-way; however few existing pipeline, utility, or road corridors exist that connect the well pad locations efficiently. Approximately 58 percent of the 68.5 miles of pipeline to be constructed will be collocated with existing pipeline, utility, or road rights-of-way.

4.1.1 Construction and Permanent Rights-of-Way

The construction and permanent right-of-way configurations for the pipeline route are summarized in Table 4.1.1-1. Locations where a single pipeline is proposed will be 50 feet wide on federal land, 100 feet on state and private lands and 60 feet through wetlands and waterbodies. Where two pipelines are proposed, the typical construction right-of-way will be 80 feet on federal land, 125 feet on state and private lands, and 75 feet through wetlands. Additional temporary workspaces (ATWS) along, but outside, the nominal right-of-way will be needed to facilitate equipment turnarounds, equipment parking areas, pipe and pipe fitting storage, and steep slope construction. CEBCS considers the proposed nominal construction right-of-way width and proposed additional temporary workspace locations to be the minimum necessary to construct the project in an efficient and safe manner. Both the typical right-of-way and extra workspaces are needed to provide adequate space for segregating topsoil and assuring the safe handling of materials and operation of equipment. CEBCS anticipates stripping topsoil over the full right-of-way width through most of the project, which will require significant space for segregation of soils especially through steep, rocky terrain and across 'sidehills.' CEBCS will obtain landowner/land managing agency approval for all construction right-of-way workspace identified for the Bear Den Project prior to their use. CEBCS will also confirm cultural resource and special status species clearances for these areas.

Table 4.1.1-1

Bear Den Project
Proposed Construction Right-of-Way (CROW) and Permanent Right-of-Way (PROW)
by Landowner or Habitat Type Where There is a Single or Double Pipeline

	Landowner			
Pipeline/Right-of-Way	Federal	North Dakota Department Trust Lands	Privately Owned	Wetlands and Waterbodies
Single Pipeline				
CROW (feet wide)	50	100	100	60
PROW (feet wide)	20	33	50	50
Two Pipelines				
CROW (feet wide)	80	125	125	75
PROW (feet wide)	50	33	50	50

Drawings that depict the typical temporary construction and permanent right-of-way widths, pipeline offsets and associated configurations for this Project are provided in Appendix B. These figures represent the following typical pipeline installation scenarios:

- single pipeline Installation (10.2 miles of right-of-way), 100-foot-wide construction right-of-way and 50-foot-wide permanent right-of-way on privately owned lands;
- 100-foot-wide construction right-of-way and 33-foot-wide permanent right-of-way on North Dakota Department of Trust Lands;
- 50-foot-wide construction right-of-way and 20-foot-wide permanent right-of-way on federal lands;

- within wetlands and waterbodies, a 60-foot-wide construction right-of-way and a 50-foot-wide permanent right-of-way will be used;

- dual pipeline Installation (58.9 miles of right-of-way), 125-foot-wide construction right-of-way and 50-foot-wide permanent right-of-way on privately owned lands;

- 125-foot-wide construction right-of-way and 33-foot-wide permanent right-of-way on North Dakota Department Trust Lands;

- 80-foot-wide construction right-of-way and 50-foot-wide permanent right-of-way on federal lands;

- 75-foot-wide construction right-of-way and 50-foot-wide permanent right-of-way within wetlands and waterbodies; and

- where the pipeline traverses rugged terrain, a wider width construction right-of-way will be required based on site-specific conditions.

4.1.2 Temporary Workspaces and Contractor Yards

CEBCS will utilize additional temporary workspace (ATWS) and two contractor yards for construction, laydown, and parking during construction of the Project. ATWS (outside the typical construction right-of-way) will be needed at selected road, wash, and wetland or waterbody crossings; pipeline crossings; pipeline valve locations; pipe laydown areas; and in special situations where required such as near existing pipe or power lines and at the beginning and end of the project to tie the proposed new facilities into existing facilities. Extra workspace is intended to provide additional room for safe working, for long radius truck turns, for stockpiling trenched and graded materials, for safe trenching and installation of the pipeline, and where CEBCS has identified particularly rugged terrain, side slopes, deep wash crossings, foreign pipeline crossings, or access approaches. Table 4.1.2-1 lists the ATWS locations and their dimensions outside the typical construction right-of-way required for the project.

TABLE 4.1.2-1

Bear Den Project
Proposed Extra Temporary Workspaces Along the Project Corridor

Milepost (MP) Begin	Width (feet)	Length (feet)	Temporary Area Affected (acres) [a]	Reason [b]	Land Ownership
AR at MP 0.2	25	50	0.028	Constructability (steep slope)	Private
AR at MP 0.4	25	50	0.028	Constructability (steep slope)	Private
AR at MP 2.2	25	50	0.028	Road crossing	Private
AR at MP 2.2	25	50	0.028	Road crossing	Private
AR at MP 2.4	25	50	0.028	Road crossing	Private
AR at MP 3.6	25	50	0.028	Road crossing	Private
AR at MP 3.6	25	50	0.028	Road crossing	Private
AR at MP 4.0	25	50	0.028	Pipeline crossing	U.S. Forest Service (USFS)
AR at MP 4.0	25	70	0.080	Pipeline crossing	USFS
AR at MP 5.9	25	50	0.028	Waterbody crossing and constructability (steep slopes)	USFS
AR at MP 6.1	25	50	0.028	Waterbody crossing and constructability (steep slopes)	USFS
AR at MP 6.9	25	50	0.028	Road crossing	State
AR at MP 7.0	25	50	0.028	Road crossing	Private
AR at MP 7.4	25	50	0.028	Pipeline crossing	Private
AR at MP 7.4	25	50	0.028	Pipeline crossing	Private
AR at MP 7.4	45	90	0.150	Pipeline crossing	Private
AR at MP 8.2	25	50	0.028	Constructability (woody draw)	Private
AR at MP 8.2	25	50	0.028	Constructability (woody draw)	Private
AR at MP 8.5	25	50	0.028	Road crossing	Private
AR at MP 8.5	25	50	0.028	Road crossing	Private
AR at MP 8.8	25	50	0.028	Constructability (woody draw)	Private
AR at MP 8.8	25	50	0.028	Constructability (woody draw)	Private
AR at MP 9.5	25	50	0.028	Road crossing	Private
AR at MP 9.5	25	50	0.028	Road crossing	Private
AR at MP 10.6	25	50	0.028	Pipeline crossing	Private
AR at MP 10.6	25	50	0.028	Pipeline crossing	Private
AR at MP 10.8	25	50	0.028	Road crossing	Private
AR at MP 10.9	25	50	0.028	Road crossing	Private
AR at MP 11.9	25	50	0.028	Pipeline crossing	Private
AR at MP 12.0	25	50	0.028	Pipeline crossing	Private
AR-06 at MP 0.0	25	50	0.026	Road crossing	Private
AR-07 at MP 0.1	25	50	0.023	Road crossing	Private
AR-07 at MP 0.1	25	50	0.026	Road crossing	Private
AR-08 at MP 0.0	25	50	0.026	Road crossing	Private
AR-15 at MP 0.1	25	50	0.028	Road crossing	Private
AR-15 at MP 0.2	25	50	0.028	Road crossing	Private
AR-16 at MP 0.0	25	50	0.028	Road crossing	Private

TABLE 4.1.2-1 (cont'd)

Bear Den Project
Proposed Extra Temporary Workspaces Along the Project Corridor

Milepost (MP) Begin	Width (feet)	Length (feet)	Temporary Area Affected (acres) [a]	Reason [b]	Land Ownership
AR-16 at MP 0.0	25	50	0.028	Wetland/waterbody crossing	Private
AR-16 at MP 0.1	25	50	0.028	Wetland/waterbody crossing	Private
AR-16 at MP 0.3	25	50	0.028	Pipeline crossing	Private
AR-16 at MP 0.4	25	50	0.028	Pipeline crossing	Private
AR-17 at MP 0.1	25	50	0.023	Road crossing	Private
AR-17 at MP 0.1	25	50	0.023	Road Crossing	Private
AR-19 at MP 0.0	25	50	0.028	Wetland and road crossing	Private
AR-19 at MP 0.3	25	50	0.028	Bore: constructability (steep wooded slope)	Private
AR-19 at MP 0.4	25	50	0.028	Bore: constructability (steep wooded slope)	Private
AR-20 at MP 0.2	25	50	0.026	Bore location: constructability (waterbody crossing; steep slopes into a drill pad location)	Bureau of Land Management (BLM)
AR-20 at MP 0.2	50	480	0.550	Pipe stringing location for horizontal directional drill (HDD)	BLM/Private
AR-20 at MP 0.4	140	635	1.244	Pipe stringing location for HDD of AR 13	Private
AR-20 at MP 0.6	25	50	0.028	Road crossing	Private
AR-20 at MP 0.7	25	50	0.028	Road crossing	Private
AR-20 at MP 0.7	25	50	0.028	Two wetland/waterbody crossings	Private
AR-20 at MP 0.9	25	50	0.028	Two Wetland/Waterbody Crossings	Private
AR-21 at MP 0.0	25	50	0.028	Wetland and road crossing	Private
AR-21 at MP 0.1	25	50	0.028	Wetland and road crossing	Private
AR-21 at MP 1.0	25	50	0.028	Road crossing	Private
AR-22 at MP 0.0	33	477	0.362	Pipe stringing location for HDD	State
AR-22 at MP 0.1	25	50	0.028	Constructability (steep side slope and road constraints)	State
AR-22 at MP 0.2	25	50	0.028	Constructability (steep side slope and road constraints)	State
AR-22 at MP 0.3	33	437	0.331	Pipe stringing locations for HDD	Private
AR-22 at MP 0.3	25	50	0.028	Waterbody and road crossing	Private
AR-22 at MP 0.4	25	50	0.028	Waterbody and road crossing	Private
AR-22 at MP 0.7	25	50	0.028	Wetland and road crossing	Private
AR-22 at MP 0.8	25	50	0.028	Wetland and road crossing	Private
AR-22 at MP 1.0	25	50	0.028	Road crossing	Private
AR-24 at MP 0.0	50	517	0.594	Pipe stringing location for HDD	USFS
AR-24 at MP 0.1	25	50	0.028	Constructability	USFS
AR-24 at MP 0.3	25	50	0.028	Constructability	USFS
AR-24 at MP 0.6	25	50	0.028	Road crossing	USFS
AR-24 at MP 0.6	25	50	0.028	Road crossing	USFS

TABLE 4.1.2-1 (cont'd)

Bear Den Project
Proposed Extra Temporary Workspaces Along the Project Corridor

Milepost (MP) Begin	Width (feet)	Length (feet)	Temporary Area Affected (acres) [a]	Reason [b]	Land Ownership
AR-24 at MP 0.8	25	50	0.028	Constructability and multiple wetland/waterbody crossings	USFS
AR-24 at MP 1.1	25	50	0.028	Constructability and multiple wetland/waterbody crossings	USFS
AR-24 at MP 1.2	25	50	0.028	Constructability	USFS
AR-24 at MP 1.2	25	50	0.028	Constructability	USFS
AR-25 at MP 0.4	25	590	0.339	Constructability (steep side slope)	USFS
AR-25 at MP 0.5	25	50	0.028	Wetland crossing	USFS
AR-25 at MP 0.8	25	50	0.028	Wetland crossing	USFS
AR-25 at MP 0.8	25	50	0.028	Wetland crossing	USFS
AR-25 at MP 1.2	25	50	0.028	Wetland/waterbody crossing	Private
AR-25 at MP 1.2	25	50	0.028	Wetland/waterbody crossing	Private
AR-25 at MP 1.8	25	50	0.028	Constructability	State
AR-25 at MP 1.9	25	50	0.028	Constructability	State
AR-25 at MP 3.0	25	50	0.028	Waterbody crossing	USFS
AR-25 at MP 3.1	25	50	0.028	Waterbody crossing	USFS
AR-26 at MP 1.0	25	50	0.028	Road crossing	Private
AR-26 at MP 1.0	25	50	0.028	Road crossing	Private
AR-26 at MP 1.0	42	113	0.110	Pipe stringing location for HDD	Private
AR-27 at MP 0.7	25	50	0.028	Road crossing	Private
AR-27 at MP 0.7	25	50	0.028	Road crossing	Private
AR-27 at MP 1.1	25	1,971	1.131	Constructability (steep side slope)	USFS
AR-27 at MP 1.8	25	360	0.206	Constructability (steep side slope)	USFS
AR-27 at MP 2.2	25	50	0.028	Wetland/waterbody crossing	Private
AR-27 at MP 2.3	25	50	0.028	Wetland/waterbody crossing	Private
AR-27 at MP 2.8	25	50	0.028	Wetland/waterbody crossing	Private
AR-27 at MP 2.8	25	50	0.028	Wetland/waterbody crossing	Private
AR-28 at MP 0.0	25	50	0.028	Drill to well pad	Private
AR-28 at MP 0.0	25	50	0.028	Road crossing	Private
AR-28 at MP 0.1	25	50	0.028	Road crossing	Private
AR-28 at MP 1.1	25	50	0.028	Road crossing	Private
AR-28 at MP 2.2	25	50	0.028	Road crossing	Private
AR-28 at MP 2.2	25	50	0.028	Road crossing	Private
AR-28 at MP 2.5	25	50	0.028	Road crossing	Private
AR-28 at MP 2.5	25	50	0.028	Road crossing	Private
AR-28 at MP 2.9	25	50	0.028	Road crossing	Private
AR-28 at MP 2.9	25	50	0.028	Road crossing	Private
AR-28 at MP 2.9	25	50	0.028	Road crossing	Private
AR-28 at MP 3.0	25	50	0.028	Road crossing	Private

TABLE 4.1.2-1 (cont'd)

Bear Den Project
Proposed Extra Temporary Workspaces Along the Project Corridor

Milepost (MP) Begin	Width (feet)	Length (feet)	Temporary Area Affected (acres) [a]	Reason [b]	Land Ownership
AR-29 at MP 0.0	25	50	0.028	Road crossing	Private
AR-29 at MP 0.1	25	50	0.028	Road crossing	Private
AR-29 at MP 1.6	25	50	0.028	Wetland crossing	Private
AR-29 at MP 1.6	25	50	0.028	Wetland crossing	Private
AR-29 at MP 2.1	25	50	0.028	Road crossing	Private
AR-30 at MP 0.0	25	50	0.028	Pipeline interconnect; waterbody and two road crossings	Private
AR-30 at MP 0.0	25	50	0.028	Pipeline interconnect; waterbody and two road crossings	Private
AR-30 at MP 0.5	25	50	0.028	Road crossing	Private
AR-30 at P 0.5	25	50	0.028	Road crossing	Private
AR-30 at MP 1.1	25	50	0.028	Road crossing	Private
AR-30 at MP 1.1	25	50	0.028	Road crossing	Private
AR-30 at MP 1.8	25	50	0.028	Constructability (steep slopes)	Private
AR-30 at MP 2.1	25	50	0.028	Constructability (steep slopes)	Private
AR-30 at MP 2.3	30	70	0.051	Pipe stringing location for HDD	STLAND
AR-30 at MP 2.4	25	50	0.028	Waterbody crossing	STLAND
AR-30 at MP 2.4	25	50	0.028	Waterbody crossing	STLAND
AR-30 at MP 3.2	33	47	0.035	Pipe stringing location for HDD	STLAND
AR-30 at MP 3.2	28	370	0.239	Pipe stringing location for HDD	STLAND
AR-30 at MP 3.3	25	50	0.028	Waterbody crossing	STLAND
AR-30 at MP 3.5	25	50	0.028	Waterbody crossing	Private
AR-30 at MP 4.1	25	50	0.028	Road crossing	Private
AR-30 at MP 4.2	25	50	0.028	Road crossing	Private
AR-30 at MP 4.5	25	50	0.028	Side slope constraints, waterbody crossing and road crossing	Private
AR-30 at MP 4.7	25	50	0.028	Side slope constraints, waterbody crossing and road crossing	Private
AR-30 at MP 4.8	25	50	0.028	Waterbody crossing	Private
AR-30 at MP 4.8	25	50	0.028	Waterbody crossing	Private
AR-30 at MP 5.2	25	50	0.028	Waterbody crossing	Private
AR-30 at MP 5.3	25	50	0.028	Waterbody crossing	Private
AR-30 at MP 5.6	25	50	0.028	Waterbody crossing	Private
AR-30 at MP 5.7	25	50	0.028	Waterbody crossing	Private
AR-30 at MP 5.9	25	50	0.028	Waterbody crossing	Private
AR-30 at MP 6.0	25	50	0.028	Waterbody crossing	Private
AR-30 at MP 6.4	25	50	0.028	Waterbody crossing	Private
AR-30 at MP 6.4	25	50	0.028	Waterbody crossing	Private
AR-30 at MP 7.0	25	90	0.057	Staging for two drills: constructability (steep slopes)	Private

TABLE 4.1.2-1 (cont'd)

Bear Den Project
Proposed Extra Temporary Workspaces Along the Project Corridor

Milepost (MP) Begin	Width (feet)	Length (feet)	Temporary Area Affected (acres) [a]	Reason [b]	Land Ownership
AR-30 at MP 7.5	25	50	0.028	Staging for drill: constructability (steep slopes)	Private
AR-30 at MP 7.6	75	615	1.061	Pipe stringing location for HDD	Private/STLAND
AR-30 at MP 11.2	25	50	0.028	Waterbody crossing – Little Missouri River	Private
AR-30 at MP 11.7	25	50	0.028	Waterbody crossing – Little Missouri River	Private
AR-31 at MP 0.0	25	50	0.028	Wetland crossing	USFS
AR-31 at MP 0.1	25	50	0.028	Wetland crossing and avoid sensitive resource	USFS
AR-31 at MP 0.8	25	50	0.028	Waterbody crossing	USFS
AR-31 at MP 0.9	25	50	0.028	Waterbody crossing	USFS
AR-31 at MP 3.2	25	650	0.373	Constructability (steep side slopes and road constraints)	USFS
AR-31 at MP 2.4	25	50	0.028	Road crossing	USFS
AR-31 at MP 2.5	25	50	0.028	Constructability (side slope)	USFS
AR-31 at MP 2.6	25	50	0.028	Constructability (side slope)	USFS
AR-31 at MP 2.8	25	50	0.028	Road crossing	USFS
AR-31 at MP 2.9	25	50	0.028	Road crossing	USFS
AR-31 at MP 3.4	25	50	0.028	Constructability and road crossing	USFS
AR-31 at MP 3.6	25	50	0.028	Road crossing	USFS
AR-31 at MP 3.6	250	25	0.145	Constructability (steep side slope and road)	USFS
AR-31 at MP 3.6	25	50	0.028	Road crossing	USFS
AR-31 at MP 3.6	25	50	0.028	Road crossing	USFS
AR-31 at MP 3.6	25	1,155	0.663	Constructability (steep slope, waterbody and road constraints)	USFS
AR-31 at MP 4.1	25	50	0.028	Waterbody crossing	USFS
AR-31 at MP 4.2	25	50	0.028	Waterbody crossing	Private
AR-31 at MP 4.6	25	50	0.028	Waterbody crossing	USFS
AR-31 at MP 4.6	25	50	0.028	Waterbody crossing	USFS
AR-31 at MP 4.9	25	50	0.028	Constructability	Private
AR-31 at MP 5.0	25	50	0.028	Avoid sensitive resource	Private
AR-31 at MP 7.5	25	50	0.028	Constructability	Private
AR-31 at MP 8.9	25	50	0.028	Multiple waterbody and wetland crossings and avoid a sensitive resource	Private
AR-31 at MP 9.3	25	50	0.028	Multiple waterbody and wetland crossings	BLM
AR-32 at MP 2.3	25	50	0.028	Road crossing	Private
AR-32 at MP 2.4	25	50	0.028	Road crossing	Private
AR-32 at MP 2.6	25	50	0.028	Road crossing	Private
AR-32 at MP 2.7	25	50	0.028	Road crossing	Private

TABLE 4.1.2-1 (cont'd)

Bear Den Project
Proposed Extra Temporary Workspaces Along the Project Corridor

Milepost (MP) Begin	Width (feet)	Length (feet)	Temporary Area Affected (acres) [a]	Reason [b]	Land Ownership
AR-34 at MP 1.0	75	175	0.303	Pipe stringing location for HDD	Private
AR-34 at MP 1.0	25	50	0.028	Road crossing	Private
AR-34 at MP 1.0	25	50	0.028	Road crossing	Private
AR-34 at MP 1.7	25	50	0.028	Road crossing	Private
AR-34 at MP 1.8	25	50	0.028	Road crossing	Private
AR-34 at MP 1.9	25	50	0.028	Constructability (steep slope)	Private
AR-34 at MP 2.0	25	50	0.028	Constructability (steep slope)	Private
AR-34 at MP 2.5	25	50	0.028	Constructability (steep slope and wetland/waterbody crossing)	Private
AR-34 at MP 2.6	25	50	0.028	Constructability (steep slope and wetland/waterbody crossing)	Private
AR-34 at MP 2.7	25	50	0.028	Road crossing	Private
AR-34 at MP 2.8	25	50	0.028	Road crossing	Private
AR-35 at MP 0.1	25	50	0.028	Road crossing	USFS
AR-35 at MP 0.1	25	50	0.028	Road crossing	USFS
AR-35 at MP 0.2	25	50	0.028	Wetland crossing and constructability (steep slopes)	USFS
AR-35 at MP 0.4	25	50	0.028	Wetland crossing and constructability (steep slopes)	USFS
AR-35 at MP 0.4	25	50	0.028	Road crossing	USFS
AR-35 at MP 0.5	25	50	0.028	Road crossing	USFS
AR-35 at MP 0.5	25	50	0.028	Wetland/waterbody/woody drawing crossing	USFS
AR-35 at MP 0.6	25	50	0.028	Wetland/waterbody/woody drawing crossing	USFS
AR-35 at MP 0.7	25	50	0.028	Constructability (steep slope)	USFS
AR-35 at MP 0.8	25	50	0.028	Constructability (steep slope)	USFS
AR-35 at MP 2.1	25	50	0.028	Constructability (steep slope)	Private
AR-35 at MP 2.2	25	50	0.028	Constructability (steep slope)	USFS
Total Acreage:			**12.985**		

[a] Only includes temporary workspaces beyond the typical construction right-of-way.
[b] All 25-foot by 50-foot locations are associated with a HDD entry/exit location.

All equipment and vehicular access to the pipeline will be confined to existing and temporary, approved access roads (see Table 4.1.2-2 and *Transportation Management Plan,* Appendix N) and established rights-of-way. All roads used for project access will be returned to their original condition after pipeline construction is completed, unless other agreements are made in writing with the appropriate land management agency office or landowner. Equipment used for construction will include trenchers, tractor-trailers, 2-ton trucks, pickup trucks, ditch-padding machines, seed drills, tractors, backhoes, side-boom, welding trucks, water trucks, or other similar equipment as needed. Dust generated during construction activities will be controlled by water spraying as necessary. Water used for dust control on roads will be obtained from municipal sources.

TABLE 4.1.2-2

Bear Den Project
Roads and Crossing Method

Road Name	Segment and Milepost (MP)	Crossing Method	Bore Length (feet)	Condition
Private Road	Main AR at MP 4.6	Horizontal directional drill (HDD)	150	Improved scoria
County Road 34	Main AR at MP 4.8	HDD	275	Improved gravel
County Road 34	Main AR at MP 6.0	HDD	150	Improved gravel
County Road 34	Main AR at MP 7.6	HDD	175	Improved gravel
Private Road	Main AR at MP 9.4	HDD	500	Improved scoria
Private Road	Main AR at MP 10.9	HDD	150	Gravel
County Road 34	Main AR at MP 11.9	HDD	250	Improved gravel
County Road 34	Main AR at MP 13.2	HDD	250	Improved gravel
Forest Service Road No. 856	AR-03 at MP 0.1	HDD	150	Improved scoria
Private Road	AR-06 at MP 0.1	HDD	200	Improved scoria
Private Road	AR-07 at MP 0.1	HDD	150	Improved scoria
Private Road	AR-08 at MP 0.1	HDD	150	Improved scoria
Private Road	AR-08 at MP 0.1	HDD	1,200	Improved scoria
Private Road	AR-15 at MP 0.1	HDD	165	Improved scoria
Private Road	AR-15 at MP 0.2	HDD	150	Improved scoria
125th Avenue NW	AR-16 at MP 0.1	HDD	150	Improved gravel
Private Road	AR-17 at MP 0.1	HDD	300	Improved scoria
Private Road	AR-19 at MP 0.1	HDD	300	Improved scoria
Private Road	AR-20 at MP 0.1	HDD	1,000	Improved scoria
112th Avenue NW	AR-20 at MP 0.7	HDD	150	Improved scoria
23rd Street NW	AR-21 at MP 0.1	HDD	400	Improved gravel
107th NW	AR-22 at MP 0.1	HDD	800	Improved scoria
107th NW	AR-22 at MP 0.4	HDD	700	Improved scoria
107th NW	AR-22 at MP 0.8	HDD	150	Improved scoria
Private Road	AR-22 at MP 1.1	HDD	200	Improved scoria
Forest Service Road No. 856	AR-24 at MP 0.7	HDD	150	Improved scoria
Private Road	AR-26 at MP 1.0	HDD	150	Improved scoria
Private Road	AR-28 at MP 0.1	HDD	150	Improved scoria
117th Avenue SW	AR-28 at MP 1.1	HDD	100	Improved scoria
Private Road	AR-28 at MP 2.3	HDD	175	Improved scoria
Private Road	AR-28 at MP 2.5	HDD	100	Improved gravel
Private Road	AR-28 at MP 2.9	HDD	150	Improved gravel
16th Street NW	AR-28 at MP 3.0	HDD	250	Improved gravel
Private Road	AR-29 at MP 2.4	HDD	175	Improved gravel
Private Road	AR-29 at MP 2.7	HDD	200	Improved gravel
Private Road	AR-29 at MP 3.0	HDD	150	Improved gravel
112th Avenue SW	AR-29 at MP 5.0	HDD	100	Improved gravel
Private Road	AR-30 at MP 1.0	HDD	175	Improved scoria
Private Road	AR-30 at MP 1.8	HDD	300	Improved scoria
Private Road	AR-30 at MP 2.8	HDD	325	Improved scoria
111th Avenue NW	AR-30 at MP 3	HDD	400	Improved scoria
111th Avenue NW	AR-30 at MP 3.5	HDD	160	Improved scoria
Private Road	AR-30 at MP 4.1	HDD	100	Improved scoria
Private Road	AR-30 at MP 7.2	HDD	425	Improved scoria
112th Avenue SW	AR-30 at MP 7.6	HDD	150	Improved gravel

TABLE 4.1.2-2 (cont'd)

Bear Den Project
Roads and Crossing Method

Road Name	Segment and Milepost (MP)	Crossing Method	Bore Length (feet)	Condition
120th Avenue NW	AR-31 at MP 0.1	HDD	200	Improved gravel
120th Avenue NW	AR-31 at MP 0.5	HDD	150	Improved gravel
Forest Service Road No. 856	AR-31 at MP 7.0	HDD	175	Improved gravel
Forest Service Road No. 856	AR-31 at MP 7.4	HDD	175	Improved gravel
Forest Service Road No. 856	AR-31 at MP 8.1	HDD	900	Improved gravel
Forest Service Road No. 856	AR-31 at MP 8.2	HDD	200	Improved gravel
Private Road	AR-31 at MP 12.7	HDD	150	Improved scoria

4.1.3 Surveying and Staking

In preparation for surveying and staking, CEBCS will coordinate with local utilities within and adjacent to the proposed right-of-way utilizing the One Call system. The pipeline construction right-of-way will be offset from existing parallel facilities by at least 20 feet from their centerlines, with centerlines being generally separated by 50 feet to allow adequate right-of-way area for safe construction and maintenance. Prior to construction, the final pipeline alignment and support facility locations will be surveyed. During "one calls" the contractor will pot-hole as necessary. The right-of-way centerline and boundaries will be staked, as will be staging areas, environmental avoidance areas, and construction control points. Boundary stakes will be maintained until final cleanup and reclamation are complete. Permission from landowners will be obtained, as necessary, prior to entering property to conduct any alignment or property surveys.

Minor realignments may be required during construction to avoid unforeseen geotechnical, topographical, archaeological, utility encroachment, or other sensitive areas. However, all realignments will be authorized by the BLM prior to disturbance and will remain within cultural, paleontological, and biological/physical resource survey corridors. If realignment must deviate from the previously surveyed corridor, new surveys and reports will be completed prior to a realignment approval.

CEBCS will protect all survey monuments, witness corners, reference monuments, and bearing trees within the right-of-way against disturbance during construction, operation, maintenance, and reclamation. Survey monuments include, but are not limited to, General Land Office and Bureau of Land Management Cadastral Survey Corners, reference corners, witness points, U.S. Coastal and Geodetic benchmarks and triangulation stations, military control monuments, and recognizable civil (both public and private) survey monuments. If any monument, corner, or accessory is destroyed, or damaged, CEBCS will arrange for a registered land surveyor to restore the monument according to guidance found in the *Manual of Surveying Instruction for the Survey of Public Lands of the United States,* 1973 edition. CEBCS will record the survey, as applicable, and send a copy to the BLM AO. CEBCS will notify other authorized federal right-of-way and/or leaseholders of any pipeline crossings or overlaps. Any associated building or zoning permits on river, creek, or utility crossings will be secured from the appropriate regulatory agency or private entity prior to pipeline construction and copies of associated permits will be submitted to BLM, if applicable.

4.1.4 Clearing and Topsoil Salvage

The temporary construction right-of-way will be cleared of trees and obstructions and graded to provide a relatively flat surface to accommodate construction equipment, while preserving natural drainage to the extent possible. Clearing on the spoil side will be limited to that which is necessary for the installation of the facilities. Soil, brush, roots, and rocks removed from the working side of the right-of-way will be windrowed on the outer edge of the temporary right-of-way during construction. Vegetation buffers of appropriate width will be left between additional temporary workspace and waterbodies and wetlands.

Fences that require cutting during clearing activities will be braced during construction. Temporary fence sections or gates will be installed to prevent livestock from drifting into adjacent areas. Fences will be repaired at the conclusion of construction to specifications of the BLM and/or the affected landowner.

CEBCS will perform topsoil segregation in actively cultivated agricultural lands, which include permanent or rotated croplands, hayfields, or improved pastures, and in other areas at the request of resource agencies or landowners. Where the pipeline traverses rugged terrain, a wider width construction right-of-way will be required, based on site-specific conditions. CEBCS anticipates stripping topsoil over the full right-of-way width through most of the project, which will require significant space for segregation of soils. Any conserved topsoil and excavated soils will be stockpiled along one side of the right-of-way (the spoil side), allowing the other side (the working side) to be used for access, material transport, and pipe assembly. In limited instances, topsoil may be stockpiled along the edge of both sides of the construction right-of-way.

4.1.5 Grading and Trenching

The construction area will be graded as necessary to create a relatively flat working surface for the heavy equipment and vehicles used in subsequent construction activities. During grading, topsoil will typically be stripped from over the entire construction right-of-way and placed in a discrete row along the edge of the temporary right-of-way to be kept segregated from subsoil that is excavated from the trench. Existing permanent survey monuments and reference monuments within the pipeline right-of-way will be protected against disturbance during construction. In sloping areas, conventional single-cut grading will be used. Specialized side slope construction techniques (i.e., making the work and trenching areas with two cuts on steep slopes) may be used.

After grading, the two pipeline trenches will be dug in sequence with a wheel ditcher or trencher where feasible. The steel, crude oil and the composite, produced water pipeline will be constructed by separate construction crews working independently of one another, with the steel pipeline construction spread preceding the composite pipeline construction spread. In rocky areas or where the pipeline changes direction, a backhoe may be used to dig each trench. The pipelines will be buried in an approximately 5- to 10-foot-wide and 7-foot deep trench. At stream and wash crossings, the trench will be a minimum of 7 feet below the streambed or, if not viable, at a depth deep enough to minimize environmental impacts to the streambed and a depth that is also satisfactory to those charged with construction and regulatory oversight. Though unanticipated, if bedrock is encountered, the trench depth will be at least 7 feet deep, sufficient to bury and cover the pipe.

Spoil and topsoil will be windrowed separately along the trench. Gaps will be left in the windrows as necessary to permit natural drainage and to prevent excessive water erosion in the

event that the construction segment receives storm runoff. No spoil or topsoil will be placed outside the approved right-of-way. Periodic gaps would be left in the topsoil and subsoil windrows to allow livestock and wildlife movement (if applicable) and periodic trench plugs or ramps would be maintained to prevent livestock or wildlife trappings in the excavated trench.

In areas of loose rock, a large bulldozer equipped with a single-shank ripper will precede backhoes. Trenching will be performed by mechanical rock breaking or drilling. No blasting is anticipated during construction of the Project. In the unlikely event that blasting is necessary to excavate the trench; CEBCS will conduct blasting in accordance with pertinent regulations and the *Blasting Plan* (Appendix O).

4.1.6 Pipeline Stringing, Bending, Welding, and Coating

The pipelines will be installed sequentially. The steel, crude oil and the composite, produced water pipeline will be constructed by separate construction crews working independently of one another, with the steel pipeline construction spread preceding the composite pipeline construction spread. In essence, the proposed work can be viewed as requiring two separate construction rights-of-way, which will partially overlap one another.

Steel pipe for the crude oil pipeline and other construction materials will be hauled to the construction site by truck and stored along the right-of-way. Pipe will be strung along the trench within the right-of-way. Stringing, bending, welding, and lowering-in of the pipeline will typically occur on the working side of the trench. In rocky areas, the trench will be padded by screening trench spoil to create finer bedding material or using a layer of rock-free soil that will be imported from a borrow pit; topsoil will not be used for ditch padding. A pipe-bending machine or equivalent technique will be used to bend the pipe to fit the trench. Sections of the steel pipe will be aligned with the trench and welded. A certified contractor will utilize visual, radiographic, sonic or other approved-equivalent inspection methods of welds. Any defects will be repaired or removed as required by DOT regulations. After welding, field joints will be coated with either a tape wrap or shrinkable sleeve wrap, and the pipeline coating will be visually and/or electronically inspected (jeeped), and any faults, scratches, or other coating defects will be repaired before the pipeline is lowered in. The trench will be backfilled after the pipeline has been lowered in the trench.

A separate crew would follow the crude oil pipeline construction crew and excavate the second trench for the produced water line. The waterline will be made of a high pressure composite material rather than steel. This line will be delivered to the right-of-way on spools, and deployed from the reel into the trench. The segments of pipe will be fastened using a swaged system of midline fittings that do not require welding or x-ray inspection. Once the pipe is positioned in the trench, the trench would be backfilled, and right-of-way reclamation would commence.

The same crews for the produced water line or crude oil pipeline would concurrently install an armored fiber optic line for communications from the various well pads facilities to the control center at the storage/transfer facility. Installation of the fiber optic lines will not require any additional excavation activities or land requirements, as fiber optic lines will be laid concurrent with the pipeline facilities and within the excavated pipeline trenches. Specifically, the armored fiber optic line will preferentially be laid within the produced water pipeline trench, but will be laid within the crude oil pipeline trench where only the single crude oil pipeline will be installed. At HDD locations a 1.5-inch-diameter PVC conduit will be pulled through the bore along with the produced water pipeline (or crude oil line where only a single pipeline will be

installed). Following conduit installation, the fiber optic line will be blown into place though the conduit. Small, aboveground fiber optic junction boxes will be installed at communication and splice points in the line, and these will be located at the planned aboveground facility locations (valve sites, lateral pipeline interconnects, etc.).

4.1.7 Backfilling and Erosion Control

The trench will then be backfilled using a bulldozer in combination with a moldboard, rotary auger back-filler, pipeline-padder, or other appropriate machine(s). Pipe trench backfill will generally consist of the material originally excavated from the trench. Soils will be replaced from the horizon in which they occur. First, subsoil will be returned to the trenched area. Topsoil will be replaced last at the ground level. In some cases, commercially available backfill material may be used. If encountered, cobble- and boulder-sized material will not be backfilled directly onto the pipe. As needed, select backfill (i.e., backfill that meets CEBCS' specifications) will be imported from off-site (e.g., commercial gravel pit). Rock shields may also be used as an alternative to pipeline padding.

Any excavated material, such as rock, that is not suitable for backfill may be redistributed on the right-of-way as agreed to by BLM or the landowner, or hauled away to a rock disposal area. All rock larger then 6-inches in diameter will be removed from the right-of-way. During backfilling activities, procedures will be implemented to minimize erosion, to restore the natural contour of the ground, and to allow normal surface drainage. To slow the flow of subsurface water along the trench in sloping terrain, burlap-type sacks filled with sand or foam-type or bentonite breakers will be placed within and across the trench. Installation and spacing of the trench breakers will be determined on a site-specific basis by the construction contractor in consultation with the Environmental Inspector. Where the trench intersects streams or ground water and where site conditions may affect the area's hydrology, the trench will be sealed with impervious materials such as trench breakers or clay.

After construction of the pipeline is completed, the work areas will be graded and restored, as nearly as practicable, to the original surface contours. The original topsoil will be evenly spread over the disturbed area. Soil will be mounded over the trench only to allow for normal soil settling. No crown will be installed over the trench line. Permanent soil stabilization efforts may include construction of water bars and/or silt barriers along surface contours of disturbed area, which will direct runoff into areas of low erosion potential.

Aboveground Pipeline Facilities

The construction of aboveground pipeline facilities, such as the storage/transfer facility, pig launchers/receivers, and block valves, will generally occur at the same time as the construction of the pipeline facilities. Therefore, activities such as clearing, grading, trenching, testing, and cleanup and restoration will generally occur as part of a single construction effort. Upon completion of construction, the aboveground components of these facilities will be painted a natural color, as specified by the BLM and the USFS, which will blend in with surrounding vegetation and soils. Aboveground facilities will be fenced and maintained to allow permanent access for operation and maintenance by CEBCS. The fenced areas require the conversion of rangeland to industrial/commercial land.

After pipeline construction is complete, markers will be installed at line-of-sight intervals and at road crossings to identify the pipeline location within the approved right-of-way. The steel pipeline will be protected from corrosion through use of external pipeline coating and

cathodic protection. The cathodic protection system will include impressed current rectifiers and buried anodes. Cathodic protection devices will be installed at aboveground facilities concurrent with pipeline construction, or once the pipeline is installed and the proper tests conducted. Test leads will be attached to the pipe at intervals based on the recommendations of a corrosion engineer near fence lines, roads, and pipeline crossings, as necessary, to monitor cathodic protection. Each set of test leads will be brought to a junction box mounted on a short (approximately 4 feet tall) post that will be installed where it will not interfere with existing land uses. The cathodic protection test leads, which appear similar to pipeline markers, will be the only visible portion of the cathodic protection facilities after construction.

4.1.8 Special Construction Techniques

Rugged and Steep Topography

In areas of side-slopes and rolling terrain, construction of some portions of the proposed Project may require specialized side slope construction techniques to establish safe working conditions (Appendix B). Under the side slope construction technique, the uphill side of the construction right-of-way will be cut during grading. The material removed from the cut will be used to fill the downhill side of the construction right-of-way to provide a safe and level surface from which to operate heavy equipment. The pipeline trench will then be excavated along the newly graded right-of-way. If required, the right-of-way may also be “two-toned.” For two-toned rights-of-way, the height of the construction (side) tone is usually as close to the height of the ditch as possible and the travel tone will be higher or lower than the height of the construction tone, depending on the area’s natural grade. Following backfill and final grading, the original contours will be restored as near as practicable and stabilized.

Wetland and Waterbody Construction

Construction across wetlands and waterbodies will be in accordance with applicable permit requirements and CEBCS’ CRMP (Appendix E). Overall, the wetland and waterbody crossing methods and mitigation measures identified in the CMRP are designed to minimize the extent and duration of construction-related disturbance within these features. The waterbody and wetland crossings required for the Project are listed in Tables 4.1.8-1 and 4.1.8-2.

The specific crossing procedures used to install the pipeline across wetlands will depend on the level of soil stability and saturation encountered during construction. Where not crossed via HDD, construction across unsaturated wetlands (those wetlands without standing water or saturated soils) that can support construction equipment will be conducted in a manner similar to the upland construction procedures described above. Where site-specific soil and saturation may not support construction equipment, construction mats will be used to minimize disturbance to wetland hydrology and maintain soil structure.

TABLE 4.1.8-1

Bear Ben Project
Waterbody Crossing Table

Line	Milepost	Waterbody ID	Waterbody Type	Waterbody Name	Crossing Method
AR	6.0	s-mc-c-007	Intermittent	Rough Creek	Horizontal Directional Drill (HDD)
AR-15/ARW-15	0.3	s-du-b-009	Intermittent	unnamed drainage	HDD*
AR-16	0.2	s-mc-b-012	Perennial	Spring Creek	HDD
AR-17/ARW-17	0.1	s-du-b-019	Intermittent	unnamed drainage	Open-cut
AR-17/ARW-17	0.3	s-du-b-018	Perennial	unnamed drainage	Open-cut
AR-19/ARW-19	0.4	sp-du-b-001	Spring	unnamed drainage	HDD
AR-19/ARW-19	0.5	s-du-b-015b	Intermittent	unnamed drainage	Open-cut
AR-20/ARW-20	0.2	s-du-b-038	Intermittent	unnamed drainage	HDD
AR-20/ARW-20	0.5	s-du-b-037	Intermittent	unnamed drainage	Open-cut
AR-20/ARW-20	0.8	s-du-b-029	Perennial	Bear Creek	HDD
AR-20/ARW-20	0.9	s-du-b-030	Perennial	Bear Creek	HDD
AR-20/ARW-20	0.9	s-du-b-030	Perennial	Bear Creek	HDD
AR-21/ARW-21	0.1	s-du-b-042	Perennial	unnamed drainage	HDD*
AR-22/ARW-22	0.4	s-du-b-013	Perennial	unnamed drainage	HDD
AR-24/ARW-24	0.9	s-mc-c-001a	Intermittent	Lone Beaver Creek	HDD
AR-24/ARW-24	0.9	s-mc-c-001a	Intermittent	Lone Beaver Creek	HDD
AR-24/ARW-24	0.9	s-mc-c-001a	Intermittent	Lone Beaver Creek	HDD
AR-24/ARW-24	1.0	s-mc-c-001a	Intermittent	Lone Beaver Creek	HDD
AR-25/ARW-25	1.2	s-mc-c-009	Perennial	Cherry Creek	HDD
AR-25/ARW-25	3.1	s-mc-c-004	Perennial	Cherry Creek	HDD*
AR-26/ARW-26	0.9	s-du-b-016a	Perennial	unnamed drainage	Open-cut
AR-26/ARW-26	1.7	s-du-b-020	Perennial	unnamed drainage	Open-cut
AR-27/ARW-27	2.8	s-mc-c-001b	Intermittent	Lone Beaver Creek	HDD
AR-30/ARW-36	0.04	s-du-b-014	Intermittent	unnamed drainage	HDD
AR-30/ARW-36	2.5	s-du-b-040	Intermittent	Tributary to LMR	HDD
AR-30/ARW-36	3.4	s-du-b-039a/b	Perennial	Little Missouri River	HDD
AR-30/ARW-36	4.6	s-du-b-031	Perennial	unnamed drainage	HDD
AR-30/ARW-36	4.7	s-du-b-032	Intermittent	Tributary to Bear Creek	HDD
AR-30/ARW-36	4.8	s-du-b-033a	Intermittent	Bear Creek	Open-cut
AR-30/ARW-36	4.8	s-du-b-033a	Intermittent	Bear Creek	Open-cut
AR-30/ARW-36	4.9	s-du-b-034	Perennial	Bear Creek	HDD*
AR-30/ARW-36	5.3	s-du-b-036	Intermittent	Tributary to Bear Creek	HDD*
AR-30/ARW-36	5.3	s-du-b-035	Perennial	Bear Creek	HDD*
AR-30/ARW-36	5.4	s-du-b-036	Intermittent	Tributary to Bear Creek	Open-cut
AR-30/ARW-30	5.7	s-du-b-026	Perennial	Bear Creek	HDD*
AR-30/ARW-30	6.0	s-du-b-045	Perennial	Bear Creek	HDD
AR-30/ARW-30	6.1	s-du-b-045	Perennial	Bear Creek	HDD
AR-30/ARW-30	6.3	s-du-b-028	Intermittent	Tributary to Bear Creek	Open-cut
AR-30/ARW-30	6.5	s-du-b-022	Intermittent	unnamed drainage	HDD*

TABLE 4.1.8-1 (cont'd)

Bear Ben Project
Waterbody Crossing Table

Line	Milepost	Waterbody ID	Waterbody Type	Waterbody Name	Crossing Method
AR-30/ARW-30	6.8	s-du-b-023	Intermittent	unnamed drainage	HDD*
AR-30/ARW-30	6.8	s-du-b-023	Intermittent	unnamed drainage	HDD*
AR-30/ARW-30	6.9	s-du-b-024	Perennial	unnamed drainage	Open-cut
AR-30/ARW-30	7.2	s-du-b-025	Intermittent	unnamed drainage	HDD
AR-30/ARW-30	11.5	s-du-b-007a/b	Perennial	Little Missouri River	HDD
AR-31/ARW-37	0.1	s-mc-c-005	Intermittent	tributary to Cherry Creek	HDD
AR-31/ARW-37	0.9	s-mc-c-006	Intermittent	unnamed drainage	HDD
AR-31/ARW-37	4.2	s-mc-b-008a/b	Perennial	Cherry Creek	HDD
AR-31/ARW-31	4.6	s-mc-c-011	Intermittent	Rough Creek	HDD*
AR-31/ARW-31	5.3	s-mc-c-010	Ephemeral	tributary to Cherry Creek	Open-cut
AR-31/ARW-31	7.9	s-du-b-001	Perennial	unnamed drainage	Open-cut
AR-31/ARW-31	9.0	s-du-b-002	Intermittent	Tributary to LMR	HDD
AR-31/ARW-31	9.1	s-du-b-003	Intermittent	tributary to LMR	HDD
AR-31/ARW-31	9.2	s-du-b-004	Perennial	tributary to LMR	HDD
AR-31/ARW-31	9.7	s-du-b-005	Perennial	unnamed drainage	Open-cut
AR-34/ARW-34	0.5	s-du-b-008	Intermittent	unnamed drainage	Open-cut
AR-34/ARW-34	1.2	s-du-b-010	Intermittent	unnamed drainage	Open-cut
AR-34/ARW-34	1.9	s-du-b-012	Intermittent	unnamed drainage	Open-cut
AR-34/ARW-34	2.6	s-du-b-011	Intermittent	unnamed drainage	HDD
PA1-AR-23	NA	s-du-b-006	Intermittent	unnamed drainage	Access Road Crossing
PA1-AR-30	NA	s-du-b-021	Perennial	Bear Creek	Access Road Crossing
PA4-AR-30	NA	s-du-b-040	Intermittent	unnamed drainage	Access Road Crossing

* HDD with temporary 15-foot travel lane

TABLE 4.1.8-2

Bear Den Project
Wetland Crossing Method and Construction Impacts

Line	Milepost In	Milepost Out	Wetland ID	Wetland Type	Crossing Method [b]	Area Within the Temporary Construction Right-of-Way (acres)	Area Within the Permanent Easement (acres)	Total Construction Disturbance (acres)
AR	9.9	9.9	w-mc-b-011	PEM	Open-cut	0.01	0.04	0.05
AR	12.2	12.2	w-mc-b-012	PEM	Open-cut	0.01	0.04	0.05
AR-15/ ARW-15	0.4	0.4	w-du-b-008	PEM	Horizontal Directional Drill (HDD)	0.00	0.00	0.00
AR-16	0.1	0.2	w-mc-b-013b	PEM	HDD	0.00	0.00	0.00
AR-17/ ARW-17	0.3	0.4	w-du-b-014[a]	PEM	Open-cut	0.01	0.00	0.01
AR-19/ ARW-19	0.1	0.2	w-du-b-011	PEM	HDD	0.00	0.00	0.00
AR-20/ ARW-20	0.8	0.8	w-du-b-018a	PEM	HDD	0.00	0.00	0.00
AR-20/ ARW-20	0.8	0.8	w-du-b-018b	PEM	HDD	0.00	0.00	0.00
AR-20/ ARW-20	0.8	0.8	w-du-b-018c	PEM	HDD	0.00	0.00	0.00
AR-20/ ARW-20	0.9	0.9	w-du-b-018d	PEM	HDD	0.00	0.00	0.00
AR-20/ ARW-20	0.9	0.9	w-du-b-018e	PEM	HDD	0.00	0.00	0.00
AR-20/ ARW-20	0.9	0.9	w-du-b-018f	PEM	HDD	0.00	0.00	0.00
AR-21/ ARW-21	0.1	0.1	w-du-b-021a	PEM	HDD[b]	0.01	0.00	0.01
AR-21/ ARW-21	0.1	0.1	w-du-b-021b	PEM	HDD[b]	0.01	0.00	0.01
AR-22/ ARW-22	0.8	0.8	w-du-b-010	PEM	HDD	0.00	0.00	0.00
AR-23/ ARW-23	0.5	0.5	w-du-b-006	PEM	Open-cut	0.02	0.03	0.05
AR-24/ ARW-24	0.9	0.9	w-mc-c-001a	PEM	HDD	0.00	0.00	0.00
AR-24/ ARW-24	0.9	0.9	w-mc-c-001b	PEM	HDD	0.00	0.00	0.00
AR-24/ ARW-24	0.9	0.9	w-mc-c-001c	PEM	HDD	0.00	0.00	0.00
AR-24/ ARW-24	0.9	0.9	w-mc-c-001d	PEM	HDD	0.00	0.00	0.00
AR-24/ ARW-24	0.9	1	w-mc-c-001f	PEM	HDD	0.00	0.00	0.00

TABLE 4.1.8-2

Bear Den Project
Wetland Crossing Method and Construction Impacts

Line	Milepost In	Milepost Out	Wetland ID	Wetland Type	Crossing Method [b]	Area Within the Temporary Construction Right-of-Way (acres)	Area Within the Permanent Easement (acres)	Total Construction Disturbance (acres)
AR-24/ ARW-24	0.9	1	w-mc-c-001g	PEM	HDD	0.00	0.00	0.00
AR-24/ ARW-24	1	1	w-mc-c-001h	PEM	HDD	0.00	0.00	0.00
AR-24/ ARW-24	1.1	1.1	w-mc-c-006c	PEM	HDD	0.00	0.00	0.00
AR-25/ ARW-25	1.6	1.7	w-mc-b-005	PEM	Open-cut	0.21	0.18	0.39
AR-25/ ARW-25	3	3	w-mc-c-007	PEM	HDD	0.00	0.00	0.00
AR-25/ ARW-25	0.5	0.5	w-mc-c-011a	PEM	HDD[b]	0.02	0.00	0.02
AR-25/ ARW-25	0.8	0.8	w-mc-c-012a	PEM	HDD[b]	0.02	0.00	0.02
AR-25/ ARW-25	1	1	w-mc-c-012b	PEM	Open-cut	0.02	0.02	0.04
AR-25/ ARW-25	1.2	1.2	w-mc-c-013a	PEM	HDD	0.00	0.00	0.00
AR-25/ ARW-25	1.2	1.2	w-mc-c-013b	PEM	HDD	0.00	0.00	0.00
AR-26/ ARW-26	0.2	0.6	w-du-b-013a	PEM	Open-cut	1.23	0.91	2.14
AR-26/ ARW-26	0.9	0.9	w-du-b-013b	PEM	Open-cut	0.01	0.06	0.07
AR-26/ ARW-26	1	1	w-du-b-014[a]	PEM	Open-cut	0.01	0.01	0.02
AR-29/ ARW-29	2	2	w-du-b-023a	PEM	Open-cut	0.00	0.04	0.04
AR-29/ ARW-29	1.9	1.9	w-du-b-023b	PEM	Open-cut	0.00	0.00	0.00

TABLE 4.1.8-2 (cont'd)

Bear Den Project
Wetland Crossing Method and Construction Impacts

Line	Milepost In	Milepost Out	Wetland ID	Wetland Type	Crossing Method [b]	Area Within the Temporary Construction Right-of-Way (acres)	Area Within the Permanent Easement (acres)	Total Construction Disturbance (acres)
AR-29/ARW-29	1.8	1.8	w-du-b-024	PEM	Open-cut	0.00	0.05	0.05
AR-29/ARW-29	1.6	1.7	w-du-b-025	PEM	HDD[b]	0.08	0.00	0.08
AR-30/ARW-30	9.4	9.4	w-du-b-015a	PEM	Open-cut	0.12	0.21	0.33
AR-30/ARW-30	6.8	6.8	w-du-b-016a	PEM	HDD[b]	0.01	0.00	0.01
AR-30/ARW-30	6.9	6.9	w-du-b-016b	PEM	Open-cut	0.01	0.00	0.01
AR-30/ARW-30	7.2	7.2	w-du-b-017	PEM	HDD	0.00	0.00	0.00
AR-30/ARW-36	5.1	5.1	w-du-b-019a	PEM	Open-cut	0.02	0.06	0.08
AR-30/ARW-36	5.1	5.1	w-du-b-019b	PEM	Open-cut	0.00	0.00	0.00
AR-30/ARW-36	4.8	4.8	w-du-b-018g	PEM	HDD[b]	0.01	0.00	0.01
AR-30/ARW-36	3.7	3.7	w-du-c-003a	PEM	HDD[b]	0.11	0.00	0.11
AR-30/ARW-36	3.7	3.8	w-du-c-003b	PEM	HDD[b]	0.02	0.00	0.02
AR-30/ARW-36	3.8	3.8	w-du-c-003c	PEM	HDD[b]	0.05	0.00	0.05
AR-31/ARW-31	6.7	6.7	w-du-b-001	PEM	Open-cut	0.04	0.10	0.14
AR-31/ARW-31	6.4	6.5	w-du-b-002	PEM	Open-cut	0.03	0.12	0.15
AR-31/ARW-37	4.2	4.2	w-mc-b-004g	PEM	HDD	0.00	0.00	0.00
AR-31/ARW-37	4.2	4.2	w-mc-b-004h	PEM	HDD	0.00	0.00	0.00
AR-31/ARW-37	4.3	4.4	w-mc-b-010a	PEM	Open-cut	0.01	0.01	0.02
AR-31/ARW-37	2.6	2.6	w-mc-c-002b	PEM	HDD	0.00	0.00	0.00
AR-31/ARW-37	0.1	0.1	w-mc-c-008	PEM	HDD	0.00	0.00	0.00
AR-31/ARW-37	2.3	2.3	w-mc-c-009	PEM	Open-cut	0.01	0.00	0.01
AR-31/ARW-37	2.3	2.3	w-mc-c-010a	PEM	Open-cut	0.01	0.01	0.02
AR-31/ARW-37	2.3	2.3	w-mc-c-010b	PEM	Open-cut	0.01	0.00	0.01
AR-34/ARW-34	2.6	2.6	w-du-b-009a	PEM	HDD	0.00	0.00	0.00
AR-34/ARW-34	2.6	2.6	w-du-b-009b	PEM	HDD	0.00	0.00	0.00
AR-34/ARW-34	2.6	2.6	w-du-b-009c	PEM	HDD	0.00	0.00	0.00
AR-34/ARW-34	2.5	2.5	w-du-b-009d	PEM	Open-cut	0.01	0.02	0.03
AR-35/ARW-35	0.3	0.4	w-mc-b-007	PEM	HDD	0.00	0.00	0.00
AR-35/ARW-35	0.6	0.6	w-mc-b-008	PEM	HDD[b]	0.05	0.00	0.05
AR-30/ARW-30	11.4	11.4	w-du-b-012	PFO	HDD	0.00	0.00	0.00
AR-30/ARW-36	3.7	3.7	w-du-c-004a	PFO	HDD[b]	0.02	0.00	0.02
AR-30/ARW-36	3.8	3.8	w-du-c-004b	PFO	HDD[b]	0.02	0.00	0.02
AR-31/ARW-36	6.2	6.3	w-du-b-003	PSS	Open-cut	0.27	0.28	0.55
AR-31/ARW-36	9.2	9.3	w-du-b-005	PSS	HDD	0.00	0.00	0.00
					Total (acres)	**2.5**	**2.2**	**4.7**

Notes: PEM = palustrine emergent; PFO = palustrine forested; PSS = palustrine scrub-shrub
[a] Wetland crossed by two pipelines, Lines AR-17 and AR-26
[b] HDD requires temporary 15-foot travel lane

A total of 61 waterbodies occur within the construction right-of-way of the Bear Den Project: 1 spring, 24 perennial waterbodies, 35 intermittent waterbodies, and 1 ephemeral waterbody. If the waterbodies are dry when crossed, CEBCS proposes to use conventional upland cross-country construction techniques. If the waterbodies are flowing when crossed, CEBCS proposes to use the open-cut crossing method. Additionally, CEBCS plans to cross a total of 40 waterbodies including the 1 spring using the HDD crossing technique, which will generally avoid surface disturbance and direct impacts to those waterbody features. Of these planned HDD crossings, 11 waterbodies will require a 15-foot-wide access path/temporary crossing to allow for construction equipment access to remote portions of the construction right-of-way that cannot be accessed by any other reasonable means. If the intermittent waterbodies not included in the HDDs are dry when crossed, CEBCS proposes to use conventional upland cross-country construction techniques. If these waterbodies are flowing when crossed, CEBCS proposes to use the open-cut crossing method.

A total of 69 wetlands occur within the construction right-of-way for the Bear Den Project: 64 palustrine emergent wetlands (PEM), 2 palustrine shrub-scrub wetlands, and 3 palustrine forested wetlands). CEBCS plans to cross a total of 45 wetlands using the HDD crossing technique and 24 wetlands using modified conventional upland cross-country technique to reduce the potential for pipeline construction to affect wetland hydrology and soil structure. A 15-foot-wide access path will be required through 13 of the HDD locations to allow for construction equipment access to remote portions of the right-of-way that cannot be accessed by any other reasonable means. These paths will be cleared of vegetation as necessary to allow safe passage of equipment and personnel. In addition, there are wetlands present along some of the proposed access roads; however, these are existing roads that will not require improvements, thus no impacts are anticipated to these wetlands.

Although dry crossing methods are not proposed for this Project, they may be considered if warranted by site-specific conditions at the time of construction. Dry crossing methods may include the flume and the dam and pump methods.

Road and Railroad Crossings

Generally paved road crossings will use the HDD method in compliance with crossing permit requirements. Minor or rarely traveled gravel or dirt roads may be open-cut. A list of road crossing methods is provided in Table 4.1.2-2. Where roads are open-cut, proper barricades, lights, or warning signs will be in place. Road crossings will be installed in a manner so as not to impede traffic flow. Roads will not be open-cut until the pipe is ready to be placed in the trench. Excavation depth and pipeline cover for each crossing will vary depending on the terrain, length of crossing, and other safety factors. Following placement, the trench will be backfilled and the roadbed returned to original or better condition. The Project does not cross any railroads.

4.1.9 Hydrostatic Testing

After the trench is backfilled, the pipeline will be pressure-tested with water according to DOT specifications, as applicable, to ensure structural integrity. Each pipeline segment to be installed by HDD will also be pre-tested prior to installation. Test segments of the pipeline will be capped, filled with water, and pressurized. Any loss of pressure that cannot be attributed to other factors such as temperature changes will be investigated. Any leaks detected will be repaired and the segment retested. Upon completion of the test, the water may be discharged,

or it may be pumped to the next segment for testing. It is anticipated that hydrostatic test water will be discharged overland along the edges of the construction right-of-way using energy dissipation devices to minimize erosion and sedimentation. Sources, volumes, and discharge locations of hydrostatic test water are provided in CEBCS' *Hydrostatic Test Plan* (Appendix P).

Hydrostatic test water will contact only new pipe, and no chemicals or biocides are proposed for addition to the test water. Additionally, all test water will be sampled prior to discharge and tested in accordance with permit requirements to determine suitability for discharge. If treatment of hydrostatic test water is found to be required, treatment procedures will be developed and implemented prior to discharge.

In addition to hydrostatic testing, CEBCS will use water for dust control on roads. This water will be obtained from municipal water supplies.

4.1.10 Cleanup and Reclamation

Depending upon weather conditions, cleanup and reclamation will occur as soon as practical. CEBCS will implement a "no litter policy" in all work areas during all phases of construction. Trash, surplus materials, or other waste debris will be removed from the construction area and disposed of at an off-site approved disposal facility in accordance with federal, state, and local requirements and landowner preference. Both temporary and permanent erosion control structures will be installed during construction to minimize potential for soil loss due to wind and water erosion. Temporary structures will include sediment barriers, silt fences, culvert installation, water bars, and erosion control matting and will be utilized until permanent revegetation is deemed successful or other permanent structures have been installed. Permanent structures may include slope breakers, water bars, culverts, rock check dams or other flow-energy dissipaters, and riprap.

Reclamation practices will include measures to achieve the following goals:

- to construct the pipeline and to reclaim disturbed areas in accordance with the requirements and conditions of applicable permits and approvals along the entire right-of-way;
- to restore approximate original contours (unless otherwise directed by the BLM AO) to blend with the adjacent landscape;
- to provide erosion and sediment control, as required; and
- to encourage revegetation while discouraging noxious weeds and invasive species.

4.2 APPLICANT-COMMITTED ENVIRONMENTAL PROTECTION MEASURES

CEBCS will implement the following applicant-committed environmental protection practices. In addition, other environmental protection measures that will be implemented during construction and operation of the project as specified in stipulations included in the final Right-Of-Way Grant issued by the BLM AO.

4.2.1 Storm Water Pollution Prevention Plan

CEBCS has developed a *Storm Water Pollution Prevention Plan* (SWPPP; Appendix F) for this project to ensure that erosion from disturbed lands is minimized during all phases of pipeline construction and operation. CEBCS and its contractors will follow the guidelines in the SWPPP, and copies of the plan will be kept at the construction site.

4.2.2 Environmental Inspection

CEBCS will provide at least one full-time EI per construction spread to monitor construction activities and construction in sensitive areas. The EIs will be responsible for coordinating various permit and mitigation measures' requirements with the construction contractor and CEBCS. The EIs will be responsible for preparing daily and weekly reports that document the progress of construction activities and associated environmental mitigation measures.

During construction, unforeseen or unavoidable site conditions can result in the need for changes from approved mitigation measures and construction procedures. Additionally, the need for route realignments, additional temporary workspaces, or access roads outside of the previously approved construction work area may arise. Changes to previously approved mitigation measures, construction procedures, and construction work areas will be handled in the form of variance requests to be submitted by CEBCS for review and approval by the BLM and the USFS (if on National Forest land).

The environmental inspection and monitoring program for the Project, as well as the variance request process, is more fully described in CEBCS' *Environmental Inspection and Compliance Monitoring Plan* (Appendix M).

4.3 WORK FORCE REQUIREMENTS

CEBCS anticipates that a peak work force of approximately 250 construction personnel will be required to construct the Project, and approximately 15 permanent employees will be utilized to operate the facilities. Construction personnel will consist of CEBCS' employees, contractor employees, construction inspection staff, and environmental inspection staff. CEBCS anticipates that the Project will be constructed in two spreads, and each spread would be comprised of two separate crews responsible for the respective installation of the steel and composite pipelines. The contractor will utilize the 40-acre storage/transfer site and two contractors yard for its base of command. Most contractor personal vehicles will be parked at the construction contractor yard except in special circumstances for supervisory agency or inspection personnel. The construction contractor will provide buses for transporting workers that do not require personal vehicles to the work site from the yard. CEBCS will restrict non-essential foot traffic in off-right-of-way areas. The proposed pipeline will be operated and maintained by CEBCS personnel or contractors under CEBCS' supervision.

4.4 PUBLIC ACCESS AND SAFETY DURING CONSTRUCTION

The proposed pipeline facilities will be designed, constructed, operated, and maintained in accordance with DOT regulations, as applicable. In addition, the proposed project will comply with all other applicable federal, state, and local laws and regulations. Adherence to these standards and regulations will minimize the potential hazards and dangers to the public during

construction and operation of the proposed pipeline and from failure of project components, thus maintaining a high level of system reliability.

4.5 INDUSTRIAL WASTES AND TOXIC SUBSTANCES

Hazardous materials used during pipeline construction will include petroleum products typically required for heavy equipment operations (e.g., gasoline, diesel fuel, lubricants, and coolants) that contain several hazardous and extremely hazardous materials identified in the Environmental Protection Agency's *Consolidated List of Chemicals Subject to Reporting Under Title III of the Superfund Amendments and Reauthorization Act of 1986* and 40 CFR 355*.* Project construction and maintenance operations will comply with all relevant federal and state laws regarding hazardous materials*.*

CEBCS will conform with provisions of the *Toxic Substances Control Act of 1976,* as amended (15 U.S.C. 2601, et seq.) with regard to any toxic substances that are used, generated, or stored on the right-of-way or on facilities authorized under right-of-way grants (see 40 CFR 702-799 and especially provisions on polychlorinated biphenyl--40 CFR 761.1-761.193). Any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity as established by 40 CFR 117.3 will be reported as required by the *Comprehensive Environmental Response, Compensation, and Liability Act of 1980,* as amended, Section 102 B. Copies of reports required by federal or state agencies for the release or spill of any hazardous material will be furnished to the BLM AO within 5 working days of occurrence.

Per the Project's SPCC Plan, vehicles will be maintained and operated so as to prevent accidental leaks or spills. To minimize adverse environmental impacts from spills, the following measures will be taken:

- All spills will be reported immediately to the construction foreman or inspector who will direct cleanup efforts. The Project's SPCC Plan, Appendix L, further discusses protocol associated with spill reporting.

- Some construction equipment and all refueling trucks will be equipped with spill control kits (e.g., shovels, plastic bags, portable bags, portable dams, absorbent material, etc.).

- Accidental leaks will be cleaned up immediately, and contaminated material will be disposed of at an approved facility.

- Servicing, refueling, and storing of fuels and lubricants will occur in the right-of-way, staging areas, or off-site at an appropriate facility and will not occur within 100 feet of any ephemeral or perennial streams. Used oil or unused lubricants will be stored in appropriate containers, removed from the site regularly, and disposed of at an approved facility. Service truck operators will not allow residual fuels or lubricants to drain onto the ground.

- When not in use, construction equipment will be stored in staging areas or off-site at appropriate facilities.

4.6 FIRE PLAN

CEBCS will notify the appropriate landowner or land managing agency of any fires during construction of the pipeline. CEBCS and its contractors will comply with all rules and regulations administered by the AO concerning the use, prevention, and suppression of fires on federal lands. In the event of a fire, the following actions will be taken:

1. The Contractor will take the initial fire suppression action in the work area.

2. The Contractor will direct the fire suppression activities, contact CEBCS and appropriate AO and fire dispatch center, and determine whether or not to request assistance from the local fire emergency response agency. CEBCS or the AO may also determine to contact a fire emergency response agency.

3. Suppression actions will continue until the fire is out or until the crew is relieved by a fire emergency response agency or authorized representative of the agency on whose land the fire occurs.

4. Heavy equipment will not be used for fire suppression outside the limits of the approved ROW without prior approval of the AO or private landowner, unless there is imminent danger to life or property.

Fire extinguishers that are rated at a minimum as ABC-5 pound will be available on all vehicles or equipment used for construction or maintenance of the pipeline. In the event of a fire, personal safety will be the first priority. If a fire spreads beyond the suppression capability of workers with fire extinguishers, all will cease fire suppression action and leave the area immediately via pre-identified escape routes. The General Office of the North Dakota Fire Marshall (Raymond Lambert 701-328-5555) will be notified immediately of the location and status of the escaped fire. In the case of an emergency the first call will be to 911.

4.7 STABILIZATION

CEBCS will implement a *Construction, Reclamation, and Monitoring Plan* during construction to minimize the possibility of erosion (see Appendix E). Additionally, both temporary and permanent erosion control structures will be installed during construction to minimize potential for soil loss due to wind and water erosion. Temporary structures will include windrows of topsoil and subsoil, silt fences, culvert installations, water bars, and erosion control matting and will be installed immediately following initial ground disturbance and utilized until permanent revegetation is deemed successful by BLM or other permanent structures have been installed. Permanent structures may include slope breakers/water bars, pocks (identified as more effective than water bars by the BLM (2012)), culverts, rock check dams or other flow-energy dissipaters, and riprap.

4.8 RECLAMATION OBJECTIVES

Reclamation objectives will be met by implementing practices developed in consultation with BLM, USFS, and other landowners. Post-construction monitoring will be conducted by CEBCS operating personnel during the long-term operation and maintenance of the pipeline system to ensure that the objectives are met, and revegetation efforts will be repeated, and modified if necessary, until revegetation is deemed successful by the BLM AO.

Reclamation practices will include measures to achieve the following goals:

- construct the pipeline and reclaim disturbed areas in accordance with the requirements and conditions of applicable permits and approvals along the entire right-of-way;
- restore approximate original contours (unless otherwise directed by the BLM AO or other landowner) to blend with the adjacent landscape;
- provide erosion and sediment control as required;
- discourage noxious weed growth and control other invasive species and pests;
- utilize adapted native species for revegetation (unless otherwise directed by the BLM AO or other landowner) to reduce the visual effect of the corridor and provide a self-sustaining cover compatible with post-construction land uses;
- implement site-specific and comprehensive erosion control and reclamation procedures on sites with lower reclamation potential including steep slopes, areas subject to water erosion, or other sites where additional measures are necessary to achieve reclamation objectives;
- restore affected stream channels;
- discourage unauthorized use of the right-of-way by off-highway vehicles;
- maintain and monitor revegetation and erosion/sediment control structures and practices; and
- remediate any areas where revegetation is deemed by BLM, the USFS or CEBCS to be unsuccessful.

4.9 RECONTOURING

After backfilling, all disturbed areas (including the permanent easement, ATWS areas, vehicle turnarounds, and stockpile sites) will be returned to pre-excavation grades with allowance for settling. The criteria for determining potential settling will be based on soil texture, coarse fragment content, and type of equipment used for regrading. If settling results in topographic discontinuity between natural and regraded ground, CEBCS will regrade the area such that the right-of-way will be approximately level. Any excessively steep cuts will be graded to approximately 3:1 (horizontal/vertical) slope or less. Waterbody banks will be returned to approximate pre-construction contours or to a stable angle of repose, and banks will be stabilized as appropriate with vegetation, erosion control fabric, or other means.

Rock excavated during pipeline construction may be redistributed on the right-of-way as agreed to by BLM or the landowner, or hauled away to a rock disposal area. All remaining trash, brush, or debris will be disposed of in accordance with federal, state, and local laws and ordinances and organic refuse not suitable for spreading over the right-of-way will be disposed of at an authorized facility.

4.10 SEEDBED PREPARATION

Seedbed preparation will be performed in accordance with the CRMP (Appendix E). In general, after the trench has been backfilled and the right-of-way has been recontoured, compacted soils will be decompacted, if necessary, based on field evaluation by an EI. Any conserved topsoil will then be uniformly spread over the disturbed areas. Areas to be revegetated will be worked to loosen soils and break soil clods; surfaces will be roughened to reduce potential for wind and water erosion and to facilitate moisture capture. The use of fertilizers or other soil amendments is not anticipated because they may tend to promote weed growth. If reclamation were unsuccessful, the need for fertilizers will be re-evaluated in consultation with BLM or other landowners.

4.11 REVEGETATION

All seed would be State of North Dakota Certified or Registered seed (or certified/registered by the state of origin), and certification tags shall be made available to the BLM AO or environmental inspector before seed is planted to prevent the introduction of noxious weeds and invasive or non-native species. Seed would be applied at the rate recommended by the land management agency or soil conservation authority. Seeding rates will be based on Pure Live Seed (PLS). The seed mixture will be evenly and uniformly planted over the disturbed area. Seed will be planted using a seed drill equipped with a depth regulator to ensure proper depth of planting where seed drilling is possible. Where seed drilling is not possible, seed will be broadcast using a cyclone-type broadcast seeder and the seeding rate doubled. On steep slopes, seeded areas may be imprinted using a tracked bulldozer to provide small depressions to collect moisture and stimulate seed germination. Areas that are not accessible with revegetation equipment will be broadcast-seeded and hand-raked to cover the seed. In areas where vegetation was only scalped during construction, seed will be broadcast and raked.

4.11.1 Revegetation Seed Mixes

The final seed mix(s) would be based on written recommendations for seed mixes obtained from the local soil conservation authority, or as requested by applicable land management agencies (BLM and USFS). Additionally, landowners may request specific seeding requirements during easement negotiations. On federally managed lands crossed by the Project, seed mixtures used to revegetate the right-of-way will be based on consultations with the BLM and USFS. If the supply of a specific seed is limited or unavailable at the time of ordering, CEBCS will consider alternative species subject to agency approval.

4.12 RECLAMATION MONITORING

4.12.1 Goals of Reclamation Monitoring

To assess the effectiveness of the reclamation treatments and to evaluate the condition of right-of-way, CEBCS will implement a monitoring program consisting of field inspections and vegetative analysis. A report of the condition of the right-of-way and the status of sensitive resources affected during construction will be submitted to the BLM by the end of the respective year of the monitoring. The monitoring program will also identify remedial measures that will be considered by CEBCS to mitigate environmental degradation if the initial treatments were not effective in achieving the objectives of the reclamation program.

4.12.2 Reclamation Performance Criteria

CEBCS' effort to reclaim areas disturbed during construction will be evaluated for a minimum period of five years. Successful reclamation performance will be based on revegetation success (e.g., cover, frequency, and diversity), the absence of weeds or invasive plants, stability of the construction right-of-way, waterbody bed and bank stability; and visual aesthetics. Additional detail on reclamation performance criteria is provided in the CRMP (Appendix E).

4.12.3 Vegetation Monitoring

Monitoring and reporting, as required, will occur following the growing season during the first five growing seasons after final reclamation. Plant diversity, frequency, and percent cover data will be collected. Data obtained from the reclaimed right-of-way will be compared to vegetative data obtained from the undisturbed, naturally occurring vegetative populations adjacent to the right-of-way. Variation between the right-of-way and off right-of-way areas will provide an indication of the relative success of reclamation.

4.12.4 Erosion and Runoff Control

Periodic ground and aerial inspections of the route by CEBCS Operations and Maintenance (O&M) personnel should detect areas of erosion (i.e., formation of gullies, deposition of sediment) and uncontrolled runoff (i.e., berm washouts) before significant impacts occur. In addition to O&M reconnaissance, reclamation specialists will conduct annual inspections during the summer of the first three years following reclamation to assess the condition of the right-of-way and the effectiveness of erosion control measures. This ground inspection will concentrate on steep slopes, erodible soils, and sensitive areas identified during construction by the EIs and agency representatives.

4.12.5 Waterbody Stabilization

In association with erosion control and runoff inspections, CEBCS representatives will visually assess the condition of bed and bank stabilization measures installed during restoration at waterbodies. This assessment will occur with the same frequency as the erosion and runoff control inspections. In addition, a number of dry washes that drain into high quality streams off-site will also be assessed for bed and bank stability.

5.0 OPERATION AND MAINTENANCE OF THE FACILITY

After pipeline construction has been completed, CEBCS will be responsible for monitoring and inspecting the operation of the pipeline system, as well as maintenance and repair. CEBCS will operate and maintain the proposed Project facilities in compliance with the DOT regulations provided at 49 CFR 195, as well as other applicable regulations and standards.

Operational activity on the pipeline will be limited primarily to maintenance of the right-of-way and inspection, repair, and cleaning of the pipeline facilities. Periodic aerial inspections, supplemented by ground inspection based on results of aerial patrols by pipeline personnel will identify soil erosion that may expose the pipe, conditions of the vegetative cover and erosion control measures, unauthorized encroachment on the right-of-way such as buildings and other substantial structures, and other conditions which could present a safety hazard or require preventative maintenance or repairs. Specifically, patrol frequency could vary slightly, but would

occur approximately every other week (biweekly) at a frequency not to exceed three weeks. The pipeline cathodic protection system will also be monitored and inspected periodically to ensure adequate corrosion protection. Appropriate responses to conditions observed during inspection will be taken as necessary.

The pipeline facilities will be clearly marked at crossings of roads, railroads, and other key points. The markers will clearly indicate the presence of the pipeline facilities and provide a telephone number and address where a company representative could be reached in the event of an emergency or prior to any excavation in the area by a third party. CEBCS is a member of the One-Call and related pre-excavation notification organizations in the states in which it operates.

The following measures will be implemented to prevent or mitigate any adverse effects resulting from the Project operations:

- Per federal regulations, CEBCS would have an established maintenance, inspection, and repair program that ensures the integrity of the pipeline during operations. CEBCS's pipeline maintenance program would be designed to maintain the safe and reliable operation of the pipeline. Data collected during maintenance would be fed back into the decision-making process for the development of the ongoing maintenance program.

- CEBCS also would mitigate third-party excavation risk by implementing comprehensive Public Awareness and Damage Prevention programs focused on education and awareness in accordance with 49 CFR Section 195.440 and API RP1162. Further, CEBCS would complete regular visual inspections (ground or aerial) of the ROW as per 49 CFR Section 195.412 and monitor activity in the area to prevent unauthorized trespass or access.

- To mitigate the effects of corrosion on the pipeline, CEBCS will construct the produced water system out of a reinforced high-density polyethylene (HDPE) pipeline material that is resistant to corrosion. In addition, CEBCS would apply a FBE or other type of protective pipeline coating to the external surface of steel pipe to prevent corrosion. A cathodic protection system would be installed on the steel pipeline, composed of engineered metal alloys or anodes, which would be connected to the pipeline. A low voltage direct current would be applied to the pipeline; the process corrodes the anodes rather than the pipeline. During operations, the pipeline would be routinely cleaned. The steel pipeline segments 4-inch and greater are designed to be inspected utilizing one of a variety of inspections methods including internal inspection tools, pressure testing, direct assessment; or other technologies which are demonstrated to be equivalent to the previous three methods. These inspection methods may be interchanged or used in combination, thereby allowing CEBCS the ability to proactively detect corrosion and third party damage.

- The pipeline would be monitored 24 hours a day, 365 days a year from the Operational Control Center (OCC) using a sophisticated supervisory control and data acquisition (SCADA) system. CEBCS would implement multiple leak detection methods and systems that are overlapping in nature and progress through a series of leak detection thresholds. The leak detection methods are as follows:

    - Remote monitoring performed by the OCC Operator, which would consist of monitoring pressure and flow data received from pump stations and valve sites fed back to the OCC by the CEBCS SCADA system. This system will provide the real time data used to detect leaks and allow Operators to initiate system shutdowns.

    - Computer-based, non-real time accumulated gain/loss volume trending that would assist in identifying low rate or seepage.

    - Direct observation methods, which include aerial patrols, ground patrols, and public and landowner awareness programs that would be designed to encourage and facilitate the reporting of suspected leaks and events that may suggest a threat to the integrity of the pipeline.

    - The system would be configured in a manner capable of alarming the OCC operators through the SCADA system and also would provide the OCC operators with a comprehensive assortment of display screens for incident analysis and investigation.

- CEBCS would follow a written manual of procedures for conducting normal operations and maintenance activities and for handling abnormal operations and emergencies. The manual would delineate the responsibilities of both management and operating personnel and would be reviewed each calendar year to insure it remains effective. The manual would include provisions that address the following:

    - Retention of important construction, operation and maintenance records, including records of pipeline and equipment inspections.

    - Procedures for reporting spills, accidents, and safety related conditions.

    - Identification of sensitive areas along the Project route that would require an immediate response to prevent hazards to the public if the facilities failed or malfunctioned.

    - Procedures for receiving, identifying and classifying notices of events which need immediate response by Project personnel or notice to fire, police or other appropriate public officials.

    - Establishing and maintaining liaison with fire, police and other appropriate public officials. Procedures would be included for notifying these officials of pipeline emergencies and coordinating with them pre-planned and actual responses during such emergency.

- Maintaining a list and contact information of area contractors that may be used to respond to a spill or emergency.

- A continuing training program would be implemented to instruct personnel in safely carrying out the operations, maintenance and emergency procedures related to their assignments. This would include instruction on the characteristics and hazards of the crude oil being transported, the recognition of conditions that are likely to cause emergencies, and the steps necessary to control or minimize the impacts of an accidental release.

6.0 TERMINATION AND RESTORATION

At the end of the pipeline's useful life, CEBCS will obtain the necessary authorizations from the BLM AO and other applicable local, state, and federal agencies to abandon the facilities. CEBCS will contact the BLM AO to arrange a pre-termination conference and joint inspection of the right-of-way to agree on an acceptable abandonment plan. Pipeline abandonment will be in accordance with the policies and standards employed by BLM at the time of abandonment.