BEAR DEN PHASE 2 PROJECT

Plan of Development

APPENDIX E
Construction, Reclamation, and Monitoring Plan (CRMP)

BEAR DEN PHASE 2 PROJECT

Plan of Development

Construction, Reclamation and Monitoring Plan (CMRP)

Prepared for:

BUREAU OF LAND MANAGEMENT

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1.0 STRUCTURE OF THE CONSTRUCTION AND RECLAMATION PLAN

The *Construction, Reclamation, and Monitoring Plan* (CRMP) is structured to address site-specific construction, reclamation, and revegetation plans for the Enable Bakken Crude Services, LLC (EBCS) Bear Den Project (Project). This document combines EBCS' Project-wide Best Management Practices (BMPs) and site-specific reclamation which has been developed based on federal land management documents and resource agency consultations. In addition, construction related mitigation measures are discussed where appropriate. Methods contained in this document may apply project-wide, or only to site-specific areas or conditions. Where appropriate, provisions that pertain to a specific management unit are discussed in greater detail.

2.0 PRECONSTRUCTION

2.1 Training

EBCS has retained the services of experienced contractors and consultants, and has established an inspection and monitoring organization for the project consisting of knowledgeable and effective craft inspectors, environmental inspectors (EIs), resource inspectors (RIs), and other personnel. EBCS' project management team will provide oversight of the project activities and will work closely with the contractors' key personnel to ensure compliance with EBCS' project permits, agreements, and approved mitigation measures. Prior to construction, all EBCS personnel and project Contractors shall complete training that covers prevention and response procedures as well as safety. The training shall be executed such that it improves awareness of laws and procedures pertaining to safety and pollution, as well as equipment maintenance and operation.

EBCS will implement an environmental training program prior to the start of construction on each spread and on an ongoing, as-needed basis during construction to support compliance with environmental requirements. EBCS' environmental training program is designed to consistently communicate project requirements to every individual working on the project so that both managers and workers understand EBCS' expectations and the Project's requirements and incorporate them into their daily work activities. The training program will focus on EBCS' environmental mitigation plans and procedures, the Project Plan of Development (POD), and other project-specific permit conditions including Right-of-Way Grant stipulations and conditions of approval. All personnel working on the project will be required to attend environmental training prior to entering the project right-of-way, aboveground facilities, and other associated work areas (e.g., contractor yards).

It is the construction contractor's responsibility to ensure that all persons involved in Project construction receive appropriate training. Each person trained will be required to sign a training attendance roster and will be issued a hard-hat sticker certifying that they have been notified of and understand the project's environmental requirements. No construction personnel will be allowed to enter any construction work area without prior environmental training. EBCS will maintain environmental training attendance records.

2.2 Construction Right-of-Way Flagging and Project Signs

EBCS will complete a final civil survey and stake/flag the right-of-way to locate the pipeline centerlines and the construction right-of-way boundaries. EBCS will stake the Additional Temporary Workspace (ATWS) boundaries, staging areas, sensitive environmental areas,

reclamation treatment areas, access roads, and along the right-of-way every 200 feet, as appropriate, to maintain line-of-sight from one stake to the next. In preparation for surveying and staking, EBCS will coordinate with local utilities within and adjacent to the proposed right-of-way utilizing the One Call system. EBCS' contractor will be responsible for locating and marking underground crossings (e.g., gas and water pipelines, fiber optic cable, telephone lines, etc.), to prevent accidental damage during construction. Staking on the right-of-way and all ATWS will be inspected and maintained for the duration of construction and initial reclamation.

EBCS will preserve all existing General Land Office, Bureau of Land Management (BLM), U.S. Forest Service (USFS), or other recognizable civil survey monuments, cadastral corner markers, witness points, triangulation stations, military control monuments, or other recognizable physical markers (public and private). If markers are disturbed or destroyed, EBCS will notify the installing authority and the BLM's Authorized Officer in writing of the incident. EBCS will be responsible for repairing markers using surveying procedures found in the *Manual of Surveying Instructions for the Survey of the Public Lands in the United States*.

Signs will be posted along the construction right-of-way to identify sensitive areas and to alert construction personnel of applicable restrictions. The limits of these areas will be delineated at the edge of the right-of-way. Fencing may also be required in some areas to further protect site-specific resources. Routine equipment maintenance will be restricted to contractor yards and commercial sites off the right-of-way.

EBCS will require its construction contractor(s) to post caution signs on roads, where appropriate, to alert motorists of pipeline construction and warn them of slow traffic. In addition, trucks transporting pipe and heavy equipment will comply with all applicable state, county and federal laws, rules, and permits for these loads.

Prior to construction, EBCS will coordinate with landowners to identify any landowner-specific issues of concern that may be affected by construction activities. In coordination with these landowners, EBCS will implement mitigation measures, as applicable, that:

- avoid drain tiles and other types of irrigation systems;
- locate and mark aboveground and belowground water lines;
- locate and mark all above and belowground utilities;
- coordinate with landowners that utilize pivot irrigation systems;
- develop grazing deferment plans with landowners, tenants, or other grazing permit holders that address construction timing, fence cutting and bracing, cattle guard locations, and water requirements for livestock; and
- conduct baseline compaction surveys of the existing soil conditions, as requested by the landowner.

Any component of irrigation systems, waterlines, utilities, or other physical impediments damaged during construction will be repaired to at least pre-construction condition.

3.0 GENERAL PIPELINE CONSTRUCTION PROCEDURES

Construction of the main pipeline is planned for two simultaneous construction areas, or "spreads." Spread 1 is approximately 6.3 miles located in McKenzie County, and Spread 2 is approximately 7.9 miles also located in McKenzie County (see Table 3-1). Aboveground facilities will be constructed by separate construction crews. Currently, construction is planned to start in June 2014, and is scheduled to be completed by October 2014, subject to the receipt of necessary permits and approvals.

TABLE 3-1

Bear Den Phase 2 Project Construction Spreads

Spread Name	Segment Number	County
Spread 2	AR-18	McKenzie
Spread 1	AR-25	McKenzie
Spread 2	AR-47	McKenzie
Spread 2	AR-48	McKenzie
Spread 1	AR-50	McKenzie
Spread 1	AR-51	McKenzie
Spread 2	AR-54	McKenzie
Spread 2	AR-55	McKenzie

The typical Project construction right-of-way will be 80 feet wide on federal land, 100 feet on state and private lands, and 75 feet through wetlands. Standard pipeline construction is composed of specific activities that make up the linear construction sequence. These operations collectively include survey and staking of the right-of-way; clearing and grading; trenching; pipe stringing, bending, and welding; lowering the pipeline into the trench; backfilling the trench; hydrostatic testing; final tie-ins; commissioning; and right-of-way cleanup and restoration. Construction personnel and equipment will be limited to the areas required to conduct these activities. Appendix C of the POD, *Construction Typical Drawings*, depicts the typical steps of cross-country pipeline construction.

3.1 Clearing and Grading

Before clearing and grading are conducted, landowner fences will be braced and cut to landowner or land management agency specifications, and temporary gates and fences will be installed to contain livestock if present. A clearing crew will clear the work area of vegetation and obstacles (e.g., trees, logs, brush, rocks). The clearing crew will follow the fence crew and skim surface vegetation in areas of high fire danger to minimize the potential for wildfires. Where trees are felled, timber will be cut to uniform length and stacked along the edge of the right-of-way until disposal or use during reclamation. Stumps will be cut as close to the ground as possible and left in place except over the trenchline or as necessary to create a safe and level work surface.

Grading will be conducted where necessary to provide a reasonably level work surface. More extensive grading will be required in steep side slope or vertical areas to prevent excessive bending of the pipeline. EBCS intends to use several topsoil stripping methods during construction. Where the ground is relatively flat and does not require grading, rootstock will be left in the ground.

3.2 Topsoil Removal and Storage

EBCS proposes to use two topsoil removal techniques: trenchline plus spoil side or full right-of-way stripping (POD Appendix C, Figures 2 and 3). These techniques require a backhoe or bulldozer to remove the topsoil. It is currently anticipated that topsoil will be removed from the full right-of-way in most areas to avoid pulverization or rutting during wet periods, and in some instances, to mitigate heavy weed infestations. Topsoil and sub-soil will be stored in separate piles until reclamation occurs.

In most instances, topsoil and excavated subsoil will be placed and stored on the non-working side (spoil side) of the construction right-of-way. Gaps will be left between the soil piles to prevent stormwater runoff from backing up or flooding adjacent areas. In areas that are prone to wind erosion, EBCS will wet down topsoil piles. Wetting down topsoil piles will create a crust across exposed soils and minimize soil loss by wind. EIs will inspect watered soils regularly and re-watering will occur as needed.

3.3 Rutting

In areas of the construction right-of-way where topsoil has not been removed, rutting from construction equipment will be considered excessive if greater than 4-inches. In consultation with EBCS' EIs, topsoil removal techniques may be modified to remedy topsoil rutting. Rutting stipulations will not apply in areas where topsoil removal has occurred on the construction right-of-way. Rutting standards will apply to all roads on federal land, but rutting standards for private and public roads off of federal lands will be determined by individual landowner agreements.

3.4 Rocky Conditions

If rocky conditions are encountered, tractor-mounted mechanical rippers will be used to fracture rock prior to excavation. Rock will be stockpiled along the edge of the construction right-of-way and either used during reclamation. Rock six inches or larger in diameter will be disposed of at an off-site facility. Rock will not be permanently windrowed along the edge of the construction work area.

3.5 Temporary Erosion Control

The installation of temporary erosion controls will begin immediately following initial ground disturbance. Temporary erosion controls will be properly maintained throughout construction and reinstalled as necessary until replaced by permanent erosion controls. Temporary erosion controls that will be used during construction include the following:

3.5.1 Temporary Slope Breakers

Temporary slope breakers are intended to reduce runoff velocity and divert water off the construction right-of-way (POD Appendix C). Temporary slope breakers may be constructed of materials such as compacted soil, staked straw bales or sand bags.

EBCS will install temporary slope breakers to avoid excessive erosion. Temporary slope breakers will be installed on slopes greater than five (5) percent at the following spacing, as well as where the base of the slope is less than 50 feet from waterbody, wetland, and road crossings:

Slope (percent)	Spacing (feet)
5 to 15 percent	300 feet
> 15 to 30 percent	200 feet
> 30 percent	100 feet

On slopes less than five percent that are located in areas not prone to soil movement or erosion (e.g., rocky soil conditions) slope breakers may be eliminated at the discretion of the EIs. Slope breaker spacing may also be modified to correspond with slope breakers from adjacent rights-of-way.

The outfall of each temporary slope breaker will be directed to a stable, well-vegetated area or into an energy-dissipating device at the end of the slope breaker. The outfall of each temporary slope breaker will be positioned so as to prevent sediment discharge into wetlands, waterbodies, or other sensitive resources. The requirements stated in section 3.5.1 also apply to permanent slope breakers.

3.5.2 Sediment Barriers

Sediment barriers are intended to stop the flow of sediments and to prevent the deposition of sediments into sensitive resources. As shown in Appendix C of the POD, sediment barriers may be constructed of materials such as silt fence, staked, certified weed-free straw bales, compacted earth (e.g., drivable berms across travelways), sand bags, or other appropriate materials. Where silt fence is used, J-hooks will be installed at outlets.

At a minimum, EBCS will install and maintain temporary sediment barriers across the entire construction right-of-way at the base of slopes greater than five percent where the base of the slope is less than 50 feet from a waterbody, wetlands, or road crossing until construction is complete. Adequate room will be left between the base of the slope and the sediment barrier to accommodate ponding of water and sediment deposition.

Where wetlands or waterbodies are adjacent to and downslope of construction work areas, EBCS will install sediment barriers along the edge of these areas, to prevent sediment flow into the wetland or waterbody.

In travel lanes, EBCS may install drivable berms rather than removable sediment barriers such as straw bales. The EI may specify one technique or the other.

3.6 Trenching

After grading, two pipeline trenches (i.e., one for the steel, crude oil pipeline and one for the composite, produced water pipeline) will be dug in sequence using rotary trenching machines, track-mounted backhoes, or other similar equipment. The two pipelines will be constructed by separate construction crews working independently of one another, with the steel pipeline construction spread preceding the composite pipeline construction spread. The trenches will be excavated to a depth that provides sufficient cover over the pipelines, after backfilling, to protect

the lines from surface loads and to moderate ambient temperature fluctuation, which could adversely affect system hydraulics. The pipelines will each be buried in an approximately 5- to 10-foot-wide and 7-foot-deep trench. Additional cover may be provided at road and waterbody crossings. The trench width will provide adequate clearance from trench walls for safe installation of the pipelines. In sandy, unstable soils, the trench could be considerably wider, as the walls could cave or slough during trenching.

3.6.1 Open Trench Wildlife Mitigation

During sensitive wildlife timeframes, trench plugs will be installed at a maximum of 0.5-mile intervals and at visible wildlife game trails and livestock watering trails that intersect the trench line. Twenty-foot gaps will be left in spoil and topsoil stockpiles at all trench plugs. Suitable ramps will be installed from the bottom of trench to the top with a 5-foot-wide open path across the trench plug. A corresponding gap in the welded pipe string will be left at each trench plug.

3.7 Pipe Stringing, Bending, and Welding

3.7.1 Crude Oil Pipeline

Following trenching, sections of externally coated, steel pipe up to 80 feet long (also referred to as joints) will be transported over public road networks and authorized private access roads to the right-of-way by truck and placed or “strung” along the trench line.

After the pipe sections are strung along the trench and before they are joined together, individual sections of the pipe will be bent where necessary to allow for uniform fit of the pipeline with the varying contours of the bottom of the trench. Typically, a track-mounted, hydraulic pipe-bending machine will tailor the shape of the pipe to conform to the contours of the terrain. Where direction changes require bends greater than what can be properly bent in the field, a factory made fitting will be used. After the pipe sections are bent, they will be welded together into long sections and placed on wooden support skids.

Each weld must exhibit the same structural integrity with respect to strength and ductility as the pipe. Welds will be inspected by quality control personnel utilizing either X-ray techniques or other DOT-approved non-destructive examination to determine the quality of the weld. Welds that do not meet established specifications will be repaired or removed. Once the welds are approved, a protective epoxy or other suitable coating will be applied to the welded joints. The pipeline will then be electronically inspected or “jeeped” for faults or voids in the epoxy coating, and visually inspected for any faults, scratches, or other coating defects. Damage to the coating will be repaired before the pipeline is lowered in.

3.7.2 Produced Water Pipeline

Following installation and backfill of the crude oil pipeline, a separate crew would excavate the second trench and install the produced water pipeline. The produced water pipeline will be constructed of a high-pressure composite material rather than steel. This line will be delivered to the right-of-way in 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 produced water pipeline is positioned in the trench, the trench would be backfilled, and right-of-way restoration would commence.

3.7.3 Fiber Optic Communication Line

The fiber optic communication line will extend from the various well pad facilities to the control center at the storage/transfer facility. Installation of the fiber optic lines will not require additional excavation activities or land requirements, as fiber optic lines will be laid concurrent with the pipeline facilities and within the excavated pipeline trenches. An 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 a single crude oil pipeline will be installed. At horizontal directional drill (HDD) locations a 1.5-inch-diameter polyethylene 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.).

3.8 Lowering-in, Trench Dewatering, Trench Breakers and Backfilling

Before the pipelines are lowered in, the trench will be inspected to be sure it is free of wildlife that may be trapped in the trench as well as rocks and other debris that could damage the pipe or protective coating. In rocky areas, padding material such as finer grain sand, soil, or gravel will be placed in the bottom of the trench to protect the pipeline. No topsoil will be used as padding material. The pipeline may also be wrapped in a rock shield, which is typically made of fabric or screen. Excess rock will be removed from at least the top 12 inches of soil in all actively cultivated or rotated cropland and pastures, hayfields, and residential areas.

During construction, open trench sections may fill with water due to weather events. In these instances, trench sections will be dewatered by pumping water out and discharging it in an upland area, or into sediment filtration/energy dissipation device, within the approved workspace. Dewatering devices will typically be located on the edge of the construction right-of-way. See EBCS' *Storm Water Pollution Prevention Plan* (SWPPP) located in Appendix F of the POD.

Trench breakers may be installed where needed. Trench breakers are intended to slow the flow of subsurface water along the closed trench. Trench breakers may be constructed of materials such as sand bags or polyurethane foam; topsoil will not be used to form trench breakers. Appendix C of the POD shows a typical trench breaker installation. Trench breaker locations will coincide with slope breakers, unless the EIs recommend modified spacing. Spacing intervals for trench breakers will be the same as those described for temporary and permanent slope breakers in Section 3.5.1. At a minimum, EBCS will install a trench breaker at the base of slopes greater than 5 percent where the base of the slope is less than 50 feet from a waterbody or wetland and where needed to avoid draining a waterbody or wetland.

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. Soil will be mounded over the trench only to allow for normal soil settling.

3.9 Hydrostatic Testing

After backfilling, the pipelines will be hydrostatically tested with pressurized water to ensure the system is capable of withstanding the operating pressure for which it is designed. The pipelines will be broken into 'test segments'. These test segments have been determined by water

availability, water permitting requirements, and terrain. It is anticipated that water for hydrostatic testing will primarily be obtained from municipal or commercial sources, but a combination of groundwater and surface water sources could also be used subject to applicable landowner agreements and permit stipulations. 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.

After completion of hydrostatic testing, the pipelines will be cleaned and dried using mechanical tools (pigs) that are moved through the pipelines with pressurized, dry air. Details related to hydrostatic testing, including water requirements, withdrawal and discharge locations, aquatic mitigation techniques used during withdrawal, and discharge mitigation techniques, are located in the *Hydrostatic Testing Plan* (POD Appendix P).

3.10 Tie-Ins, Commissioning, and Markers

Following successful hydrostatic testing, test manifolds will be removed and the final pipeline tie-ins will be made.

After final tie-ins are complete, the tie-in welds have been inspected, and the line is sufficiently dried, pipeline commissioning will commence. Commissioning involves activities to verify that equipment is properly installed and working, the controls and communications systems are functional, and that the pipelines are ready for service. Finally, the pipelines will be prepared for service by purging the line of air and loading the line with product.

Markers showing the location of the pipelines will be installed at fence and road crossings in order to identify the owner of the pipelines and convey emergency information in accordance with applicable governmental regulations, including DOT safety requirements. Special markers providing information and guidance to aerial patrol pilots will also be installed.

4.0 SPECIAL PIPELINE CONSTRUCTION PROCEDURES

In addition to standard pipeline construction methods, EBCS will use special construction techniques where warranted by site-specific conditions. These special techniques will be used when constructing across paved and unpaved roads, railroads, utility crossovers, steep terrain, unstable soils, waterbodies, wetlands, when blasting through rock, or avoiding sensitive resources.

4.1 Road, Highway, Railroad, Foreign Utility Crossings

Construction across paved roads, highways, and railroads will be in accordance with the requirements of EBCS' road and railroad crossing permits and approvals. Major paved roads, highways, and railroads will be crossed by the *Horizontal Directional Drill* (HDD) method or using a conventional road bore. A road bore requires the excavation of a pit on each side of the feature, the placement of boring equipment in the pit, then boring a hole under the road at least equal to the diameter of the pipe. Once the hole is bored, a prefabricated pipe section will be pulled through the borehole. For long crossings, sections may be welded onto the pipe string just before being pushed through the borehole. There will be little or no disruption to traffic at road, highway, or railroad crossings that are bored.

Some smaller, unpaved roads and driveways may be crossed using the open-cut method where permitted by local authorities or private owners (see Appendix C, figure 13). The open-cut method will require temporary closure of the road to traffic and establishment of detours. If no reasonable detour is feasible, at least one lane of the road being crossed will be kept open to traffic, except during brief periods when it is essential to close the road to install the pipelines. Most open-cut road crossings will be completed and the road resurfaced in a few days. EBCS will take measures such as posting signs at open-cut road crossings and utilizing flagmen to ensure safety and minimize traffic disruptions.

Additionally, EBCS has developed a *Transportation Plan* (see POD Appendix N). The *Transportation Plan* is intended to mitigate potential impacts of project-related road use and construction activity, and to maintain and/or moderately upgrade existing access roads, consistent with project needs relating to the useful management of resources. EBCS is currently working with the counties crossed by the pipelines' route to obtain permits and develop road mitigation that might be necessary for construction and post-construction of the project.

Driveway installation to permanent, aboveground facilities are depicted on the aboveground facility plot plans located in Appendix B of the POD, *Facility Plot Plans and Typical Right-of-Way Cross Sections*. These roads will be wholly contained within the right-of-way, or constructed within parcels that EBCS has identified for the construction of aboveground facilities.

Foreign pipeline and road and railway crossing designs will conform to good engineering practices and to the requirements of the applicable facility owner or regulatory authority (e.g., DOT, County Department of Public Works).

4.2 Side Slope Cutting and Steep Terrain

Side slope cutting will occur in rough, steep terrain, and in areas where rerouting the pipelines is not feasible due to mitigating factors such as sensitive resource avoidance, paralleling road ways, existing utilities, etc. Where the pipelines cross laterally along the side of a slope, cut, and fill grading may be required. Generally, on steep side slopes, soil from the high side of the right-of-way will be excavated and moved to the low side of the right-of-way to create a safe and level work terrace. This process will require sufficient construction right-of-way width, or ATWS. Specifically, EBCS has determined that side slopes greater than 10 degrees or 17 percent grade will require special construction practices and ATWS, where the construction right-of-way width is otherwise restricted (e.g., federal lands). After the pipelines are installed, the soil from the low side of the right-of-way will be returned to the high side, and the slope's original contours will be restored (see POD Appendix B for workspace requirements and layout). Mulch will be applied on slopes exceeding 10 percent (see section 6.6 Mulching Crimping and Punching). Commercial erosion control fabrics and soil pocking are other measures that will be used to stabilize slopes exceeding 20 percent.

When disturbed by construction through vegetation removal, parts of the project area may be susceptible to erosion if water from snowpack runoff and intense rainfall events are not controlled. Based on site-specific conditions, EBCS has identified measures that will be implemented to prevent slope failure. The EIs may modify these mitigation measures on a case-by-case basis. Table 4.2-1 lists the locations of steep slope areas by milepost where ATWS/special construction practices will be required.

TABLE 4.2-1

Bear Den Phase 2 Project
Horizontal Directional Drill Crossings Associated with a Side Slope or Other Sensitive Area

Line Name	Feature Description	Enter Milepost	Exit Milepost	Length (feet)
AR-18	Steep Side Slope	0.3	0.5	744
AR-25	Steep Side Slope	1.6	1.7	500
AR-25	Steep Side Slope	4.7	4.8	499
AR-48	Steep Side Slope	0.0	0.1	269
AR-48	Habitat	3.7	3.8	452
AR-51	Steep Side Slope	0.0	0.0	150

4.2.1 Stockpiling

On steep slopes where topsoil, woody debris, and rock cannot be conventionally stockpiled at the edge of the construction right-of-way, the contractor will push the material to ATWS for use during restoration.

4.2.2 Temporary Slope Breakers

Temporary slope breakers will be installed after the right-of-way is graded. In most cases, temporary slope breakers will be spaced at intervals determined by the EI. A temporary breaker will be installed 10 to 30 feet from the crest of a slope to act as a reference point for spacing the remaining breakers. Slope breakers will be inspected on a daily basis in areas of active construction; on a weekly basis in areas with no active construction; and within 24 hours of each 0.5-inch or greater rainfall.

Temporary slope breakers may be omitted where the surface is predominately rock and the potential for erosion is minimal.

4.2.3 Trench Breakers

Trench breakers will be constructed at intervals determined by the EI where surface drainages parallel the trenchline. In addition, trench breakers will be installed at the base of steep slopes adjacent to waterbodies.

4.2.4 Re-contour and Slope Reduction

Special attention will be given to shaping the construction right-of-way to direct runoff into existing drainages off the right-of-way. Cut and fill slopes will have the slope reduced to 3:1 or 4:1 ratio, or to match the adjacent utility right-of-way, to aid in reclamation and stabilization. If necessary, energy dissipation devices may be installed at the bases of cut and fill slopes to prevent scour in adjacent steep banks not located in the construction right-of-way.

4.2.5 Permanent Slope Breakers

Permanent slope breakers will be installed near the top of a slope, typically within 10 to 30 feet of the crest of a slope, to act as a reference point for spacing the remaining breakers. Spacing of the remaining breakers will be determined by the EI. When deciding on the placement interval of permanent slope breakers, the EI will attempt to match them to breakers located on adjacent rights-of-way, where applicable.

Where the ground surface is naturally rocky and resistant to erosion, permanent breakers may be omitted or the spacing increased at the discretion of the EI.

4.2.6 Rock Mulch

Rock mulch will be used to control erosion in areas that have a native gravel, cobble, boulder, or bedrock surface. Rock salvaged and stockpiled from these areas during construction will be distributed over the construction right-of-way during restoration and seeded with broadcast seeder. The gaps in the rocks will provide a microenvironment beneficial to seed germination by allowing moisture to collect and provide protection from wind. A rock cover will also blend the construction right-of-way into undisturbed areas.

4.2.7 Pocking

In some instances, mulch and erosion control fabrics may not be used. In many areas where slope is 10 percent or greater, EBCS will utilize a technique called “pocking.” Pocking creates a seedbed which is conducive to the establishment of permanent vegetative cover that will stabilize steep areas, provide forage for wildlife, and create an aesthetically compatible reclaimed right-of-way to that of adjacent areas. Pocking will involve creating a series of regularly spaced depressions, or mini terraces, using a backhoe. The depressions are the width of a standard backhoe bucket and are approximately 8-inches to 12-inches in depth.

The small depressions retain water runoff, creating a more mesic site to facilitate seed germination and subsequent seedling establishment. They will also minimize the potential for rill and gullies to form by diverting runoff and retaining a large portion of collecting precipitation. The depressions are offset from one another in order to minimize the potential that lower terraces would fail should a terrace above it fail. Where pocking is used, permanent slope breakers will not be used.

4.3 Waterbody Crossing

The following provisions will apply to waterbody crossings throughout the project.

4.3.1 Definitions

Waterbodies in the project area were delineated and classified as one of four types, ephemeral, intermittent, perennial, and spring. Ephemeral waterbodies are waterbodies that flow only in direct response to precipitation and are often called dry washes. Intermittent waterbodies are waters that flow only at certain times of the year when it receives water from springs or from some other source such as snowmelt. Waterbodies that flow continuously, usually from a groundwater source, are perennial waterbodies.

4.3.2 Notification

No potable surface water supply intakes have been identified within 3 miles downstream of any waterbodies crossings. Therefore, no notifications of construction in waterbodies will be required.

4.3.3 Installation

One perennial waterbody, Cherry Creek, and one pond, would be crossed by the proposed Bear Den Phase 2 Project. Access road PAR 25-01 has an established culvert where it crosses a perennial tributary to Cherry Creek (s-mc-kl-001) and a bridge where it crosses the main

channel of Cherry Creek (s-mc-kl-002). Therefore, construction equipment using access road PAR 25-01 will not impact the waterbodies at these crossings. EBCS proposes to cross Cherry Creek using HDD crossing methods, as described in detail below, see Table 4.3.3-1. EBCS would adhere to the guidelines outlined in its CRMP and the requirements of its waterbody crossing permits when crossing Cherry Creek. One primary objective of mitigation for construction activities around waterbodies and wetlands is to minimize the amount of bare ground that is exposed.

A pond was mapped along Line AR-48-(MP 0.4) and occurs within the temporary and permanent right-of-way. The excavated pond (o-mc-kf-001) will be open-cut, as described in detail below, see Table 4.3.3-1.

Table 4.3.3-1 identifies all waterbodies crossed by type, location, and proposed crossing method.

TABLE 4.3.3-1

Bear Ben Phase 2 Project
Waterbody Crossing Table

Line	Milepost	Waterbody ID	Waterbody Type	Waterbody Name	Crossing Method
AR-25	4.4	s-mc-kl-002	Perennial	Cherry Creek	HDD
AR-48	0.4	o-mc-kf-001	Open Water	Pond	Open-Cut

ATWS areas will typically be required on both sides of waterbody crossings to stage construction equipment, fabricate pipe, and store materials. These additional temporary workspace areas will generally be located at least 50 feet away from the water's edge.

4.3.4 Equipment Bridges

Where construction equipment access across a waterbody is required, temporary bridges will be installed across waterbodies that are flowing, or contain standing water, at the time of construction. With the exception of the initial clearing equipment, which will be allowed one pass through a waterbody within a 15-foot corridor, and that needed to install equipment bridges, only the equipment necessary for instream excavation and backfilling will be allowed in the stream channel. Other construction equipment will cross waterbodies on temporary equipment bridges. Bridges will be removed as soon as possible after reclamation.

Bridges will be designed to withstand the highest flow of a given waterbody. Equipment bridges will typically consist of prefabricated construction mats (see POD Appendix C for typical bridge layout), although other options such as rail flat cars placed over the waterbody, with or without a culvert, may also be utilized. The Contractor will be responsible for maintaining any bridges built so as to prevent soils from entering the waterbody.

In instances where permanent access roads cross waterbodies, at-grade, low water crossings will be installed to provide operational equipment and vehicles with permanent access.

4.3.5 Open-Cut Crossing Method

For open-cut crossings, clearing adjacent to waterbodies will involve the removal of trees and brush from the construction right-of-way and additional temporary workspace areas. Woody vegetation within the construction right-of-way will be cut at ground level and cleared to the

edge of the waterbody. To avoid excessive disruption of wetland soils and the native seed and rootstock within the waterbody soils, stump removal, grading, topsoil segregation, and excavation will be limited to the area immediately over the trenchline. A limited amount of stump removal and grading may be conducted in other areas if dictated by safety-related concerns. Sediment barriers may be installed at the top of the streambank if no herbaceous strip exists. Initial grading of the herbaceous strip will be limited to the extent needed to create a safe approach to the waterbody and to install a bridge.

During clearing, sediment barriers will be installed and maintained across the right-of-way adjacent to a waterbody and within ATWS areas to minimize the potential for sediment runoff. Silt fence and/or straw bales located across the working side of the right-of-way will be removed during the day when vehicle traffic is present and will be replaced each night. Alternatively, drivable berms may be installed and maintained across the access path in lieu of silt fence and/or straw bales.

Once the trench is excavated, the prefabricated segment of pipe will be installed in the trench. Most pipe installed under a waterbody will be coated with concrete or equipped with set-on weights to provide negative buoyancy. The trench will then be backfilled with native streambed spoil. EBCS will attempt to complete all instream work within 24 hours for all ephemeral and intermittent waterbodies crossings and within 48 hours for perennial waterbody crossings.

Sediment Control

Silt fence, or equivalent, will be installed and anchored along the banks of waterbodies. Sediment control devices will be maintained until revegetation of adjacent areas is considered successful or the area is stabilized. Permanent diversion berms will be constructed at the base of slopes near waterbodies, unless otherwise specified by the EI.

Trench Plugs

Earthen trench plugs will be left in place on both banks of the waterbody until immediately before pipe installation. This will separate the waterbody trench from the upland trench to prevent water from being diverted into the upland portions of the pipelines' trench and to keep muddy water that accumulates in the upland trench from flowing into the waterbody.

Pipeline Burial Depth

The pipelines will be installed at a depth below the bed of washes and wetlands that is consistent with DOT pipeline design and operating standards, to prevent exposure of the pipelines and maintain the integrity of the system in event of a flash flood.

Backfill Material

Excavated material will be used for trench backfill in perennial streams and dry washes, unless expressly permitted otherwise by the regulatory agency. Backfilling will begin as soon as practical after installation of the pipe and reestablishment of the streambanks.

If blasting is required for installation in a waterbody, the trench will be backfilled with native rock that was removed during blasting activities.

Streambed and Bank Stabilization

Original channel configurations will be reestablished, and the banks replaced, compacted, and restored to the original condition. Banks may be graded to a more stable configuration if eroding or unstable conditions were present prior to construction.

To provide additional erosion control, EBCS will use erosion control fabrics (*e.g.*, jute matting, straw blankets with plastic netting, or curlex) on the banks of washes and waterbodies where steep slopes and a minimum of natural rock are present. A permanent slope breaker will be installed at the base of any slope leading to a waterbody.

If required, EBCS will install temporary fences at the edges of waterbodies to prevent grazing cattle from disturbing the area before a mature vegetative cover is established.

The banks of perennial streams will be seeded with western wheatgrass (*Pascopyrum smithii*) at a rate of 40 pounds per acre to provide temporary cover while allowing native herbaceous and woody vegetation to become re-established without excessive competition. Lime, mulch, and fertilizer will not be used in these locations. Dry wash bottoms will not be seeded.

4.3.6 Dry Crossing Methods

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

The flume crossing method involves temporarily directing the stream flow through one or more flume pipes that are placed over the area to be excavated. This method allows for trenching activities to occur under relatively dry conditions beneath the flume pipes, avoiding disruption to water flow. With this method, stream flow is directed through the flumes by constructing two bulkheads, which may consist of materials such as sand bags and plastic sheeting. Following completion of pipeline installation, backfill of the trench, and restoration of the stream banks, the bulkheads and flume pipes are removed.

The dam and pump crossing method involves installing temporary dams upstream and downstream of a waterbody crossing. The dams are typically constructed of sandbags and plastic sheeting. Following installation of the dams, appropriately sized pumps are used to dewater the excavation area and to transport the stream flow around the construction work area. Intake screens are installed at the pump inlets to prevent entrainment of aquatic organisms, and energy-dissipating devices are installed at the pump discharge point to minimize erosion and stream bed scour. Trench excavation and pipeline installation then take place in the dewatered portion of the waterbody channel. Following completion of pipeline installation, backfill of the trench, and restoration of stream banks, the temporary dams are removed, and flow through the construction work area restored.

4.3.7 Horizontal Directional Drill Method

The HDD method is a process that allows for trenchless construction across an area. With this method, a borehole is drilled under the waterbody and a prefabricated segment of pipe is installed through the borehole, thereby avoiding disturbance to the surface of the right-of-way and to the waterbody proper. HDDs are most commonly used to cross underneath sensitive or difficult to construct waterbodies or combination wetlands and waterbodies and can provide certain advantages (e.g., avoidance of surface disturbance, riparian tree clearing, or in-stream construction) over typical pipeline construction and installation methods. This method of

pipeline installation does not restrict fish passage. The HDD crossing method would be used to cross Cherry Creek and a PEM wetland, the only waterbody and wetland crossings proposed for the Project.

The first step of HDD will be to drill a small-diameter pilot hole from one side of the crossing (entry side) to the other (exit side). Drilling will be achieved using a powered drill bit. The drilling fluid, commonly referred to as mud, will be a mixture of water and bentonite (a naturally occurring clay mineral), which will be pumped into the drill hole through the drill pipe during the drilling process. The pressure of the drilling mud will transmit hydraulic power through the drill bit, transport cuttings to the surface, lubricate the drill bit, and stabilize the drill hole. Water, the main ingredient of drilling mud, will be obtained from the waterbody during drilling or will be trucked in from another source. Small pits will be dug at or near the entry and exit holes to temporarily store the mud and cuttings. The mud and cuttings will be pumped from the temporary storage pits to an on-site recycling unit where the bentonite clay will be processed for reuse.

As drilling of the pilot hole progresses, segments of drill pipe will be inserted into the pilot hole to extend the length of the drill across and under the waterbody. The drill bit will be steered and monitored throughout the process to maintain the designated path of the pilot hole. To assist in steering, a sensor grid may be established on the surface on both the entry and exit sides of the horizontal directional drill. The sensor grid will be fabricated by installing several stakes along and above the drill path and wrapping with an insulated coil wire. The coil wire will be then energized with a portable generator, which creates a magnetic field to help track the drill bit path.

Once the pilot hole is complete, the sensor grid will be removed and the hole will be enlarged to accept the pipeline. To enlarge the pilot hole, a larger reaming tool will be attached to the end of the drill pipe on the exit side of the hole. The reamer will then be drawn back through the pilot hole to the drill rig (entry side). Drill pipe sections will be added to the rear of the reamer as it progresses toward the rig, thereby allowing a string of drill pipe to remain in the hole at all times. Typically, several passes of consecutively larger reaming tools are required before the hole will be of sufficient size. The final hole will be approximately 1½ times larger than the pipeline to be installed.

The pipeline segment to be installed beneath the waterbody will be fabricated into one section on the right-of-way on the exit side of the crossing. The pipe segment will be radiographically inspected and/or hydrostatically tested prior to installation. After the hole is completed, the pipeline segment will be attached to the drill pipe on the exit side of the hole and pulled back through the drill hole toward the drill rig.

Once the pipeline is installed, excess drilling mud will be collected and disposed of at an appropriate facility. If water will be left over from the drilling process, it will be discharged into a well-vegetated upland area or into an energy dissipation/sediment filtration device, such as a geotextile filter bag or straw bale dewatering structure at the site.

Typically, horizontal directional drilling involves no disturbance to the bed or bank of the waterbody being crossed. However, if a natural fracture or void in the ground is encountered, an unexpected release of drilling mud to the surface could occur. Unconsolidated gravel, coarse sand, and fractured bedrock all present circumstances that increase the likelihood of drilling mud releases. These areas present paths that can run laterally or vertically. If drilling mud moves laterally, the release may not be evident on the ground. For a release to be evident there must be a flow path extending vertically from the drill hole to the surface. The volume of

mud released will be dependent on a number of factors, including the size of the fault, the permeability of the geologic material, the viscosity of the drilling mud, and the pressure of the hydraulic drilling system.

Releases to surface generally occur above or near the drill path. If a wetland or waterbody is present, drilling mud could be released into the wetland or waterbody. In the event drilling mud is released on surface, including within a wetland it will be contained with straw bales, silt fence, or berms. A small pit may be dug at the release site to contain its spread, and a pump will be used to transfer the drilling mud from the pit and into a containment vessel.

A drilling mud release to a waterbody will be more difficult to contain because mud is quickly dispersed into the water and carried downstream. In the event of a release to a waterbody, an attempt may be made to plug the fault by lowering the drilling pressure and thickening to the drilling mud, with additional bentonite, or other non-hazardous materials that are compatible with the drill equipment being used.

The *Horizontal Directional Drill and Contingency Plan* included as POD Appendix G describes the prevention, detection, monitoring, notification, and corrective action procedures in the event of an inadvertent release of drilling fluid during an HDD.

Because of access restrictions and the remoteness of portions of the right-of-way, there may be a need for construction equipment access across the HDD. Specifically, where there are no alternative means of ingress/egress to the right-of-way except through the HDD locations, EBCS will require a 15-foot travel lane through the HDD locations to allow construction equipment access to remote right-of-way. EBCS will cut vegetation to ground level, only removing stumps as necessary for safety, and laying mats as needed to safely travel through these areas.

4.4 Wetland Crossings

Based on a combination of field delineated wetland data and supplemented by National Wetland Inventory map data, the proposed pipeline route would cross 1 palustrine emergent wetland (PEM; Figure 2 Appendix A). There are four PEM wetlands that occur adjacent to access road PAR 25-01; however, there will be no Project impacts to these wetlands. Access road PAR 25-01 is crowned and ditched and will not require improvements due to construction activities.

EBCS will use a 75-foot-wide construction right-of-way through wetlands. ATWS areas will be required on both sides of some wetlands to stage construction, fabricate the pipelines, and store materials. Where feasible, additional temporary workspace areas will be located in upland areas a minimum of 50 feet from the wetland edge. Construction equipment working in wetlands will be limited to that essential for right-of-way clearing, excavating the trench, fabricating and installing the pipelines, backfilling the trench, and reclaiming the right-of-way.

In areas where there is no reasonable access to the right-of-way except through wetlands, construction equipment will be allowed to travel through only if the ground is firm enough or has been stabilized (e.g., with timber mats) to avoid rutting. As discussed in Section 4.3.7, construction equipment will require access to portions of the right-of-way with limited to no access other than through HDD locations.

Clearing of vegetation in wetland rights-of-way will be limited to trees and shrubs, which will be cut flush with the surface of the ground and removed from the wetland. Where HDD methods will be used and where it is necessary to cross within the wetland first, clearing of shrubs and trees will be limited to the 15-foot travel lane. To avoid excessive disruption of wetland soils and

the native seed and rootstock within the wetland soils, stump removal, grading, topsoil segregation, and excavation will be limited to the area immediately over the trenchline. A limited amount of stump removal and grading may be conducted in other areas if dictated by safety-related concerns. Topsoil segregation over the trenchline will only occur if the wetland soils are not saturated at the time of construction.

During clearing, sediment barriers, such as silt fence and staked straw bales, will be installed and maintained adjacent to wetlands and within additional temporary workspace areas as necessary to minimize the potential for sediment runoff. Sediment barriers will be installed across the full width of the construction right-of-way at the base of slopes adjacent to wetland boundaries. Silt fence and/or straw bales installed across the working side of the right-of-way will be removed during the day when vehicle traffic is present and will be replaced each night. Alternatively, drivable berms may be installed and maintained across the access path in lieu of silt fence or straw bales. Sediment barriers will also be installed within wetlands along the edge of the right-of-way to minimize the potential for sediment to run off the construction right-of-way and into wetland areas outside the work area. If trench dewatering is necessary in wetlands, silt-laden trench water will be discharged through an energy dissipation/sediment filtration device, such as a geotextile filter bag or straw bale structure, to minimize the potential for erosion and sedimentation.

The method of pipeline construction used in wetlands will depend largely on the stability of the soils at the time of construction. If wetland soils are not excessively saturated at the time of construction and can support construction equipment on equipment mats, timber riprap, or straw mats, construction will occur in a manner similar to conventional upland cross-country construction techniques. In unsaturated wetlands, topsoil from the trenchline will be stripped and stored separately from subsoil. Topsoil segregation generally will not be possible in saturated soils.

Where wetland soils are saturated and/or inundated, the pipelines may be installed using the push-pull technique. The push-pull technique will involve stringing and welding the pipelines outside of the wetland and excavating and backfilling the trench using a backhoe supported by equipment mats or timber riprap. The prefabricated pipelines will be installed in the wetland by equipping it with buoys and pushing or pulling it across the water-filled trench. After the pipeline is floated into place, the floats will be removed and the pipeline will sink into place. Most pipe installed in saturated wetlands will be coated with concrete or equipped with set-on weights to provide negative buoyancy.

Because little or no grading will occur in wetlands, restoration of contours will be accomplished during backfilling. Prior to backfilling, trench breakers will be installed where necessary to prevent the subsurface drainage of water from wetlands. Where topsoil has been segregated from subsoil, the subsoil will be backfilled first, followed by the topsoil. Topsoil will be replaced to the original ground level leaving no crown over the trenchline. In some areas where wetlands overlie rocky soils, the pipe will be padded with rock-free soil or sand before backfilling with native bedrock and soil. Equipment mats, timber riprap, gravel fill, geotextile fabric, and/or straw mats will be removed from wetlands following backfilling. Table 4.4-1 identifies all wetland crossed by type, acres, location and proposed crossing method.

TABLE 4.4-1

Bear Den Phase 2 Project
Wetland Crossing Method and Construction Impacts

Line	Milepost In	Milepost Out	Wetland ID	Wetland Type	Crossing Method [b]	Temporary Impacts (acres)	Permanent Impacts (acres)
AR-51	0.6	0.7	w-mc-kf-001	PEM	HDD	0.0	0.0

Where wetlands are located at the base of slopes, permanent slope breakers will be constructed across the right-of-way in upland areas adjacent to the wetland boundary. Temporary sediment barriers will be installed where necessary until revegetation of adjacent upland areas is successful. Once revegetation is successful, sediment barriers will be removed from the right-of-way and disposed of properly.

In wetlands, western wheatgrass will be planted at a rate of 40 pounds per acre to provide temporary cover while allowing native herbaceous and woody vegetation to become re-established without excessive competition. Lime, mulch, and fertilizer will not be used in wetlands.

4.5 Blasting

No blasting is anticipated for this Project; however, blasting may be necessary as a last resort in areas where competent shallow bedrock or boulders are encountered that cannot be removed by conventional excavation with a trackhoe trencher, ripping with a bulldozer followed by trackhoe excavation, or hammering with a trackhoe-attached device (hoe-ram) followed by excavation. See Appendix O of the POD for EBCS' *Blasting Plan*.

4.6 Residential Construction

Based on an aerial review of the project, no residences are located within 300 feet of the proposed project area; thus, no special residential construction techniques are anticipated to be needed.

4.7 Rangeland Construction

The Project will cross grazing leases on federal lands. Each fence crossed by construction crews will be braced and secured to prevent slacking of the wire. The opening created will be closed when construction crews leave the project area to prevent passage of livestock. Any gaps in natural barriers used for livestock control created by construction activity will be fenced according to landowner or lease holder.

All existing improvements, such as fences, gates, irrigation ditches, cattle guards and reservoirs will be maintained during construction and repaired to pre-construction conditions or better, if affected by construction activity.

4.7.1 Grazing Mitigation

To protect livestock on rangeland, EBCS will install trench plugs across the pipeline trench where it crosses livestock trails, and ramps will be installed to allow for the escape of livestock should they fall into the trench. EBCS will leave gaps between strung sections of pipe about every 0.5 mile or wherever there is a feature crossing (e.g., waterbody, road, utility), or where

identified by the EI to allow livestock to pass between long, continuous sections prior to pipe lowering in.

EBCS will work with landowners to discourage livestock grazing of the construction right-of-way during the first growing season by utilizing temporary fencing, deferred grazing agreements, or increased grazing rotation frequency.

4.8 Waterlines

If construction damage to water pipelines occurs, repairs will be made according to landowner's or lease holder's specifications. If needed, an emergency source of potable water for livestock will be provided by EBCS.

In the event that EBCS severs a waterline, the line will be repaired to at least equal or better quality compared to its pre-construction condition. In most cases, EBCS will be able to place the Project pipeline(s) underneath the waterline. In instances where the waterline requires cutting or is accidentally severed, the line will be braced on both sides of the affected area near the edges of EBCS' pipe trench to cut off water flow. Once the pipe is laid in the trench, a new section of waterline will be placed in the gap. The waterline will be installed back to its original burial depth with at least 6-inches of clearance between the waterline and the newly installed pipelines. Alternate water sources will be provided for livestock during this period in consultation with the leaseholder or waterline owner.

4.9 Dust Control

Wind has been identified as having a potential for causing soil erosion during construction of the Project. Fugitive dust emissions will be primarily caused by increased traffic on dirt roads and the construction right-of-way. When construction activities are in the vicinity of major roadways, such that fugitive dust plumes could create a safety hazard for traffic, construction activity shall cease until water trucks can control the dust. The EI will direct application of necessary dust controls.

In general, fugitive dust emissions from the construction right-of-way will be mitigated through efforts to complete construction and restoration as expeditiously as possible. Efforts will be made to complete final reclamation and cleanup of a disturbed area within 20 days after backfilling operations, with seeding of disturbed areas to follow rapidly thereafter, weather and soil conditions permitting. During active construction, fugitive dust from both access roads and the construction right-of-way itself will primarily be controlled using water.

Water will be applied to the access roads and right-of-way using a rear spraying water truck or other suitable means. The frequency of water application will largely depend on weather conditions, but in general it is anticipated that approximately 6,000 gallons per day per linear mile of access road and right-of-way will be required.

To minimize wind erosion and fugitive dust emissions during construction, EBCS will implement the following Reasonably Available Control Measures:

- Disturb no more earth than required for construction to occur;
- Water the right-of-way, laydown areas, and temporary roads in areas of active construction, if necessary and as determined by the EI. If soils are pulverized

greater than 2 inches deep in active areas, watering will be required as frequently as necessary to control dust. Water for dust control will be obtained from municipal sources;

- Control project-related traffic speeds on dirt access roads, the construction right-of-way, and other linear facility rights-of-way;
- Mandatory speed limits of 25 miles per hour will be enforced on unimproved dirt roads or otherwise will be determined by the occupying property owner on private lands and by the county on public roads (e.g., posted speed limits);
- Speed limits will decrease when excessive winds prevail and where sensitive areas, such as public roads, may be adjacent to access roads or the right-of-way; and
- Temporarily stockpiled soils will be watered as necessary, to create a semi-hard protective layer to minimize wind erosion if necessary, as determined by the EI. This treatment would occur once after the trench has been excavated. Topsoil piles will also be watered as soon as the right-of-way is graded and the topsoil is segregated.

4.10 Fire Prevention and Suppression

The risk of fire danger during pipeline construction is related to smoking, spark arresters, catalytic converters, vehicle fires, welding, normal operation, and refueling of equipment. EBCS and its construction contractors will prevent and suppress all fires in accordance with federal, state, and local regulations. Measures identified apply to work within the project area defined as the right-of-way, access roads, all work and storage areas, and other areas used during construction of the project. The measures described will be in effect from the beginning to the end of construction. Specifically, EBCS will implement the following measures to prevent and suppress fires:

- A list of local fire authorities and their designated representative to contact shall be maintained on site by construction personnel;
- adequate firefighting equipment shall be available on site in accordance with the applicable regulatory requirements;
- the level of fire hazard shall be posted at the construction office (where visible for workers) and workers shall be made aware of the hazard level and related implications;
- the construction contractor shall provide equipment to handle any possible fire emergency. This shall include, although not be limited to, water trucks; portable water pumps; chemical fire extinguishers; hand tools such as shovels, axes, and chain saws; and heavy equipment adequate for the construction of fire breaks when needed;
- the construction contractor shall supply and maintain in working order an adequate supply of fire extinguishers for each crew engaged in potentially

combustible work such as welding, cutting, grinding, and burning of brush or vegetative debris;

- in the event of a fire, construction contractor shall immediately use resources necessary to contain the fire, and the contractor shall simultaneously notify local emergency response personnel;
- all tree clearing activities shall be carried out in accordance with local rules and regulations for the prevention of forest fires;
- any burning shall be done in compliance with applicable state, county, or local regulations;
- any burning will be done within the right-of-way and ATWS and must be supervised at all times. Only small piles shall be burned to avoid overheating or damage to trees or other structures along the right-of-way;
- flammable wastes shall be removed from the construction site on a regular basis;
- flammable materials kept on the construction site will be stored in approved containers away from ignition sources;
- smoking shall be prohibited around flammable materials;
- smoking shall be prohibited on the entire construction site when the fire hazard level is high; and
- all burning tobacco and matches will be extinguished before discarding.

5.0 ABOVEGROUND FACILITY CONSTRUCTION

The Bear Den Phase 2 Project POD contains detailed information on aboveground facility locations, dimensions, and land requirements. In general, typical construction activities will be similar for all aboveground facilities including the pig launcher/receiver sites, wellhead facilities, mainline valves, and the lateral interconnect sites. Typical construction activities will include general clearing and grading, installation of foundations, underground piping and utilities, and any control buildings or associated ancillary facilities as required.

5.1 Infrastructure Facilities

Construction and installation of aboveground and infrastructure facilities will include clearing and grading, preparing foundations, installation and erection of facilities, hydrostatic pressure testing, cleanup and stabilization, and installation of security fencing around the facilities. Block valve and launcher/receiver construction will generally be concurrent with the construction of the pipelines. Upon completion, disturbed areas will be stabilized with gravel within a fenced enclosure or by seeding with appropriate species outside the fence. On federal lands, the aboveground components of these facilities will be painted to blend the facilities in with surrounding vegetation and soils. The valves and launcher and/or receiver sites will typically be enclosed in a chain-link security fence or bull fence.

5.1.1 Pig Launcher and Receiver Sites

Pig launcher and receiver sites lots will be fenced and graveled and will each automated block valves for both the crude oil and produced water gathering pipelines. Appendix B of the POD shows typical facility layouts for the pig launcher and receiver sites.

5.1.2 Wellhead Facilities

Wellhead facilities will include 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 with a 25-hp electric pump; pig launchers and block valves for both the crude oil and produced water pipelines; and associated piping. Appendix B of the POD shows typical wellhead facilities.

5.1.3 Block Valves and Lateral Interconnects

As part of construction of the pipelines, block valves will be installed at spacings that meet or exceed federal requirements, as defined by Title 49 CFR Part 195.260. Appendix B of the POD shows the layouts of a typical block valve site. The lateral interconnects will be constructed as depicted in the POD Appendix B.

6.0 RECLAMATION

6.1 Backfilling and Grading

To reduce the potential for erosion, proper compaction of the trench and grading would be completed prior to replacing topsoil. The backfill will be replaced to allow for normal settling over the trench. The disturbed areas would be restored to approximate the original contour of the land as closely as possible. This would include all non-essential access roads, hillsides, surface water drainages, and other areas where soil disturbance would occur.

Upon completion of grading and stabilization, disturbed areas would be inspected for slope stability, relief, topographic diversity, acceptable surface water drainage capabilities, and compaction. Trench breakers would be installed on steep slopes to prevent later surface erosion. Installation and spacing of the trench breakers are specified in Section 3.5.1 but may be adjusted by the EI, as determined on a site-specific basis.

6.1.1 Redistribution of Topsoil

Topsoil would be segregated and would not be mixed with spoil material before or during replacement. Only topsoil would be segregated and re-spread over the surface. Topsoil segregation benefits revegetation success as most plant-essential nutrients are found at or near the surface. Topsoil would not be used for bedding material in the trench, and topsoil from unstripped/undisturbed areas would not be used to cover adjacent disturbances. Topsoil would not be handled during excessively wet conditions or at times when the ground or topsoil are frozen.

Once the disturbed areas have been de-compacted as needed, topsoil would be re-distributed over the entire disturbed area from which it was salvaged and re-contoured. Re-distributed depths of topsoil would vary depending upon available stripping depths.

All disturbed areas would be subject to final grading; however, interim reclamation measures prior to seeding would ensure disturbed areas remain in rough condition to help protect the stability of topsoil after its re-distribution. Also, leaving the graded surface in a roughened condition would improve moisture permeability between the soil/spoil interface and provide micro-sites for seed germination. Compacted soils will be de-compacted using rippers, to a depth of 12 to 18 inches prior to spreading topsoil over the disturbed areas. Sites where this method is not practical (e.g., steep slopes, rocky areas, etc.) would be dozer-tracked perpendicular to the slope or otherwise left with adequate roughness following topsoil placement.

All areas disturbed by construction activities would be reclaimed using native vegetation, or in accordance with applicable land management agency request and/or private landowner specification, insofar as the landowner's requirements are compatible with EBCS's standards regarding right-of-way restoration and maintenance. If moisture conditions are favorable, permanent seeding will be done in the early fall (September) before the ground freezes. If moisture conditions are not favorable, permanent seeding will be completed in the late fall/early winter when there is no snow cover or frozen soils. If needed, revegetation may occur during the following spring, if needed, depending on weather or construction scheduling.

6.2 Decompaction

Once backfilling has been completed, decompaction will occur. Both top- and subsoils may be decompacted. Soil will be tested at regular intervals in disturbed areas using penetrometers or other appropriate devices. Similar soil types under similar moisture conditions will be examined in disturbed areas and in undisturbed, off-right-of-way areas, to approximate preconstruction conditions.

Decompaction testing will occur at approximately 0.25-mile intervals on the working side of the right-of-way. Topsoil will be tested for bulk density of 15 percent or greater and will be decompacted with a harrow plow or other deep tillage equipment prior to seeding and mulching, as needed.

In compacted soils, EBCS will scarify or rip the area to a depth of 6 to 12 inches using a chisel or para-plow, or other similar tillage equipment until the soil density is comparable to areas off the construction right-of-way. If ripped, the ripper shanks will be set apart 12 to 18 inches. Topsoil will be replaced after decompaction is completed. Sandy soils will not be scarified.

If severely compacted agricultural areas are encountered, they will be plowed with a paraplow or other deep tillage implement.

6.3 Seedbed Preparation

In upland soils, EBCS will disk or harrow the disturbed construction right-of-way approximately 2 to 6 inches deep to roughen the surface to enhance water and root penetration. Drag chains pulled by a tractor or tracked equipment may also be used to rough grade certain portions of the construction work areas.

In areas where access along the right-of-way is required for vehicular travel to hydrostatic test section tie-ins, pipeline drying, or valve sites, the travel lane may not be restored or seeded concurrently with right-of-way restoration. A separate crew will restore the travel lane when contractor access along the right-of-way becomes unnecessary.

If moisture conditions are favorable, permanent seeding will be done in the early fall (September) before the ground freezes. If moisture conditions are not favorable, permanent seeding will be completed in the late fall/early winter when there is no snow cover or frozen soils. If needed, revegetation may occur during the following spring, if needed, depending on weather or construction scheduling.

6.4 Seed Mixes

In cooperation with the USFS, BLM, and private landowners, two seed mixtures have been developed for the project area. On private and state lands crossed by the Project all disturbed areas will receive the seed mix outlined in Table 6.4-1. On federal land crossed by the Project all disturbed areas will receive the seed mix in Table 6.4-2 which was provided by the USFS McKenzie Ranger District and the BLM. All disturbed areas on USFS land would be re-seeded in accordance with the specifications outlined below. The right-of-way would be re-seeded at the end of construction.

In some instances, seed mixtures may need to be modified as a result of limited species availability, poor seed quality, soil type (see Section 6.7 below), or other site differences. These modifications would be made based on site-specific conditions and requirements.

TABLE 6.4-1

Bear Den Phase 2 Project
Approved Seed Mixes for State and Private Land Crossed by the Project

Seed Mix No./Season	Grass Species	Variety	Common Name	Percent of Mix	Actual PLS Mix Lbs/Acre	Broadcast Actual PLS Lbs/Acre
USFS – 1						
Cool Season	Agropyron smithii	Rodan	Western wheatgrass	40	4.00	8.00
	Stipa viridula	Lodorm	Green needlegrass	30	3.00	6.00
Warm Season	Calamovilfa longifolia	Goshen	Prairie sandreed	30	3.00	6.00

TABLE 6.4-2

Bear Den Phase 2 Project
Approved Seed Mixes for State and Private Land Crossed by the Project

Grass Species	Variety	Common Name	Percent of Mix	Actual PLS Mix Lbs/Acre	Drilled Actual PLS Lbs/Acre
Cool Season Grasses					
Elymus canadensis	Mandan	Canada wildrye	15	2.8	2.8
Nassella viridula	Lordorm	Green needlegrass	20	2.4	2.4
Pascopyrum smithii	Rodan	Western wheatgrass	25	4.9	4.9
Warm Season Grasses					
Bouteloua gracilis	Bad River	Blue grama	10	0.3	0.3
Calamovilfa longifolia	Goshen	Prairie sandreed	10	0.8	0.8
Schizachyrium scoparium	Badlands	Little bluestem	10	0.8	0.8
Forbes					
Dalea purpurea	Local	Prairie coneflower	4	0.25	0.25
Helianthus pauciflorus	Bismarck	Stiff sunflower	3	0.7	0.7
Echinacea angustifolia	Bismarck	Purple coneflower	3	0.5	0.5

6.5 Seeding Methods

EBCS will generally use one of four seeding methods, including seed drill, mechanized broadcast (cyclone) seeder on a tractor, hand cyclone seeder, or hydroseeding.

A seed drill will be used to distribute seed on the right-of-way where slopes and soil conditions allow. Seed shall be planted using a disc drill equipped with depth bands (or a suitable depth regulator to ensure proper depth of planting) and packer wheels. Seed shall be drilled between one quarter inch (1/4") and one half (1/2") inch deep. Care will be taken to ensure light seed (e.g., winter fat) is evenly applied with heavier seed.

A hand-operated or mechanically powered cyclone seeder will be used when a seed drill is not suitable. The seeding rate will be doubled where a broadcast seeder is used. This method distributes the seeds on the surface and the seeds are subsequently covered by use of a cultipacker, rake, or dragging a chain behind the seeding equipment. Hand-operated cyclone seeders will be used on slopes too steep for equipment to be operated safely. If rock is not present in these areas, hand dragging or raking will be used to incorporate the seed.

Hydroseeding and hydromulching are not expected to be used except in areas where conventional seeding and mulching techniques cannot be applied (i.e., slopes exceeding 25 percent), or when requested by the landowner. The seeding rate during hydroseeding will be broadcast application rate (i.e., twice the drilled rate).

General seeding of disturbed areas will occur in accordance with written recommendations for preparation, rates, methods, and dates obtained from land management agencies, the local soil conservation authority, or as requested by the landowner. EBCS will only purchase seed which has been tested for viability to ensure that desired seed viability exceeds 95 percent. All seed shall be State of North Dakota Certified or Registered seed (or certified/registered by the state of origin); certification tags shall be made available to the authorized officer for inspection before seed is planted.

Seeding will typically occur within 6 days following restoration. In some areas seeding may be delayed by weather. In these instances, seeding will occur in the following spring. If seeding cannot be done within the recommended seeding dates, the appropriate interim erosion control measures discussed in section 3.5 will be installed and seeding of permanent vegetation will be performed at the beginning of the next season. In no case will seeding be delayed beyond the next available seeding season.

6.6 Mulch Crimping and Punching

EBCS will mulch disturbed areas designated by the authorized officer. All disturbed areas with less than 40 percent slope shall be mulched as directed in 1, 2, or 3 below.

1. Straw used for mulching shall be from wheat, oats, barley, or other approved grain crops and free from noxious weeds or other objectionable material as determined by the authorized officer. Stem length of straw used for mulch shall average 10" (ten inches) or longer. Straw mulch shall be suitable for distribution with mulch blower equipment, and shall be anchored utilizing an acceptable mulch crimper. Straw mulch shall be applied at a rate of 1.5 tons (3000 lbs.) per acre.

2. Hay utilized for mulching shall be grass, free from noxious weeds or other objectionable material as determined by the authorized officer. Stem length of grass hay used for mulch shall average 10" (ten inches) or longer. Grass hay shall be suitable for distribution with mulch blower equipment, and shall be anchored utilizing an acceptable mulch crimper. Grass hay mulch shall be applied at a rate of 1.5 tons (3000 lbs.) per acre.

3. Wood cellulose fiber shall be natural or cooked wood cellulose fiber, shall disperse readily in water, and shall be nontoxic. The homogeneous slurry or mixture shall be capable of application with power spray equipment. A colored dye that is non-injurious to plant growth may be used when specified. Wood cellulose fiber shall be packaged in new, labeled containers. Rocky areas not conducive to straw or grass hay crimping will be mulched with wood cellulose fiber. Wood cellulose fiber mulch shall be applied at a rate of 1 ton (2000 pounds) per acre.

Organic erosion control mats shall be constructed of organic materials (aspen, straw, or similar), bound with a biodegradable mesh or netting, and shall be stapled to the soil as specified by the manufacturer.

6.7 Soil Mitigation

To promote the optimum regrowth potential for areas with soils that are difficult to stabilize and reclaim, EBCS has conducted a detailed analysis of soils along the pipelines' route that assessed areas which contain shallow soils, droughty soils, highly erodible soils, and those with a high potential for flooding. Slope, geomorphologic features, and vegetative cover were also factored into the analysis. The results of the analysis combined all factors to develop recommendations for site-specific mitigation and seed mixes which are best suited to these areas. The resulting mitigation will produce a stable right-of-way and maximize regrowth potential for the reclaimed areas. Many of these soil characteristics overlap one another. EBCS' EIs will be responsible for assessing areas where the following mitigation measures would be utilized and determining the specific measures for each area that will be applied.

6.7.1 Shallow Soils

On steep slopes, shallow soils are extremely erosive. Rooting depth is limited and the soils have limited water storage capacity. These areas include shallow, shallow rock, bedrock, and bedrock outcrop areas. At the discretion of the EI, EBCS may reduce the amount of soil that is removed and stored as topsoil in these areas. Rock mulch will be applied over shallow areas to stabilize topsoil, reduce erosion potential, and blend the areas with the surrounding landscape. The use of rock mulch also reduces evaporation from the soil surface, improving soil moisture retention and facilitating revegetation. EBCS will attempt to blend rock mulch into the adjacent landscape during restoration.

6.7.2 Droughty Soils

Droughty soils occur as a result of soil texture, landscape position, aspect, and slope. There are several areas along the pipelines' route which contain these soils. They typically occur in south and west aspects, sandy flat areas, and steep slope areas with limited water holding capacity where run off is a problem. These areas include sandy, droughty, elevated terrace, steep slope, or coarse alluvium, fragmental, or coarse-textured areas. These areas will be reseeded with seed mixes which contain plant species that are best suited for extended drought conditions. The initial seeding and/or planting will avoid shrub species that can compete with herbaceous species.

Several water conservation practices have been developed to assist with the revegetation of droughty soils in arid locations, including, contour scarification and furrowing, terracing, pocking, and ripping. Water conservation measures will be applied to revegetate droughty areas as indicated by site-specific conditions and as recommended by the EI.

6.7.3 Flood-Prone Soils

These areas include waterbody "low bottoms" and unstable areas that are prone to flooding. EBCS will pay particular attention to decompaction activities in these areas. Special attention will be paid to those areas that are well vegetated or in active hay or crop production. Decompaction and rough grading prior to seeding will increase the potential for water absorption during precipitation or run off events as these areas can also be coarse-textured and subject to drought. Temporary and permanent slope breaker placement (sections 3.5.1 and 3.13.2, respectively) may also be modified at the discretion of the EI to prevent water ponding or to dissipate water velocity during run off periods.

6.7.4 Highly Erodible Soils

Highly erodible soils are typically found in association with steep slopes and are often dictated by substrate. Erosion and deposition are issues that affect the potential for successful revegetation. Where native rock has been excavated, it may be spread as mulch over these areas. If straw mulch is applied, a crimping device may be utilized, as indicated in section 6.3. In areas with slopes in excess of 40 percent, EBCS may utilize geotech fabrics or anionic polyacrylamide (PAM) erosion control, as necessary, to stabilize these soils during reclamation.

Mulching (weed free straw) will be used to stabilize soils susceptible to wind and water erosion and is accompanied by revegetation seeding with suitable species. Additionally, EBCS may utilize straw wattles which will be placed on contours to reduce runoff velocity and resulting erosion.

6.8 Weed Control

Weed control practices would be implemented to limit the growth and spread of weeds and to ensure that revegetation is successful with the proposed seed mixtures in accordance with EBCS's project-specific *Weed Management Plan* (Appendix K of the POD). The goals of that plan are to implement preventative measures to eliminate the spread of weeds during construction of the pipeline and to implement prescribed treatments to eliminate, to the maximum extent possible, the invasion of weeds from surrounding lands. Monitoring during the construction and operational phases will help ensure that these goals are achieved.

6.9 Cleanup

Following completion of reclamation, all trash, debris, and other solid wastes would be removed from the right-of-way, temporary use areas, and auxiliary facilities. All waste material would be properly disposed of in the appropriate manner in existing authorized sanitary landfills. No solid waste would be buried along the right-of-way. After final cleanup, the area would be inspected by the Environmental Inspector, landowner, and/or Authorized Officer to verify that pre-construction commitments for the right-of-way and ancillary facilities are satisfied.

6.10 Post-Construction Reclamation Monitoring

To assess the effectiveness of the reclamation treatments and to evaluate the condition of right-of-way, EBCS 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. The monitoring program will also identify remedial measures that will be considered by EBCS to mitigate environmental degradation if the initial treatments were not effective in achieving the objectives of the reclamation program. The intent of reclamation is to restore the project area to a beneficial pre-existing land use, prevent undue or unnecessary degradation of the environment, and reclaim disturbed areas such that these areas are visually and functionally compatible with the surrounding topography. The following sections outline the sequential steps for reclaiming project-related disturbances.

6.11 Reclamation Monitoring Criteria

On federal lands, vegetation monitoring will occur on an annual basis for the first five years or until revegetation is successful. Successful reclamation performance will be based on revegetation success, the absence of noxious weeds, stability of the construction right-of-way,

waterbody bed and bank stability, and visual aesthetics. EBCS will consider long-term revegetation to be successful if approximately 70 percent of the background cover is reestablished in disturbed areas. In addition, vegetative monitoring will determine if, or to what extent, noxious weeds have become established in the project areas. Monitoring may continue after the five-year period in areas where revegetation, weed, and stability problems continue. Specific reclamation success criteria will be established in coordination with the BLM, USFS, and other applicable land management agencies.

6.12 Monitoring Techniques and Procedures

To evaluate the success of revegetation, EBCS will use a quantitative rapid diversity assessment. This is an effective and efficient technique to monitor the composition of vegetative cover and diversity over time and between sampling plots. The technique is useful to measure the response of vegetation to disturbance.

In association with a vegetative monitoring program, EBCS will assess the success of reclamation efforts to stabilize soil and waterbodies.

6.12.1 Vegetation Monitoring

EBCS will monitor quadrats (*i.e.,* rectangular analytical plots identified in the field and retrievable by GIS equipment) located in the right-of-way, and control quadrats located outside the right-of-way. Monitoring will occur in July during the first five years following 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 plots will provide a quantitative indication of the relative success of reclamation.

In areas where plantings/transplanting occurred, reclamation success will be based on survivorship and vigor of the transplants.

6.12.2 Erosion and Runoff Control

Biweekly ground and aerial inspections of the route by EBCS Pipeline 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 July of first five years following reclamation to assess the condition of the right-of-way and the effectiveness erosion control measures. This ground inspection will concentrate on steep slopes, erodible soils, and sensitive areas identified during construction by the EIs.

6.12.3 Waterbody Stabilization

In association with erosion control and runoff inspections, EBCS representatives will visually assess the condition of bed and bank stabilization measures installed during restoration at waterbodies that were constructed using site-specific crossing plans. This assessment will occur with the same frequency of the erosion and runoff control inspections.

6.13 Remedial Action

EBCS will consult with the Authorized Officer or appropriate agency personnel prior to initiating remedial actions. This consultation will establish a work schedule, prioritize the list of actions to be taken, identify the equipment required, and describe mitigative measures that will be implemented.

7.0 OPERATION AND MAINTENANCE OF THE FACILITIES

EBCS will operate and maintain the pipelines in accordance with federal and state regulations. The pipeline system will be monitored and controlled 24 hours a day by a remote dispatch center.

Aboveground facilities will be inspected annually to satisfy DOT requirements. Pipeline inspections will encompass testing equipment, recalibration, and repair, replacement, and reporting, as necessary.

The pipeline system will be inspected on average once every two weeks on the ground or in the air to detect and identify indications of leaks, evidence of pipeline damage, or environmental concerns (*e.g.*, erosion hazards, gullies, sedimentation of waterbodies, all-terrain vehicle rutting, etc.). Inspections will be conducted in accordance with minimum federal safety standards, Transportation of Hazardous Liquids by Pipeline, Title 49 CFR Part 195. Environmental concerns will be addressed as necessary to comply with conditions in this plan.

The pipelines will be protected from external corrosion (pitting) by the protective coating applied to the pipe and by installation of a cathodic protection system. The external pipe coating is the primary corrosion protection method. Cathodic protection applies an electrical current to the pipelines from an external direct current power source (rectifier) to prevent corrosion where the coating is not 100 percent effective. Rectifiers will be located near existing power distribution lines and mounted on poles in or adjacent to the right-of-way and connected to carbon anode ground bed within the permanent pipeline right-of-way. The condition of the pipe coating and effectiveness of the cathodic protection system will be monitored in accordance with federal standards and regulations. Repairs to the pipe, pipe coating, or the cathodic protection system will be made as appropriate.

Locations of the cathodic protection rectifiers and ground beds associated with the pipelines cannot be identified until the pipelines are installed and tests are conducted. Test leads will be attached to the line at roads, pipeline crossings, and highways to monitor the cathodic protection system. Each set of test leads will be connected in a junction box installed on the ground surface along the right-of-way. The junction boxes will not interfere with existing land uses.

Pipeline markers will be installed to mark the underground location of the pipelines and to identify the owner of the system and to display telephone numbers for emergencies or other inquiries. The pipeline markers will be located where the pipelines cross fence lines, roadways, waterbodies, and other public access locations.

In order to maintain accessibility of the rights-of-way, to accommodate pipeline integrity surveys, and to maintain visibility of pipeline markers, vegetation along the permanent pipeline easement will be periodically maintained. The goal of such vegetation maintenance activities will be to establish and retain a low-growing, herbaceous vegetative ground cover. As conditions require, it will be necessary to periodically remove woody vegetation (shrubs and trees) from the

permanent pipeline easement on federal, state, and private lands. However, no maintenance clearing of woody vegetation will generally be required in wetland and riparian areas within the permanent pipeline easement corresponding to segments of pipeline installed via HDD. Given the prevailing short-grass vegetative cover in the project area, regular maintenance mowing of the permanent pipeline easement is not anticipated. In the unlikely event that maintenance mowing is identified as required, EBCS would coordinate with BLM and the USFS prior to conducting any such activities on federal lands traversed by the Project pipeline.

8.0 ABANDONMENT

EBCS has no plan to abandon the pipeline facilities. If and when EBCS chooses to abandon part or all of the proposed facilities, EBCS will develop an abandonment plan. An Abandonment Plan would be submitted to the Authorized Officer for approval at least 60 days prior to abandonment of facilities on federal land and a pre-abandonment conference scheduled.

If abandonment were to occur, the pipelines would be purged of liquid residues, cleaned, isolated from interconnections with other pipelines, and sealed without removing the pipe from the ground. With regular maintenance during operation, the operational life of pipelines typically exceeds 50 years. Therefore, EBCS does not anticipate long-term soil subsidence due to a lack of pipe integrity or excessive corrosion.

Abandonment in place minimizes surface disturbance and other potential environmental effects from pipe removal. Aboveground pipeline facilities, including equipment and foundations, at pump and meter stations would be removed, and the station properties reclaimed to maintain consistency with federal land use plans.

Upon abandonment of the pipelines in part or in whole, the easement associated with the abandoned facilities will typically be returned to the landowners or land managing agencies according to the easement agreements.