



Wyoming Pipeline Corridor Initiative

State of Wyoming Proposal

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Table of Contents

| | | |
|--------|--|----|
| 1.0 | Introduction | 6 |
| 1.1 | WPCI Purpose and Need | 8 |
| 1.2 | Purpose and Content of Plan | 9 |
| 1.3 | Regulatory Review and Construction Timing Restrictions | 10 |
| 2.0 | Project Overview | 11 |
| 2.1 | Project Location | 11 |
| 2.2 | Construction Right-of-Way and Temporary Work Spaces | 13 |
| 2.2.1 | Construction Right-of-Way | 13 |
| 2.2.2 | Extra Temporary Work Spaces | 13 |
| 2.3 | Associated Aboveground Appurtenances | 13 |
| 2.3.1 | Block Valves | 13 |
| 2.3.2 | Pigging Equipment | 14 |
| 2.3.3 | Pump and Compressor Stations | 14 |
| 2.4 | Land Requirements | 14 |
| 2.5 | Access Roads | 14 |
| 2.6 | Pipeline Markers | 15 |
| 3.0 | Pipeline Construction and Installation BMPs | 16 |
| 3.1 | Preconstruction | 16 |
| 3.2 | Construction Equipment | 16 |
| 3.3 | Clearing and Grading | 17 |
| 3.4 | Survey Monuments | 17 |
| 3.5 | Trenching | 18 |
| 3.6 | Blasting | 19 |
| 3.7 | Road and Railroad Crossings | 19 |
| 3.8 | Waterbody Crossings | 19 |
| 3.9 | Areas with Special Conditions | 20 |
| 3.9.1 | Close Proximity and Collocated Facilities | 20 |
| 3.9.2 | Surface Slumping | 20 |
| 3.9.3 | Bank Erosion | 20 |
| 3.9.4 | Active Faults | 20 |
| 3.9.5 | Areas of Historic or Cultural Significance | 20 |
| 3.9.6 | Paleontological Resources | 21 |
| 3.10 | Pipe Installation | 21 |
| 3.10.1 | Stringing | 21 |
| 3.10.2 | Bending | 21 |
| 3.10.3 | Welding | 21 |
| 3.10.4 | Coating | 21 |

| | |
|---|-----|
| 3.10.5 Cathodic Protection | 22 |
| 3.10.6 Lowering-in and Padding | 22 |
| 3.11 Backfilling | 22 |
| 3.12 Pressure Testing and Water Use | 22 |
| 3.13 Cleanup and Reclamation | 23 |
| 3.14 Livestock Barrier and Other Livestock Issues | 23 |
| 3.15 Health and Safety | 23 |
| 3.16 Waste Disposal | 24 |
| 4.0 Operation and Maintenance Activities | 24 |
| 4.1 Surveillance | 24 |
| 4.2 Right-of-Way Access | 24 |
| 4.3 Pipeline and Site Maintenance and Repair | 25 |
| 4.4 Environmental Inspections | 25 |
| 4.5 Wildlife Avoidance Periods | 25 |
| Appendix A – Figures and Construction Typical Drawings | 26 |
| Appendix B – Tables | 38 |
| Appendix C – Waste and Spill Management Specifications | 54 |
| Appendix D – Hydrostatic Testing and Discharge Plan | 60 |
| Appendix E – Upland Erosion Control, Revegetation, and Maintenance Plan | 64 |
| Appendix F – Restoration and Revegetation Plan | 76 |
| Appendix G – Wetland and Waterbody Construction and Mitigation Plan | 84 |
| Appendix H – Noxious and Invasive Weed Control Plan | 107 |
| Appendix I – Biological Resources Conservation Measure Plan | 114 |
| Appendix J – Unanticipated Discoveries Plan for Cultural Resources | 120 |
| Appendix K – Unanticipated Discoveries Plan for Paleontological Resources | 122 |
| Appendix L – Fire Prevention and Suppression Plan | 124 |
| Appendix M – Blasting Plan | 129 |
| Appendix N – Fugitive Dust Control Plan | 131 |
| Appendix O – Traffic and Transportation Plan | 133 |

List of Abbreviations and Acronyms

ACHP - Advisory Council on Historic Preservation
AIS - Aquatic Invasive Species
API - American Petroleum Institute
ASME - American Society of Mechanical Engineers
BA - Biological Assessment
BBO - Billion Barrels of Oil
BLM - Bureau of Land Management
BMP - Best Management Practice
BOR - Bureau of Reclamation
CEQ - Council on Environmental Quality
CFR - Code of Federal Regulations
CFS - Cubic Feet per Second
CO₂ - Carbon Dioxide
CWA - Clean Water Act
DOT - United States Department of Transportation
EI - Environmental Inspector
EO - Executive Order
EOR - Enhanced Oil Recovery
EORI - Enhanced Oil Recovery Institute, University of Wyoming
EPA - U.S. Environmental Protection Agency
ESA - Endangered Species Act of 1973
ETWS - Extra Temporary Work Space
FERC - Federal Energy Regulatory Commission
FWS - U. S. Fish and Wildlife Service
HDD - Horizontal Directional Drill
HP - Horsepower
IM - Instruction Memoranda
ISO - International Standards Organization
MBTA - Migratory Bird Treaty Act
MBO - Million Barrels of Oil
MMCFD - Million Cubic Feet per Day
MP - Milepost
NDE - Non-Destructive Evaluation
NDT - Non-Destructive Test
NEPA - National Environmental Policy Act
NGL - Natural Gas Liquids
NOI - Notice of Intent
OHV - Off Highway Vehicle
OSHA - Occupational Safety and Health Administration
POD - Plan of Development
RMP - Resource Management Plan
ROW - Right-of-Way
SCADA - Supervisory Control and Data Acquisition
SHPO - State Historic Preservation Office
SUP - Special Use Permit
SWPPP - Stormwater Pollution Prevention Plan
TCF - Trillion Cubic Feet
TUP - Temporary Use Permit

USACE - U.S. Army Corps of Engineers
USFS - United States Forest Service
USFWS - United States Fish and Wildlife Service
WDEQ – Wyoming Department of Environmental Quality
WGFD – Wyoming Game and Fish Department
WPA – Wyoming Pipeline Authority
WPCI – Wyoming Pipeline Corridor Initiative
W.S. – Wyoming Statute

1.0 Introduction

The State of Wyoming (State) is seeking regulatory approval from federal land management agencies in Wyoming for the Wyoming Pipeline Corridor Initiative (WPCI). Utilizing funding allocated by the Wyoming legislature, and through coordination with the University of Wyoming's Enhanced Oil Recovery Institute (EORI), industry representatives, and the Wyoming Pipeline Authority (WPA) , we have identified approximately 1914 miles of primarily existing pipeline corridors throughout the central and western portion of the state that are essential to future production and distribution of natural resources vital to the state's economy (see Appendix A, Figure 1). The WPCI design connects existing oil fields suitable for enhanced oil recovery (EOR) identified by EORI and industry (Appendix A, Figure 2) with anthropogenic and natural carbon dioxide (CO₂) sources (Appendix A, Figure 3). WPCI is based on the need for future corridors on federal lands to accommodate construction of multiple, co-located pipelines of varying diameter and capacity.

The purpose of WPCI is to establish corridors on public lands dedicated to future use for pipelines associated with carbon capture, utilization and storage (CCUS), and enhanced oil recovery (EOR). In addition, other compatible uses (i.e. broadband infrastructure) at the outer boundaries of the corridors would be considered. In order to meet this purpose, 200 ft. (lateral) or 300 ft. (trunk) wide corridors are constrained to only transport CCUS and EOR products; however, other compatible uses may be considered that would not limit future use of the corridors for CCUS and EOR pipelines and facilities. When site-specific projects are proposed in the corridors they would be designed and constructed to reduce impacts through placement of facilities to avoid resources values, including placement adjacent to the corridor.

There are 1104.67 miles of BLM lands crossed by the WPCI corridors including lands managed by the Kemmerer, Buffalo, Rock Springs, Rawlins, Casper, Cody, Worland and Pinedale, Wyoming field offices (see Table 1-1 and Appendix B, Table 1).

WPCI consists of 25 segments in the western and central portions of the state. A list of the segments and their lengths is provided on Table 1-2. Narrative descriptions of each segment are provided in the text below (Section 2.1, Project Location).

| Table 1-1 | |
|---|----------------------|
| Miles of Federally-Managed Lands Crossed by WPCI Corridors¹ | |
| Federal Land Management Agency | Miles Crossed |
| BLM – Kemmerer Field Office | 2.30 |
| BLM – Buffalo Field Office | 35.99 |
| BLM – Rock Springs Field Office | 223.65 |
| BLM – Rawlins Field Office | 130.66 |
| BLM – Casper Field Office | 101.49 |
| BLM – Pinedale Field Office | 27.08 |
| BLM – Cody Field Office | 134.31 |
| BLM – Worland Field Office | 159.14 |
| BLM – Lander Field Office | 290.05 |
| Total BLM | 1104.67 |
| Private | 690.03 |
| State | 118.37 |
| Water Crossing | 0.93 |
| Total All Ownership | 1914.00 |

¹ Federal land ownership of individual parcels are shown in the Map Book (see CD attached to the back of this POD).

Of the 1914 miles of pipeline corridor that comprise WPCI, ~1105 miles occur on BLM managed lands. On BLM managed lands, ~745 miles (or ~65 percent) of WPCI are located in approved corridors designated by BLM in current or currently draft Resource Management Plans (RMPs). Additionally, ~291 miles of WPCI, which are outside of designated corridors are located adjacent (within 0.5 miles) to existing pipelines on federally-managed lands. Therefore, a total of ~1036 miles (or ~90 percent) of WPCI are either within designated corridors, or within 0.5 miles of existing pipeline infrastructure on federally managed lands. Private (690.03 miles) and state lands (118.37 miles) are also crossed by WPCI.

| Table 1-2 WPCI Total Segment Length | | |
|--|---|----------------|
| Segment | Counties | Length (Miles) |
| 1 | Lincoln, Sublette, Sweetwater | 133.17 |
| 2 | Carbon, Sweetwater | 125.40 |
| 3 | Freemont, Sweetwater | 50.50 |
| 4 | Bighorn, Fremont, Hot Springs, Park, Sweetwater, Washakie | 320.30 |
| 5 | Sublette, Sweetwater | 123.34 |
| 6 | Carbon, Natrona | 80.26 |
| 7 | Carbon, Fremont, Sweetwater | 58.96 |
| 8 | Fremont, Sweetwater | 38.22 |
| 9 | Fremont | 43.96 |
| 10 | Fremont, Natrona | 104.50 |
| 11 | Fremont, Natrona | 69.18 |
| 12 | Fremont, Natrona | 55.64 |
| 13 | Fremont | 27.60 |
| 14 | Fremont | 22.94 |
| 15 | Sublette, Natrona | 52.59 |
| 16 | Johnson, Natrona | 74.52 |
| 17 | Johnson, Natrona | 123.31 |
| 18 | Campbell, Johnson | 64.82 |
| 19 | Bighorn, Hot Springs, Park | 110.10 |
| 20 | Bighorn, Hot Springs, Washakie | 39.41 |
| 21 | Hot Springs, Park | 88.17 |
| 22 | Bighorn | 24.26 |
| 23 | Park | 30.99 |
| 24 | Park | 26.02 |
| 25 | Bighorn | 25.84 |
| Total | | 1914.00 |

Wyoming has large, economically significant oil reserves in existing, often “played-out”, reservoirs that are good candidates for EOR using CO₂. Currently, CO₂ is being injected into five fields in Wyoming to recover oil which has been left in the ground during conventional production. The oil currently being produced using CO₂ is unrecoverable using conventional production techniques (i.e., primary production or water-flooding). Between 2010 and 2012, CO₂ flooding in Wyoming produced over 23 million barrels of oil (MBO) – about 14 percent of Wyoming crude production during that time. Through the end of 2012 the combined incremental oil produced by CO₂ in Wyoming exceeded 95 MBO generating approximately \$180 million in government royalties, \$77 million in severance tax and \$94 million in property taxes to Wyoming counties.¹

Wo *et al.* (2009) identified more than 500 existing oil reservoirs in Wyoming as potential CO₂ EOR candidates and estimated that 1.2 to 1.8 billion barrels of additional oil (BBO) might be recovered by CO₂ flooding and up to 20 trillion cubic feet (TCF) of CO₂ could be sequestered after CO₂ EOR in Wyoming’s oil basins.²

¹ Cook, B. R. 2013. Wyoming’s miscible CO₂ enhanced oil recovery potential from main pay zones: an economic scoping study. Enhanced Oil Recovery Institute, School of Energy Resources, University of Wyoming.

² Wo, S, L. D. Whitman, and J. R. Steidtmann. 2009. Estimates of potential CO₂ demand for CO₂ EOR in Wyoming

EOR using CO₂ is receiving national attention as a potential mechanism for sequestering greenhouse gas emissions. By their very nature, EOR projects can store large quantities of CO₂. Because CO₂ used during EOR is a purchased commodity, it is recycled continuously in the reservoir rather than vented to the atmosphere. In essence, EOR projects can add value by maximizing oil recovery from existing, previously disturbed fields, while at the same time offering a bridge to a reduced carbon emissions future.³ Many experts believe geologic sequestration is one of the best alternatives for dealing with carbon emissions because CO₂ EOR effectively reduces the cost of sequestering CO₂ by earning revenues for the CO₂ emitter from sales of CO₂ for EOR.

Known sources of CO₂ in Wyoming are shown on Figure 1-3. In addition to anthropogenic sources of CO₂ (principally power plants), Wyoming has nearly 150 TCF of naturally-occurring CO₂ in numerous formations in the western portion of the state. CO₂ occurs naturally in many hydrocarbon reservoirs and can be produced in quantities sufficient to support EOR. Two of these reservoirs (Shute Creek and Lost Cabin) currently serve as the source for CO₂ for ongoing EOR projects in the state. Shute Creek produces 7 Mpta (2016) of CO₂ and Lost Cabin produces 0.9 Mpta (2017) of CO₂.

This POD describes the BMPs that may be taken by individual project proponents during construction, operation, maintenance and termination of pipeline facilities on federally-managed lands. The commitments made by the BLM and State in this POD, along with any conditions of approval included in federal authorizations, would become contractually binding on project proponents who develop infrastructure within the WPCI corridors.

1.1 WPCI Purpose and Need

Since 1978, oil production in Wyoming has been declining. This downward trend in production has resulted in significant reductions in revenues to the state and federal governments, adverse impacts to local government revenues and a loss of jobs. Although Wyoming is the 8th largest domestic source of oil production, annual crude production in the state has fallen 38 percent from the 1978 peak. This fall in production, coupled with lower oil prices from the mid-1980s through 1990s and the increasing importance of natural gas, reduced the contribution of crude oil to total state severance tax revenues from about 40 percent in the early 1990s to just 15 percent in 1999.⁴ According to EORI, Wyoming mineral royalties and severance collections from oil are projected to be 16 to 23 percent below the 1978 peak in the coming years.⁵

Wyoming's experience with CO₂ flooding goes back to the 1980s when Amoco Production Company began injecting CO₂ in the Bairoil Field in south central Wyoming utilizing CO₂ from ExxonMobil's Shute Creek Gas Plant in southwestern Wyoming. Three additional projects have

Basins. SPE 122921

³ National Energy Technology Laboratory, 2010. Carbon Dioxide Enhanced Oil Recovery – Untapped Domestic Energy Supply and Long Term Carbon Storage Solution. www.netl.doe.gov

⁴ Cook, B. R. 2013. Wyoming's miscible CO₂ enhanced oil recovery potential from main pay zones: an economic scoping study. Enhanced Oil Recovery Institute, School of Energy Resources, University of Wyoming.

⁵ *Ibid*

subsequently come online utilizing CO₂ from Shute Creek: Anadarko began CO₂ flooding in the Salt Creek and Patrick Draw fields in 2003, and Devon initiated CO₂ flooding in the Beaver Creek Field in 2008.

Denbury constructed their 232-mile long Greencore Pipeline, which transports CO₂ from Lost Cabin to points in the Powder River Basin in Wyoming and on to the Bell Creek Field in Montana. In addition, Denbury and Elk Petroleum began injecting CO₂ in the Grieve Field, near Casper, in 2013.

EORI estimated that the five fields currently being CO₂ flooded in Wyoming account for nearly 2,000 jobs annually, paying a total of about \$326 million in labor income from 2010-2012 and adding \$1.65 billion to Wyoming gross state product.⁶ EORI also estimates that 188 jobs are supported for every million barrels of incremental oil production, or 6.7 jobs per million cubic feet/day (MMCFD) of purchased CO₂. EORI's assessment suggests that EOR can contribute thousands of Wyoming jobs annually in the coming decades.

Wo *et al.* (2009) estimated total CO₂ demand for EOR ranges from 6.1 to 9.2 TCF in the Powder River Basin, 4.8 to 7.2 TCF in the Bighorn Basin, 1.2 to 1.8 TCF in the Wind River Basin, 1 to 1.4 TCF in the Greater Green River Basin, 0.68 to 1.02 TCF in the Overthrust Belt, 0.09 to 0.13 TCF in the Laramie Basin, and 0.08 to 0.12 TCF in the Denver-Cheyenne Basins.⁷ The purpose of WPCI is to provide federal authorization for a pipeline network to connect CO₂ sources with these basins.

Construction and operation of pipelines would be conducted by individual project proponents utilizing the WPCI corridors. The BLM and State intends this process to result in a system of integrated and preferred corridors for the construction of pipelines on federal lands throughout the state of Wyoming. Identifying integrated corridors across federal lands under the direction of the various field offices in Wyoming would lead to greater consistency among the individual field offices and would comprehensively address the desire to manage the location of future pipeline construction and operation activities across field offices, thereby minimizing the aggregate impact of future projects on federal lands in Wyoming.

1.2 Purpose and Content of Plan

This plan describes the location and types of BMPs for future projects that are proposed within the WPCI corridors. During the course of designing and constructing the individual projects, changes to the POD may be necessary and additional site-specific studies and information may be required by regulatory agencies. The federal land management agencies would consider and approve any changes necessary to address the site-specific needs of individual projects.

This POD and its appendices are a requirement for new or amended permits, approvals, clearances, and plans that may be issued prior to and during construction. The POD

⁶ *Ibid*

⁷ Wo, S, L. D. Whitman, and J. R. Steidtmann. 2009. Estimates of Potential CO₂ Demand for CO₂ EOR in Wyoming Basins. SPE 122921

appendices contain additional construction information and mitigation measures, whereas the main body of the POD addresses the overall guidelines. Unless otherwise specified by the landowner or land management agency, the specifications in the POD will be implemented on all lands affected by construction in the WPCI corridors.

This POD describes the construction phase, mitigation measures, operation, and maintenance of future projects which be constructed in the WPCI corridors. Numerous appendices are incorporated into this POD:

- Appendix A – Figures and Construction Typical Drawings
- Appendix B – Tables
- Appendix C – Waste and Spill Management Specifications
- Appendix D – Hydrostatic Testing and Discharge Plan
- Appendix E – Upland Erosion Control, Revegetation, and Maintenance Plan
- Appendix F – Restoration and Revegetation Plan
- Appendix G – Wetland and Waterbody Construction and Mitigation Plan
- Appendix H – Noxious and Invasive Weed Control Plan
- Appendix I – Biological Resource Conservation Measure Plan
- Appendix J – Unanticipated Discoveries Plan for Cultural Resources
- Appendix K – Unanticipated Discoveries Plan for Paleontological Resources
- Appendix L – Fire Prevention and Suppression Plan
- Appendix M – Blasting Plan
- Appendix N – Fugitive Dust Control Plan
- Appendix O – Traffic and Transportation Plan

Attached to the back cover of this POD is a CD that contains maps of the WPCI corridors (hereafter the “Map Book”). The CD images are based on 7.5-minute quadrangle maps which show the location of WPCI corridors including segment identification and mileposts.

1.3 Regulatory Review and Construction Timing Restrictions

The BLM and the State would require project proponents to obtain all federal, state, and local permits before constructing within the WPCI corridors. A list of authorizing actions which may be necessary to construct pipeline projects in the WPCI corridors is provided in Appendix B, Table 2.

2.0 Project Overview

The WPCI corridors were established based on reasonably foreseeable development of resources that will require pipeline construction for development. EOR was the principal development activity used to select the WPCI corridors. The specific types of pipelines that may utilize WPCI corridors – along with products and quantities delivered through the pipelines – will be identified in project-specific applications filed by individual project proponents.

For analysis purposes, two “sizes” of corridors are proposed as part of WPCI. Trunk corridors were designed to accommodate five lines, for example, a CO₂ pipeline, a crude pipeline, a natural gas pipeline, a natural gas liquids (NGL) pipeline, and one additional unspecified pipeline. Lateral corridors were designed to accommodate, for example, a CO₂ pipeline, a crude pipeline and a natural gas pipeline. Other combinations of pipelines can occur in any of the WPCI corridors. The appropriate corridor type designation is shown on Appendix A, Figure 1.

In determining the construction right-of-way width necessary for each of the two corridor sizes, a 50 foot offset from adjacent, existing pipelines and a 100-foot wide construction ROW was assumed. Based on these offset assumptions, the total ROW width necessary to construct three pipelines in the WPCI lateral corridors is 200 feet. Constructing five pipelines in the trunk corridors will require 300 feet.

Individual trunk pipelines may reach 24-inches in diameter. Smaller diameter pipelines, such as lines designed to supply CO₂ to individual fields, could be installed. At this point the exact number or diameter of pipelines which will be constructed in any given segment of WPCI is not known. To a large extent, use of the corridors will be driven by oil prices and CO₂ availability. The construction descriptions below and in Chapter 3 are based on what WPA considers the largest diameter pipeline (i.e., 24-inch diameter) that will be constructed in WPCI corridors. A typical dimensioned drawing of a 100-foot wide pipeline construction ROW is shown in Appendix A, Figure 4.

2.1 Project Location

The general location of the WPCI corridors is shown on Appendix A, Figure 1. More detailed maps of the corridor alignments on federally-managed lands can be found in the Map Book.

WPCI corridors are divided into segments based on their proposed ROW width and the regions they will service within the state. As previously mentioned, the majority of these corridor segments lie within pipeline corridors that were established in existing or proposed RMPs. Those proposed outside of designated corridors typically parallel existing pipelines and disturbance. Below are brief summaries of the 25 segments that make up the WPCI.

Segment 1 is a 200-foot lateral corridor. This segment is approximately 133 miles long and lies within Lincoln, Sublette, and Sweetwater counties.

Segment 2 is a 200-foot lateral corridor within Carbon and Sweetwater counties. This segment is approximately 125 miles long and generally follows the I-80 corridor between Rawlins and Rock Springs.

Segments 3, 4, 6, and 7 are a series of 300-foot trunk corridors that provide transportation between locations along the I-80 corridor in central Wyoming and northern termini. Segment 3 is approximately 51 miles long and lies within Fremont and Sweetwater counties. Segment 4 is approximately 320 miles long and traverses Big Horn, Fremont, Hot Springs, Park, Sweetwater, and Washakie counties. Segment 6 is an 80 mile long segment within Carbon and Natrona counties. Finally, Segment 7 is approximately 59 miles and lies within Carbon, Fremont, and Sweetwater counties.

Segment 5 is an approximately 123 mile long, 200-foot wide lateral corridor. This segment will provide transportation from Riley Ridge CO2 production facilities. This designated segment lies within Sublette and Sweetwater counties.

Segments 8, 9, 13, and 14 are relatively short segments of 200-foot lateral corridors that will provide for transportation into the region around Lander. They range in lengths between approximately 23 and 44 miles long. These segments are located primarily within Fremont County, with a small portion of Segment 8 within Sweetwater County.

Segment 10 is a 200-foot wide lateral corridor that provides transportation between the Lander area and the southern Powder River Basin. This segment is approximately 105 miles long, and lies within Fremont and Natrona counties.

Segment 11 is designated as a 300-foot wide trunk corridor. It is approximately 70 miles long, and would provide transportation services from Casper, to the southern end of the Bighorn Basin. Segment 11 segments will lie within Fremont and Natrona counties.

Segments 12 and 15 are both 200-foot lateral corridors that provide for resource transportation generally between Casper and Lander. The corridors are approximately 55 miles long. These segments will lie within Fremont and Natrona counties.

There is one, 300-foot trunk and two, 200-foot lateral corridors within the Powder River Basin, which are designated as Segments 17, 16, and 18, respectively. Segment 17 is a trunk corridor that is approximately 123 miles long. Segments 16 and 18 are lateral corridors that range in lengths between approximately 65 and 75 miles. These corridor segments lie within Campbell, Johnson, and Natrona counties.

There are seven WPCI segments proposed within the Bighorn Basin. These segments will lie within Big Horn, Hot Springs, Park, and Washakie Counties. Segment 19 is proposed as an approximately 110 mile long, 300-foot wide trunk corridor. Segments 20 through 25 are designated as 200-foot wide lateral corridors. They range in lengths between approximately 24 and 89 miles long.

2.2 Construction Right-of-Way and Temporary Work Spaces

2.2.1 Construction Right-of-Way. Construction of a 24-inch diameter pipeline will utilize a nominal 100-foot-wide construction ROW. A dimensioned schematic of a typical 100-foot wide construction ROW is included in Appendix A, Figure 4. Half of the construction ROW (50 feet) will be located on the area previously disturbed during construction of the existing, adjacent pipeline.

In some areas resource constraints may require a narrowed construction ROW. These locations will be determined during the NEPA site-specific process and project specific permitting and could include cultural resource sites, wetlands, habitat for protected species, topography, etc. In these locations, the construction ROW may be narrowed to 75-feet. A restricted construction ROW configuration is shown in Appendix A, Figure 5.

2.2.2 Extra Temporary Work Spaces. In addition to the construction ROW, additional extra temporary work spaces (ETWS) will be required at a number of areas. Typically, these extra work spaces will be located at:

- stream crossings
- wetland crossings
- foreign pipeline crossings
- railroad crossings
- road crossings
- overhead utility crossings
- areas with side hill construction
- cathodic protection

Typically, ETWS of 50 x 50 to 100 feet, adjacent to one side of the construction ROW will be required in these locations for storage of spoil, additional specialized equipment (i.e., boring equipment), equipment staging, etc. necessary to safely complete the crossings. Appendix B, Table 4 lists locations where ETWS will likely be necessary to complete construction of pipelines in the WPCI corridors. Additional extra temporary work spaces will be determined during project-specific design.

2.3 Associated Aboveground Facilities

While the pipelines constructed in the WPCI corridors will be buried, a few aboveground facilities could be installed in the WPCI corridor where necessary for safe and efficient operation of the pipeline. The project-specific components of the POD will show the location of these facilities, the size of the needed construction area and the size of the permanently disturbed area of the facility after construction. The POD will include plans for reclamation of disturbed areas not needed for pipeline operations.

2.3.1 Block Valves. A number of aboveground block valves will be required to isolate sections of the pipeline in an emergency or for maintenance activities (See Appendix A – Figure 6). The block valve locations will be determined during final project design and installed within the construction ROW. Spacing will be consistent with federal regulations and varies by the pipeline product. Each block valve will occupy an area of approximately 30 x 30 feet and will be graveled and fenced. Access will be year-round, depending upon winter weather.

2.3.2 Pigging equipment. Pipe pigging equipment will be installed as necessary to allow for pipeline maintenance. Typically, these facilities consist of a series of risers for inserting and catching scrapers used to clean the inside of the pipeline. The facilities are typically located at metering locations or at block valves. Their locations will be determined during design of individual projects.

2.3.3 Pump and Compressor Stations. Some pipeline projects constructed in the WPCI corridors may require the installation of pump or compressor stations. These pump or compressor stations will include valve manifolds, pumps, pigging equipment, power distribution, and control buildings. Pump stations, if required, will be within an approximate 3- to 10-acre fenced area.

2.3.4 Staging Areas and Storage Yards. Staging areas are temporary secured sites where pipe and equipment are located prior to delivery to the ROW. Vegetation is cleared from the areas to reduce fire danger. The project specific POD will show the location and dimensions.

2.3.5 Measurement Facilities. These sites vary in size from a few to tens of acres. They are located where the transfer or delivery of pipeline products is required. The project specific POD will show the location dimensions and equipment located at the site.

2.4 Land Requirements

Appendix B, Table 5 summarizes land requirements for each corridor segment of WPCI. This table assumes that 3 and 5 pipelines are eventually constructed in all the lateral and trunk corridor segments (i.e., the entire 200- or 300-foot wide corridors are disturbed).

2.5 Access Roads

Whenever practicable, proponents will use existing federal, state, county, private and BLM roads to gain access to the ROW during construction. It is not anticipated that new road construction will be required to access the construction ROW on federal lands, but if it is, roads will be built to minimum allowable federal standards. The first preference are roads that can be used with no improvements. Second preference are roads that require minor maintenance (i.e., grading, filling, graveling, installing drainage structures or culverts and minor widening of the road surface all activities within the existing disturbed area). Third preference are roads that require any surface disturbance outside of the existing disturbed area. On public lands, this work is authorized by temporary ROWs, associated with the primary ROW for the pipeline. The final preference are access roads that require new construction. After construction, roads on public lands will be left in place or completely reclaimed, at the direction of the BLM field office.

Use of access on private lands is at the landowner's discretion. Hauling equipment and materials will be conducted in accordance with the road owner's requirements. Following construction completion, roadways will be reclaimed in accordance with landowner requirements.

Permanent access crossing Public Land to aboveground facilities is authorized by the ROW grant for the pipeline.

2.6 Pipeline Markers

The pipelines will be identified by pipeline markers placed at each public road crossing, railroad crossing and at other locations in accordance with CFR ¶195.410 and other applicable regulations. A typical pipeline marker is shown in Appendix A, Figure 7.

3.0 Pipeline Construction and Installation

This section provides a description of standard pipeline construction BMPs that the State proposes project proponents should utilize as projects are constructed within the WPCI corridors. These BMPs are industry standards and should be implemented in conjunction with site-specific plans included in the POD appendices and permit conditions.

Pipeline construction typically follows the sequence of events shown in Appendix A, Figure 8 and as described below.

3.1 Preconstruction

By the time of construction, all site-specific biological and cultural resources will be identified and permit stipulations will be determined. Project proponents will have identified avoidance areas and the locations of the ROW subject to seasonal restrictions (see Appendix B, Table 3). These designated areas will be included on the project-specific alignment sheets.

Civil engineering surveys will identify the centerline of the pipeline and the boundaries of both sides of the approved ROW working limits and ETWS before construction activities start. Construction inspectors will be responsible for verifying that the limits of authorized construction work areas are staked before construction. Flagged or painted lath will be set at approximately 200-foot intervals, or as required to maintain line of sight, along the proposed centerline. The edges of work limits will be marked at 200-foot intervals, or as required to maintain line of sight, with flagging or painted lath. All ETWS areas will be marked in a similar fashion with each of the four corners flagged. This staking will clearly demark the boundary of the area that can be used or accessed by construction personnel. Equipment and vehicles will not be parked or driven beyond these stakes and no other ground-disturbing activities will be allowed outside the staked boundaries of the work area.

Before earth-moving activities, best management practices (BMPs) will be installed to limit sediment transport and erosion consistent with regulatory approvals and the Upland Erosion Control and Sediment Control Plan (see Appendix E). Specific areas requiring BMPs will be designated on alignment sheets. Site-specific BMPs will be developed based on construction site characteristics and weather conditions. BMPs will be inspected routinely and maintained in good working order.

3.2 Construction Equipment

Typical construction equipment will include pickup trucks, loaders, various sizes of dozers, shovels and backhoes, side booms, generators, welders, bending machines, etc. (see Appendix B, Table 6). Most of the equipment used during construction will consist of dozers, blades, and trackhoes. Typical schematics for construction are included in Appendix A.

3.3 Clearing, Grading and Topsoiling

In addition to the ROW configurations shown in Appendix A, Figures 4 and 5, several additional construction configurations may be necessary depending on proximity to other lines and available working space. The nominal ROW for larger diameter pipelines will be 50 feet permanent and 50 feet temporary (see Appendix A, Figure 4).

During clearing, tree limbs and brush will be windrowed or piled for use during reclamation. Stumps will be left in place except over the trench line or removed as necessary to create a safe and level workspace. The environmental inspector (EI) will coordinate with the appropriate agency or landowner to locate areas for stump disposal. Trees will be felled inside the approved right-of-way boundaries under agreement with the landowner or land management agency. Grading will not occur over historic trails, drainages, wetlands or most ETWS.

Construction activity and ground disturbance will be limited to approved, staked areas. Whenever possible, grading will be limited to help preserve vegetation and to limit erosion and improve reclamation success. In hilly terrain, where slopes run across ROW, a level work area will be cut out of the hillside for safe construction. These areas will be returned to the natural contours to the extent possible.

Where grading is needed to create a safe, level working area, approximately 4-6 inches of topsoil (where available) will be stripped and stockpiled from the full construction ROW before cut, fill or other grading operations. In some areas, it may not be necessary to grade and stockpile topsoil. For example, level rangeland may not need to be graded for construction. In these cases, topsoiling will not be necessary, except over the trench line, which preserves the root system and increases reclamation success. Available topsoil will vary across the WPCI corridors. No matter the amount of topsoil removed, topsoil will be stockpiled separately (see Appendix A, Figure 5) from subsoil and will not be used to pad the trench or construct trench breakers. Topsoil will be used as the final layer of soil during the reclamation process.

In wetlands, only the topsoil on the trench line will be removed and segregated before digging and removing the subsoil (double-ditching method). The wetland boundaries will be flagged before construction. Topsoil removal in wetlands will generally range between 12-18 inches. In floodplains, the topsoil depth can range from 6-12 inches. Dry drainages or washes that cross the right-of-way will not be blocked with topsoil piles. Topsoil will be placed on the banks of the drainage (typically in ETWS) so natural flows are not impeded, and topsoil is not washed away.

Required dust control measures are described in the Fugitive Dust Control Plan (Appendix N). Dust abatement water would be obtained in compliance with both federal and state regulations, as well as existing water rights.

3.4 Survey Monuments

All survey markers found within the right-of-way will be protected. Survey markers include, but are not limited to, Public Land Survey System line and corner markers, other property boundary line and corner markers, and horizontal and vertical geodetic monuments. In the event of obliteration or disturbance of any of the above, the proponent shall immediately

report the incident, in writing, to the BLM Authorized Officer or his delegate and the respective installing authority if known. Where any of the above survey markers are obliterated or disturbed during construction or maintenance of the project, the BLM Authorized Officer or his delegate will determine how the marker is to be restored. The proponent will be instructed to secure the services of a registered land surveyor or informed that an official survey will be executed by the BLM. All surveying activities will be in conformance with the Manual of Surveying Instructions and appropriate State laws and regulations. Surveys by registered land surveyors will be examined by the BLM Authorized Officer or his delegate and the BLM State Office Chief Cadastral Surveyor for conformance with the Manual of Surveying Instructions and State laws and regulations before being filed in the appropriate State or county offices of record. The proponent shall be responsible for all administrative and survey costs.

3.5 Trenching

Construction methods used to excavate a trench will vary depending on soils, rock, terrain, and related factors. Excavated subsoil will be stored separately from windrowed topsoil piles (Section 3.3). Like topsoil, subsoil will not be stored in flowing waterbodies, dry drainages or washes that cross the right-of-way. Gaps will be left periodically in the subsoil piles to avoid ponding and excess diversion of natural runoff during storm events.

Measures will be taken to ensure access is provided for private landowners or tenants to move vehicles, equipment, and livestock across the ditch. Adequate precautions will also be taken to ensure that livestock are not prevented from reaching water sources because of the open ditch. Measures to be taken include contacting livestock operators and providing adequate crossing locations. The EI will determine the need and placement of soft plugs for livestock and wildlife travel. The soft plugs will be of minimal compaction and installed with ramps.

The depth and width of the ditch will vary depending upon pipe diameter and soil types. A typical ditch will be excavated approximately 3-4 feet wide at the bottom and the sides will be sloped to Occupational Safety and Health Administration (OSHA) specifications (up to approximately 8 feet wide).

The minimum backfill will vary depending on soil type and existing conditions. Table 3-1 lists the different cover requirements. Minimum cover may change depending on the existence of other utilities.

| Table 3-1 Minimum Pipeline Cover | | |
|---|----------------|--------------------|
| Minimum Cover | No Rock | Rock Trench |
| Standard trench | 36" | 30" |
| Agricultural land | 60" | 60" |
| Water crossings (> 100' wide) | 60" | 60" |
| Drainage or intermittent waterways | 60" | 60" |
| Road crossings | 60" | 60" |
| Drainage ditch at public road crossing | 48" | 48" |

Occasionally, ditches could be excavated to depths greater than the minimum values specified to achieve specific cover. Greater depths of cover could be required at unpaved road crossings, foreign pipeline crossings, water bodies, railroads, etc. Machine excavation will not be performed closer than 5 feet from any existing pipeline encountered in the ROW unless

authorized by the pipeline owners/operators. Existing pipeline locations will be marked in the field and notification given to the operator of the underground utility consistent with federal and state requirements. Where the pipeline traverses locations for which there are definite plans to level the land for irrigation or other purposes, the pipe will be buried at a depth to accommodate these plans.

Trenches will not be left open longer than 21 days. In areas where a longer open trench period is necessary, livestock and wildlife crossovers will be constructed between 1,200 and 2,500 feet. Crossovers will be sloped on each side to act as an escape ramp for animals that enter the trench. Open trenches will be inspected daily for trapped animals. Areas where crossovers are needed include, water sources, active livestock or wildlife trails, wildlife migration corridors, existing roadways and tie-in locations.

3.6 Blasting

Where rock is encountered, tractor-mounted mechanical rippers or rock trenching equipment may be used to facilitate excavation. In areas where rippers or trenchers are not practical or sufficient, blasting may be employed. Blasting will be used only where necessary and conducted by a fully licensed operator. All necessary authorizations will be obtained and all safety precautions observed. All blasting work will be conducted in compliance with federal, state, and local rules, and regulations.

3.7 Road and Railroad Crossings

Installation of road crossings will be achieved by boring or open cut techniques depending upon local regulations, traffic, and construction equipment availability. Crossings at two track roads and gravel roads will typically be open cut. All paved county roads and state highways will be crossed via slick bore or small directional drill bore method.

All road and railroad crossings will be designed in accordance with ASME B31.4 and API RP 1102. A list of road and rail crossings is provided in Appendix B, Table 4. Typical drawings of a bored and open cut road crossing are shown in Appendix A, Figures 9 and 10. A typical two-track road/trail crossing drawing is provided in Appendix A, Figure 11.

3.8 Waterbody Crossings

Wetland and waterbody crossings will be conducted consistent with the Federal Energy Regulatory Commission's (FERC) Wetland and Waterbody Construction and Mitigation Procedures (FERC's procedures) current at the time of construction.⁸ A copy of FERC's Procedures is contained in Appendix G.

The State will require individual projects to comply with the FERC Procedures. Compliance with a U.S. Army Corps of Engineers (USACE) nationwide permit will be required for construction activities affecting jurisdictional waters. A 401 water quality certification may be required from the Wyoming Department of Environmental Quality (WDEQ) for construction activities on some WPCI

⁸ www.ferc.gov/industries/gas/enviro/procedures.pdf

corridors.

3.9 Areas with Special Conditions

To the extent feasible, individual projects will be routed to avoid impacts to environmental and cultural resources. However, it will not be possible to avoid some areas entirely. To construct through these areas, timing restrictions (see Appendix B, Table 3) and construction stipulations will be established to help protect these resources. It is anticipated that the stipulations will be developed in the NEPA and other regulatory processes.

3.9.1 Close Proximity and Collocated Facilities

WPCI was designed to maximize collocation of new pipelines with existing utilities. Adjacent utilities will be staked the entire length and their representative will be notified before the start of construction. Construction activity will be limited near adjacent utilities. In order to preserve the maximum useable width of the corridor, initial pipeline placement will be, where feasible, at one edge of the corridor and follow the alignment of the corridor boundary, not wandering through the corridor. Subsequent pipelines using the corridor will be located adjacent to, offset the required safety distance, and parallel to existing pipelines their entire length, to the extent possible. These subsequent pipelines also will not wander through the remaining width of the corridor when possible.

3.9.2 Surface Slumping

Prior to construction, the project ROW will be reviewed for surface slumping in the detailed engineering design phase. Impacts to the pipeline from slumping and other geohazards will be mitigated during project design.

3.9.3 Bank Erosion

Waterbody crossings will be reviewed during the detailed design phase to insure all potential bank erosion issues are addressed. Crossing approaches will be tapered to gradual slopes and water bars installed, where required, to eliminate small abrupt changes in elevation. The new gradual slope will taper to match the undisturbed terrain. BMPs will be initiated as described in the Upland Erosion Control, Revegetation and Maintenance Plan to reduce erosion and limit sediment transport (Appendix E). Additional reclamation measures are described in the Restoration and Revegetation Plan (Appendix F).

3.9.4 Active Faults

Active faults in the WPCI corridors will be evaluated during the detailed engineering phase of the project. If active faults exist, designs will be developed that will mitigate the effects from fault movement on the pipeline.

3.9.5 Areas of Historic or Cultural Significance

The WPCI corridors cross over and adjacent to numerous known cultural resources, including historic trails. Additional surveys and mitigation plans will be developed through the

subsequent site-specific NEPA process and in consultation with the Wyoming State Historic Preservation Officer (SHPO) as part of the Section 106 process.

3.9.6 Paleontological Resources

Areas with potential paleontological resources may require construction monitoring and or recovery. Areas with potential paleontological resources will be identified in the NEPA process and site-specific mitigation measures (including trench monitoring) will be developed.

3.10 Pipe Installation

Pipe installation includes stringing, bending for horizontal or vertical angles in the alignment, welding pipe segments together, inspection, coating joint areas to prevent corrosion, and then lowering-in and padding as described in greater detail below.

3.10.1 Stringing

Line pipe will typically be shipped directly from the manufacturer by rail to off-loading areas and then hauled to staging areas where stringing trucks will collect and deliver the pipeline to the ROW. Each individual joint of pipe will be unloaded with a side-boom or trackhoe and placed (strung) parallel to the ditch in a continuous line. Sufficient pipe for road or waterbody crossings will be stockpiled at ETWAs near crossings.

Stringing operations will be coordinated with trenching and installation activities in order to properly manage the construction time at a particular tract of land. Gaps in excavation will be left to allow crossing of wildlife, livestock and other uses.

3.10.2 Bending

After joints of pipe are strung along the ditch but before the joints are welded or pressed together, individual joints of pipe will be bent to accommodate horizontal and vertical changes in direction. Field bends will be made utilizing a hydraulically operated bending machine. Where the deflection of a bend exceeds the allowable limits for field-bent pipe, factory (induction) bends will be installed.

3.10.3 Welding

After pipe joints are bent, the pipe joints will be lined up end-to-end and clamped into position. The pipeline joints will be welded together in conformance with standards applicable to the type of pipeline being installed. Welding activities will conform to requirements in the Fire Prevention and Suppression Plan (Appendix L).

3.10.4 Coating

The coating of pipeline will be done in accordance with standards applicable to the specific type of pipeline being installed.

3.10.5 Cathodic Protection

Cathodic protection will be installed in accordance with standards applicable to the specific type of pipeline being installed.

3.10.6 Lowering-in and Padding

Before pipe sections are lowered into the ditch, inspections will be conducted to verify the pipe is properly fitted and installed into the ditch, minimum cover is provided, and the trench bottom is free of rocks and other debris that could damage the external pipe coating. Side-boom tractors will be used to simultaneously lift the pipe section, position it over the ditch, and lower it in place. Specialized padding machines may be used to sift soil fines from the excavated subsoil to provide rock-free pipeline padding and bedding. Sandbags may be used to pad the bottom of the ditch instead of, or in combination with, padding with soil fines. In rocky areas, padding material or a rock shield will be used to protect the pipe. No topsoil will be used to pad pipe.

3.11 Backfilling

Backfilling will begin after a section of pipe has been successfully placed in the ditch. Trench breakers will then be installed, as needed. Before backfilling the trench, the equipment operator will check the trench for wildlife and/or livestock and will be sure any wildlife or livestock found in the trench is removed before backfilling begins. Backfilling will be conducted using a bulldozer, rotary auger backfiller, padding machine, or other suitable equipment. Backfilling will generally use the subsoil previously excavated from the trench, except in rocky areas where imported select fill material may be needed.

Backfill will be graded and compacted for ground stability, by tamping or walking with a wheeled or tracked vehicle. Compaction will be performed to the extent that no voids remain in the trench. Backfilling will not be performed with frozen soils to prevent the formation of large consolidated masses that will not break down. In irrigated agricultural areas, the backfill will be replaced at the same compaction density as the adjacent undisturbed soil. Any excavated materials or materials unfit for backfill either will be used elsewhere or properly disposed of in compliance with applicable regulations. A mound will be placed over the trench approximately 0.5-feet in height to account for subsidence (except in wetlands, waterbody crossings and at road crossings where compaction will be adequate to keep roadway flat).

3.12 Pressure Testing and Water Use

Consumptive water uses may be required for horizontal directional drilling, dust abatement during construction and to pressure test the installed pipe. Consumptive water use will be acquired and discharged in accordance with the rules, regulations and best practices applicable to the type of pipeline being installed. A hydrostatic testing and discharge plan is included in Appendix D of this POD.

3.13 Cleanup and Reclamation

All construction debris and miscellaneous items will be removed from the construction site and disposed of properly. No trash will be buried. All fences and roads will be replaced/rebuilt as negotiated with the landowner. Appendix C contains a waste and spill management plan for WPCI.

Disturbed portions of the construction workspace (including the ROW and ETWS) will be returned as closely as possible to pre-construction grades and contours. Original drainage patterns will be reestablished and contours will be returned as closely as possible to original condition. Topsoil will be replaced over the ROW from the approximate area in which it was stripped. Reseeding and mulching will be completed as soon as possible, depending upon permit stipulations, weather conditions, and guidance from the agencies and landowners. All disturbed areas will be seeded and mulched. Any temporary BMPs will be removed and final BMPs (waterbars, berms, slash material) will be installed as described in Appendix F.

Reclamation of lands disturbed by construction will be in accordance with applicable regulations and permit requirements. Species and seeding rates effective in controlling erosion will be used to revegetate the disturbed areas. Species will be selected after consideration of climatic adaptation, species adaptation to soil texture, possible adverse conditions such as drought or saline soils, palatability to wildlife, and shrub cover for wildlife (see Appendix F). Non-native species will not be used on public lands except where steril annuals are required for cover crop. Seed will be planted by drilling or broadcasting. Prior to seeding, the reclaimed area will be roughened (typically by a Dozer with ripper blades) to provide microsites for seed deposition and snow (moisture) capture. A rangeland drill is the preferred seeding equipment. Areas not accessible to a rangeland drill will be broadcast-seeded. Broadcast-seeding rates will be double those of drill application. Seeding will be performed during the appropriate period when the seeds will receive the benefit of winter or spring moisture.

BMPs for final reclamation are described in the Upland Erosion Control, Revegetation, and Maintenance Plan (see Appendix E).

3.14 Livestock Barrier and Other Livestock Issues

Fences crossing the ROW will be braced, cut, and temporarily fitted with gates to permit construction traffic passage. During construction, the opening will be controlled as necessary (including use of cattle guards) to prevent the passage of livestock and/or wild horses. Existing fences will be replaced and braces left in place upon completion of construction activities. Care will be taken not to obstruct or damage gates or cattle guards. Those damaged or made inoperable will be repaired to the land management agency and/or private landowner satisfaction. Any damage to livestock facilities (corrals, fences, water sources, etc.) will be repaired to the owner's specifications.

3.15 Health and Safety

The following health and safety measures will be implemented:

- Construction activities will cease, with the exception of pneumatic or hydrostatic testing operations, boring or drilling, by sunset. Nighttime construction (with the exception of pneumatic or hydrostatic testing) will not be permitted without approval of the appropriate regulatory agency.
- No burning of brush or debris, and no campfires, lunch fires, or warming fires will be allowed on the ROW.
- Water or chemical soil binders will be used to control dust along the ROW and access roads during construction only in accordance with federal, state, and local requirements. Water for dust control will be obtained by permits or purchased through contracts with owners with valid, existing water rights.
- Equipment will be properly maintained to reduce emissions and noise. Vehicles and equipment will be operated at safe speeds at all times on the ROW and access roads.
- Camping will be prohibited on the ROW.

3.16 Waste Disposal

Waste and spill management is discussed in Appendix C of this POD. The following waste disposal measures will be implemented:

- No littering will be allowed on the corridor. Construction and operations sites will be maintained in a sanitary condition at all times and waste materials at these sites will be disposed of promptly at an appropriate waste disposal site.
- Excess or unsuitable materials will be disposed of at commercial disposal sites, commercial recycling centers, or other approved disposal sites.
- Compliance will occur with all hazardous waste disposal requirements.
- Human wastes, temporarily located within self-contained facilities (portable toilets), will be removed from the corridors and disposed of according to applicable laws and regulations. These facilities will not be placed within 100 feet of a drainage or waterbody.

4.0 Operation and Maintenance Activities

The pipeline systems installed in the WPCI corridors will be operated and maintained according to industry standards and federal regulations to ensure safe operation and to maintain the integrity of the pipeline system.

4.1 Surveillance

Communications and detection systems will be designed and installed consistent with standards applicable to the type of pipeline being installed.

4.2 Right-of-Way Access

Surface travel along the ROW generally will be limited to periodic valve inspections, leak surveys, erosion control (Stormwater Inspection), and any pipeline repairs that may be needed. In addition, access to the ROW for the corrosion control inspections and noxious weed surveys will be necessary. This will be conducted typically with a field service truck or

ATV. Specific ROW travel requirements will be described when a ROW grant is issued.

4.3 Pipeline and Site Maintenance and Repair

Specialists and technicians will be on-call to service the pipeline. Surface traffic will be limited to workers performing pipeline and valve maintenance, periodic monitoring and inspection, and emergency repairs to the pipeline or associated equipment.

Repairs required because of minor corrosion and slight external mechanical damage to pipe and coating material can be made without interruption or with minimum interruption of service. Repairs are usually made under a reduced pipeline pressure and require a minimum amount of excavation and heavy equipment. Other minor repairs include BMP maintenance, pipeline marker replacement, and debris removal.

Some settling of the backfilled trench will occur, particularly after the first winter following construction. In this case, subsidence and potholes will be filled if necessary and the surface restored to normal grade and reseeded. If subsidence is discovered in subsequent years, the potholes will be filled, if necessary, and the surface restored to normal grade and reseeded.

Pipeline failures or external mechanical damage needing major repairs may require shutdown of the pipeline. In these instances, the pipeline segment could be isolated between mainline valves.

4.4 Environmental Inspections

Individual project proponents will be responsible for monitoring pipeline operations after construction is completed. This will include post-construction inspection of stormwater management devices as stipulated in the stormwater permit from the WDEQ. Inspection personnel will have the qualifications necessary to conduct stormwater inspections and reporting for pipelines. Individual project proponents will also be responsible for noxious weed control for any issued ROW grants.

4.5 Wildlife Avoidance Periods

General pipeline maintenance should be scheduled to avoid any wildlife construction closure periods. Emergency maintenance in these areas during the wildlife constraint periods will be coordinated with the land management agency.

Appendix A

Figures and Construction Typical Drawings

Figure 1 – Location of WPCI Corridors

Figure 2 – Existing Wyoming Oil Fields Suitable for Enhanced Oil Recovery Using CO₂ Flooding

Figure 3 – Instate Anthropogenic and Natural CO₂ Sources Which May be Suitable for CO₂ Flooding

Figure 4 – Typical 100-foot Wide Construction ROW

Figure 5 – Typical 75-foot Wide Restricted ROW

Figure 6 – Typical Block Valve Location

Figure 7 – Typical Pipeline Marker

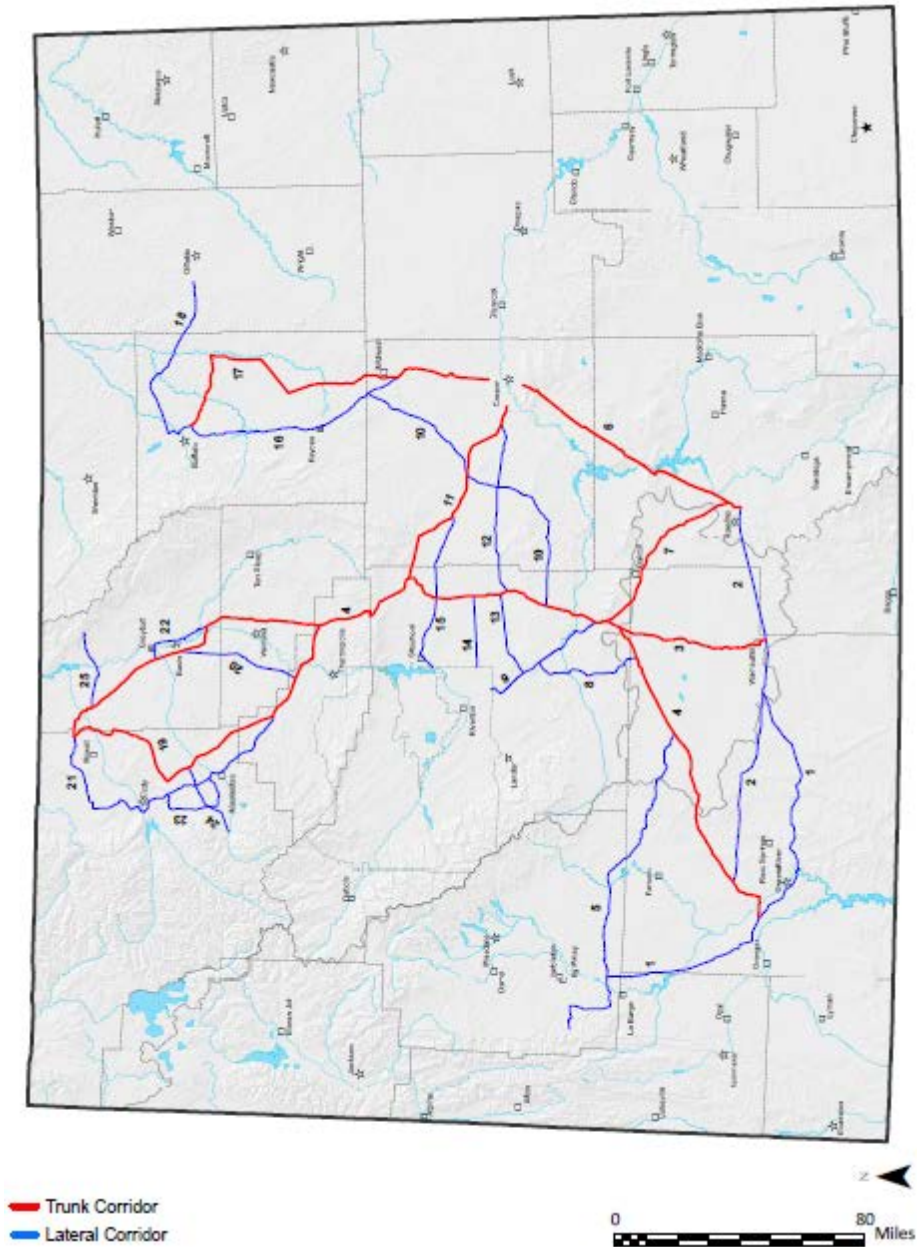
Figure 8 – Typical Pipeline Construction Sequence

Figure 9 – Typical Uncased Road Crossing: Bored

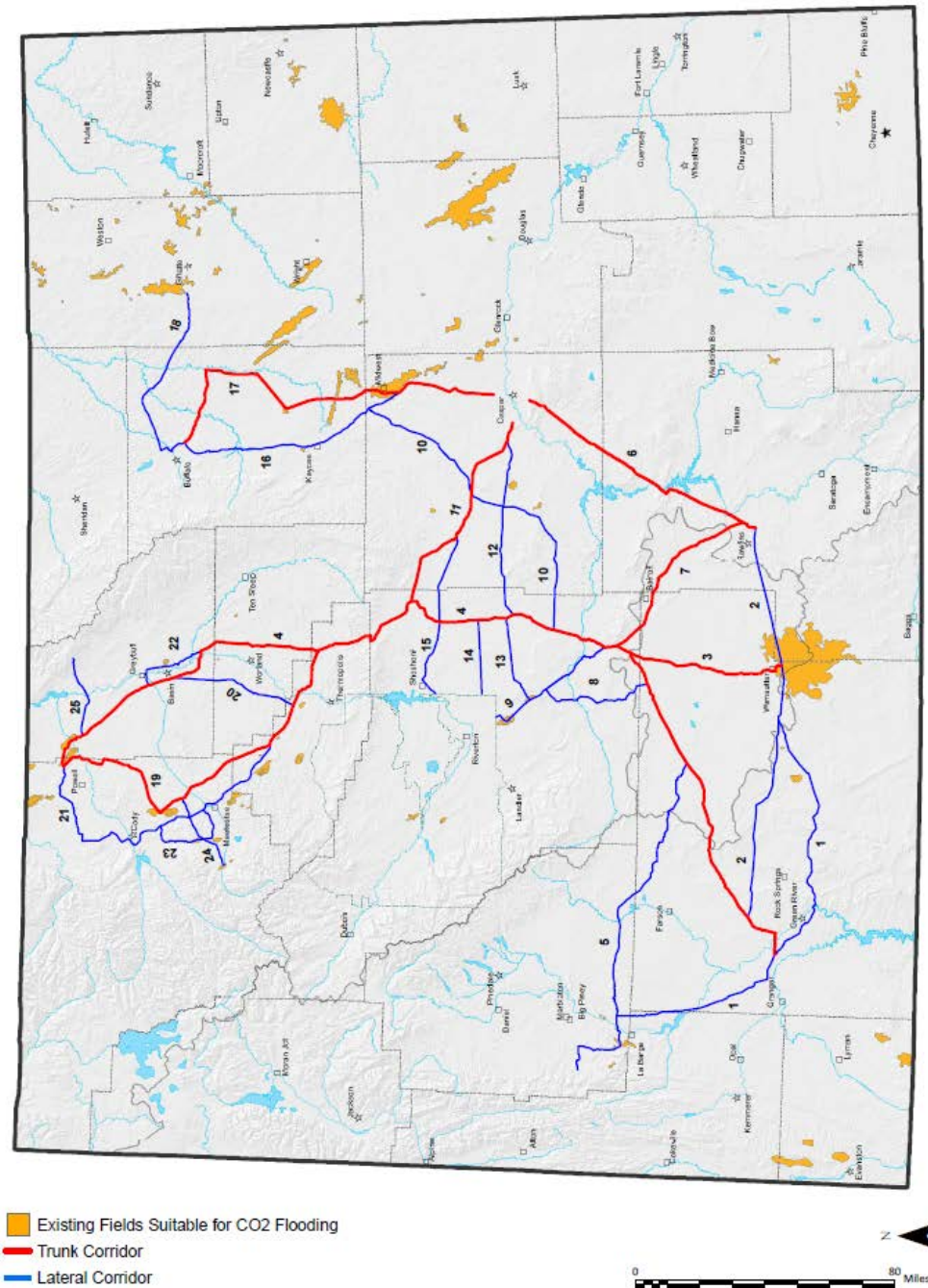
Figure 10 – Typical Uncased Road Crossing: Open Cut

Figure 11 - Typical Trail and Two-Track Road Crossing

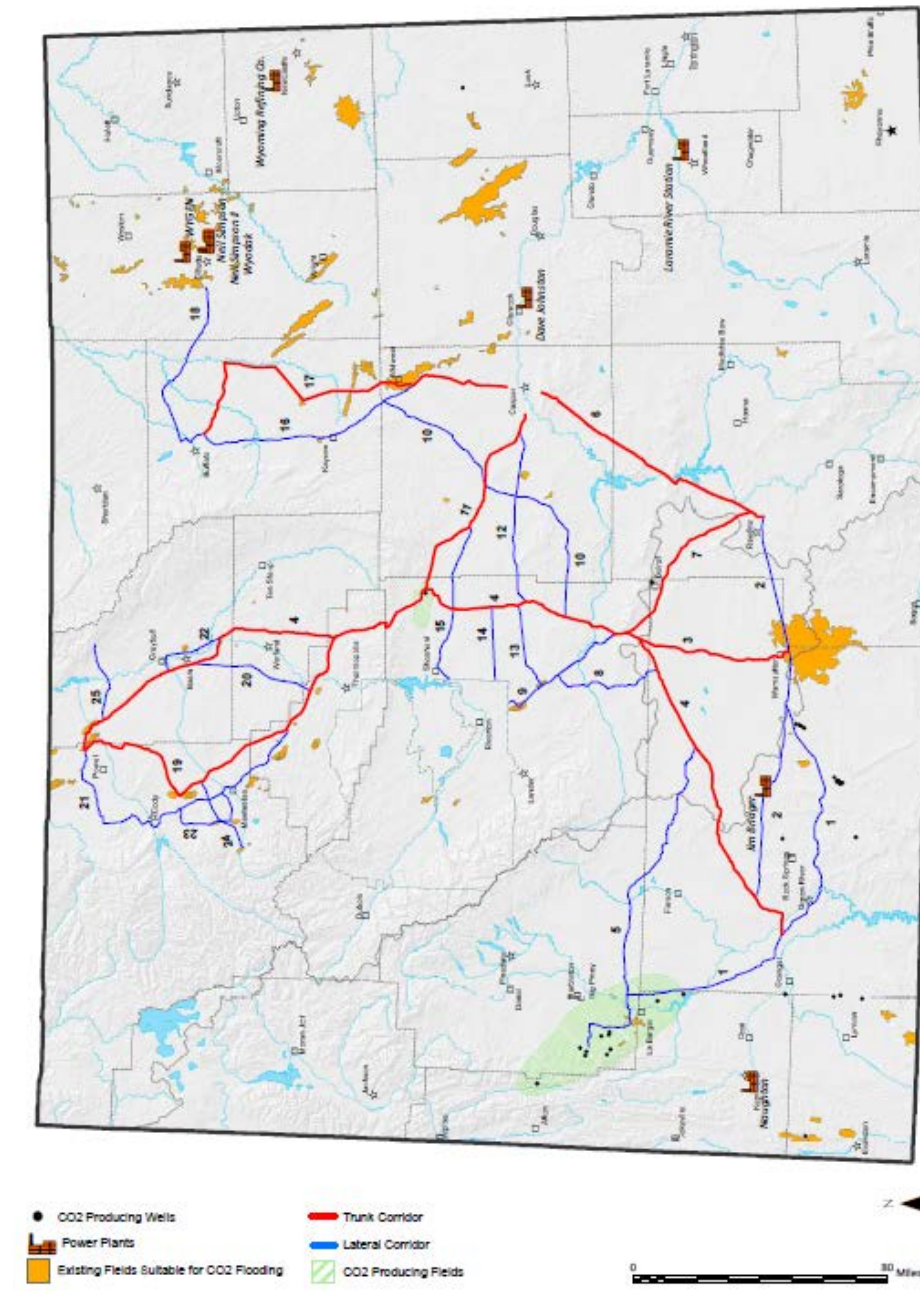
Appendix A
Figure 1
WPCI Trunk and Lateral Corridors

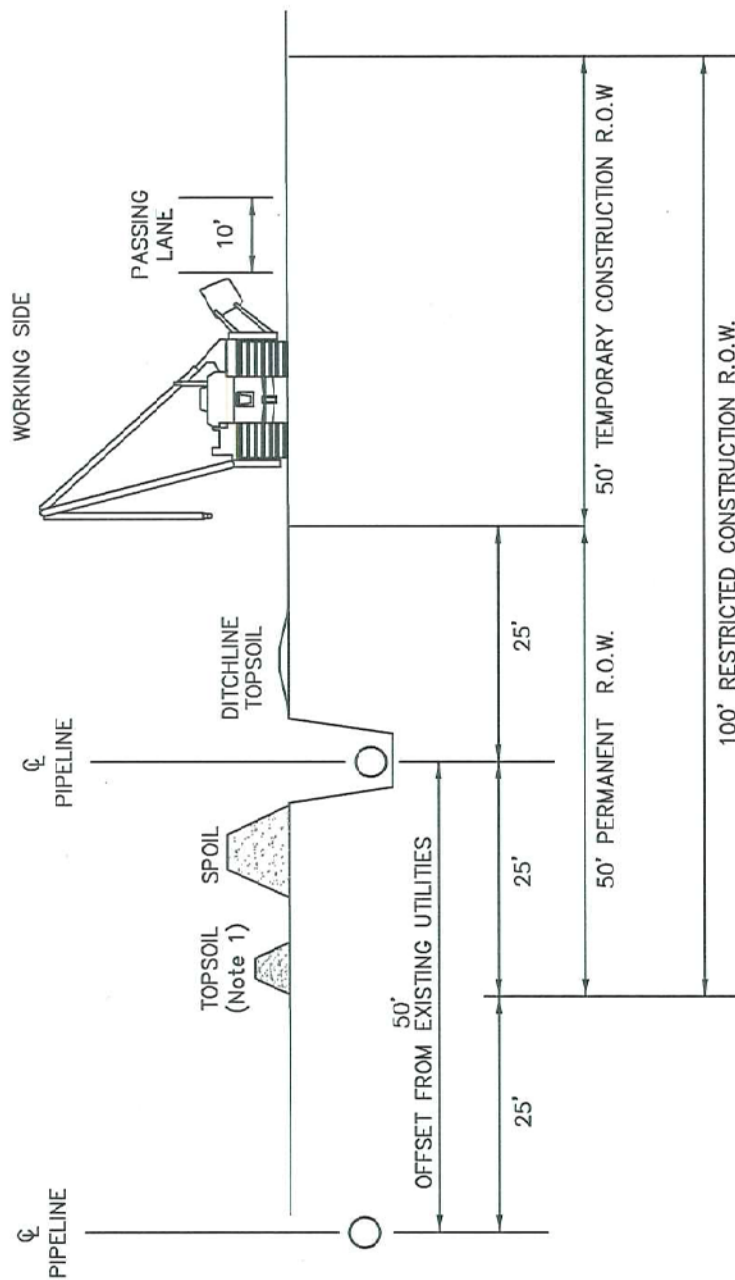


Appendix A
Figure 2
Existing Wyoming Oil Fields Suitable for Enhanced Oil Recovery Using CO₂ Flooding



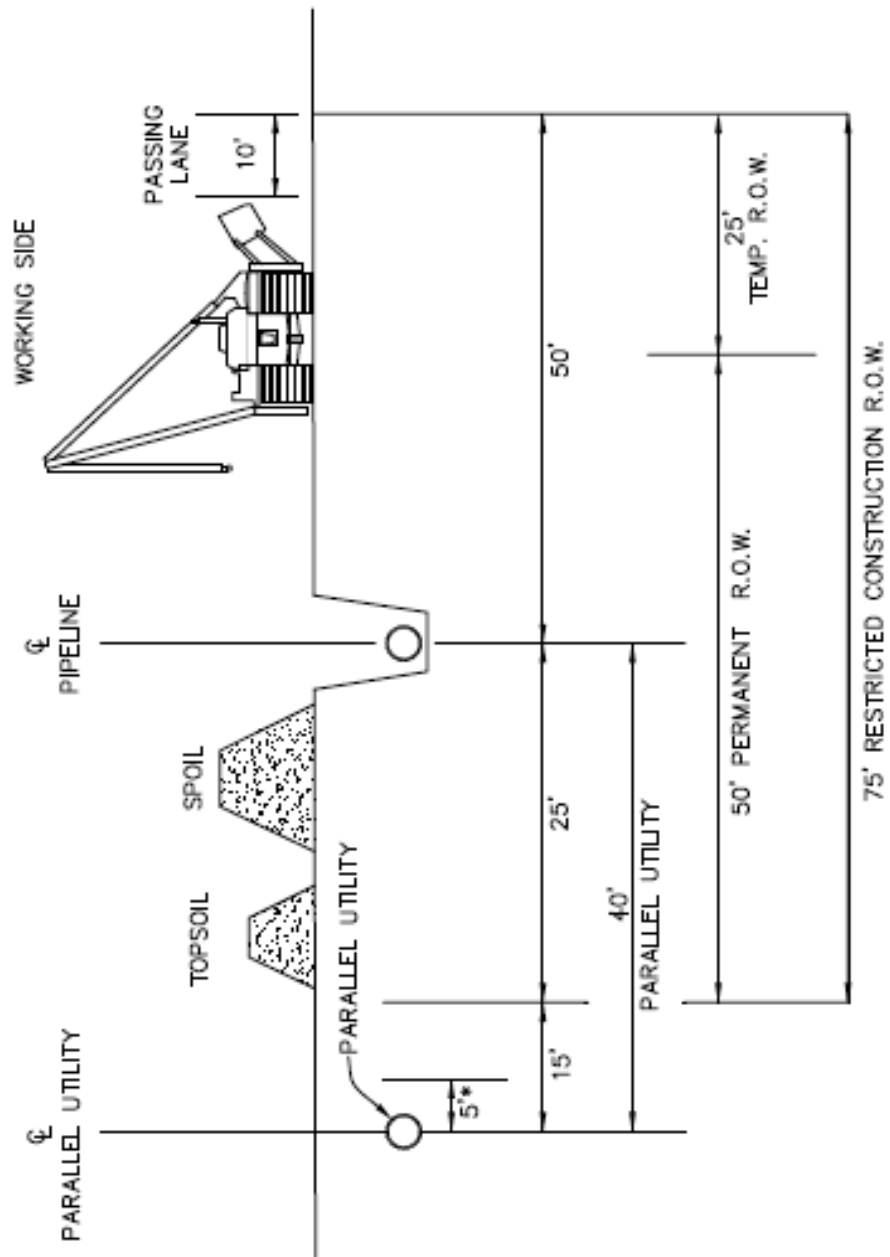
Appendix A
Figure 3
Instate Anthropogenic and Natural CO₂ Sources Which May be Suitable for CO₂ Flooding





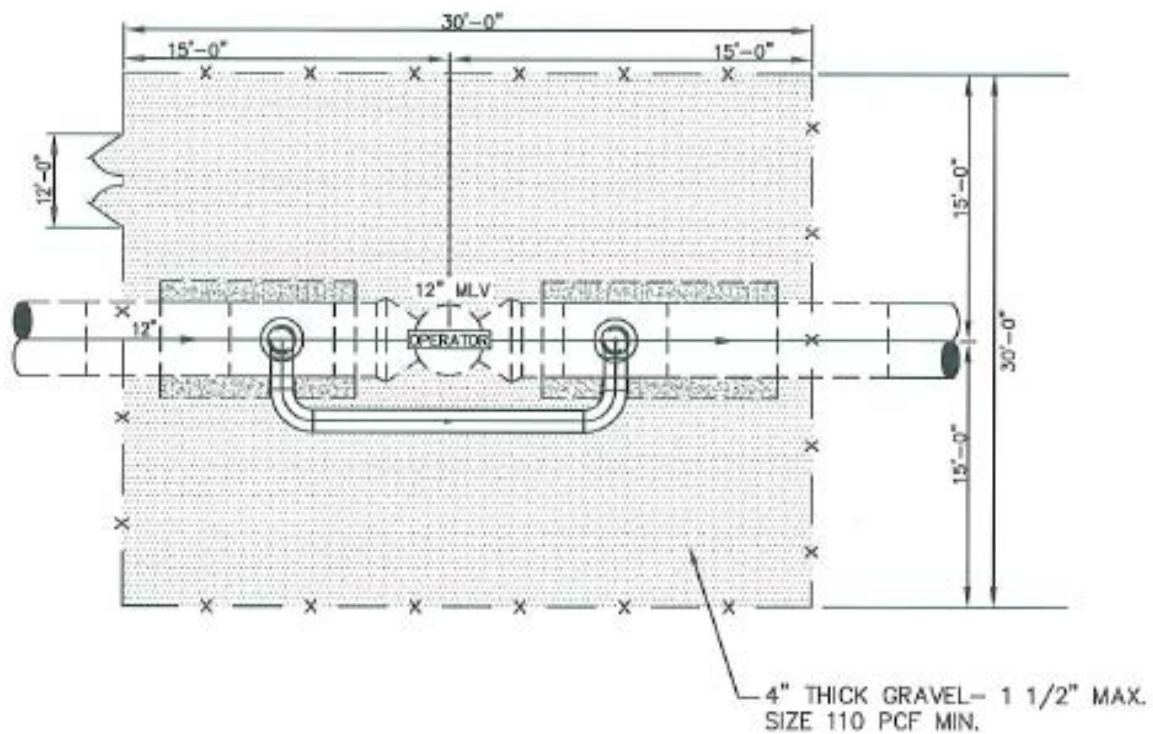
Wyoming Pipeline Corridor Initiative
Appendix A
Figure 4
Typical 100-foot Wide Construction ROW





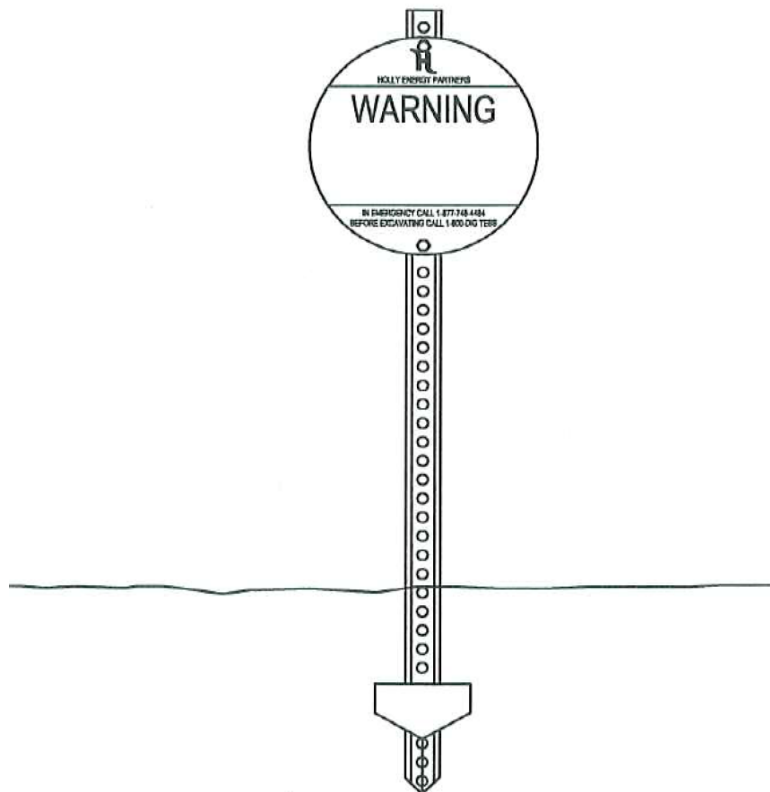
Wyoming Pipeline Corridor Initiative
Appendix A
Figure 5
Typical 75-foot Wide Restricted ROW





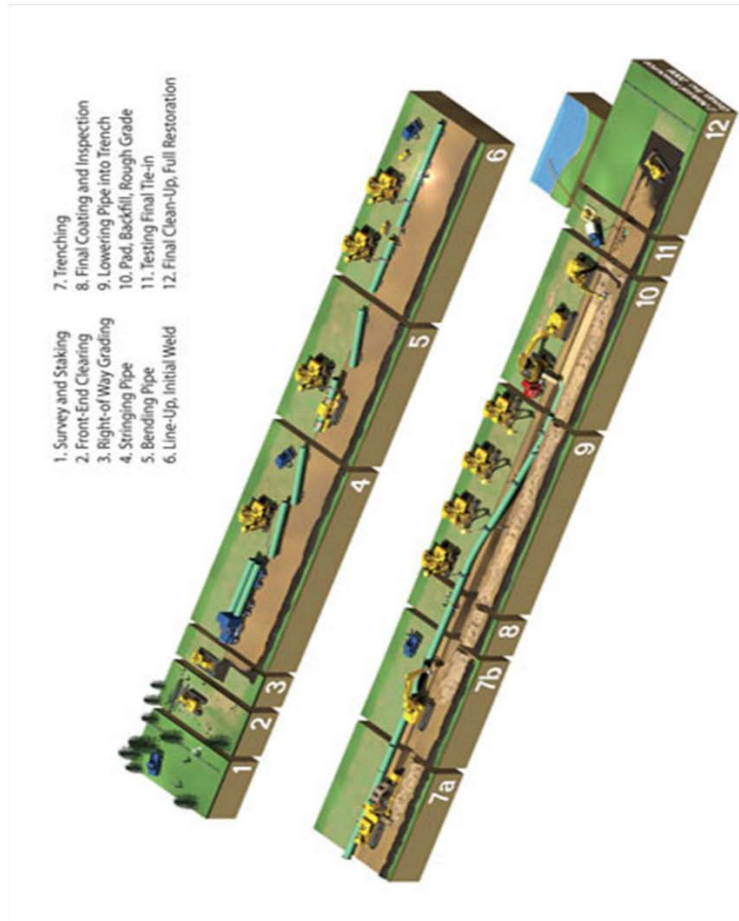
Wyoming Pipeline Corridor Initiative
Appendix A
Figure 6
Typical Block Valve Location





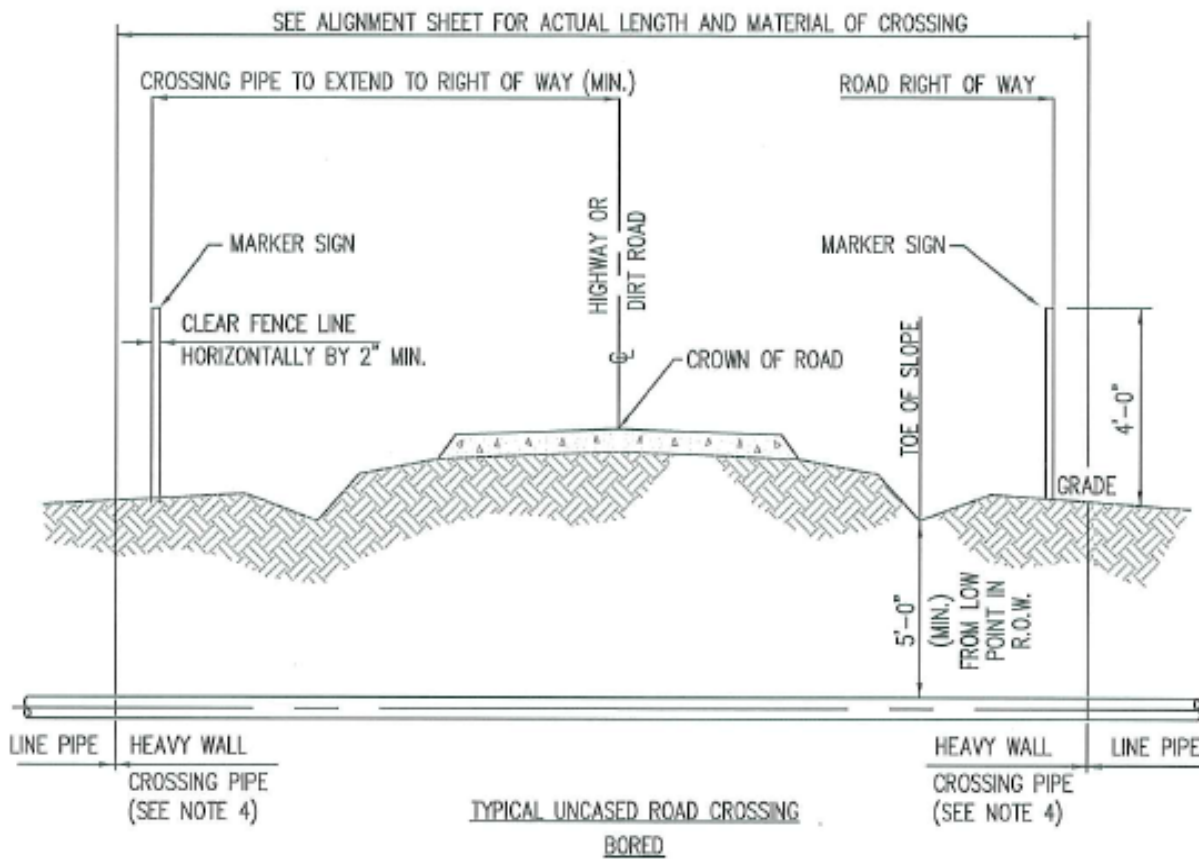
Wyoming Pipeline Corridor Initiative
Appendix A
Figure 7
Typical Pipeline Marker





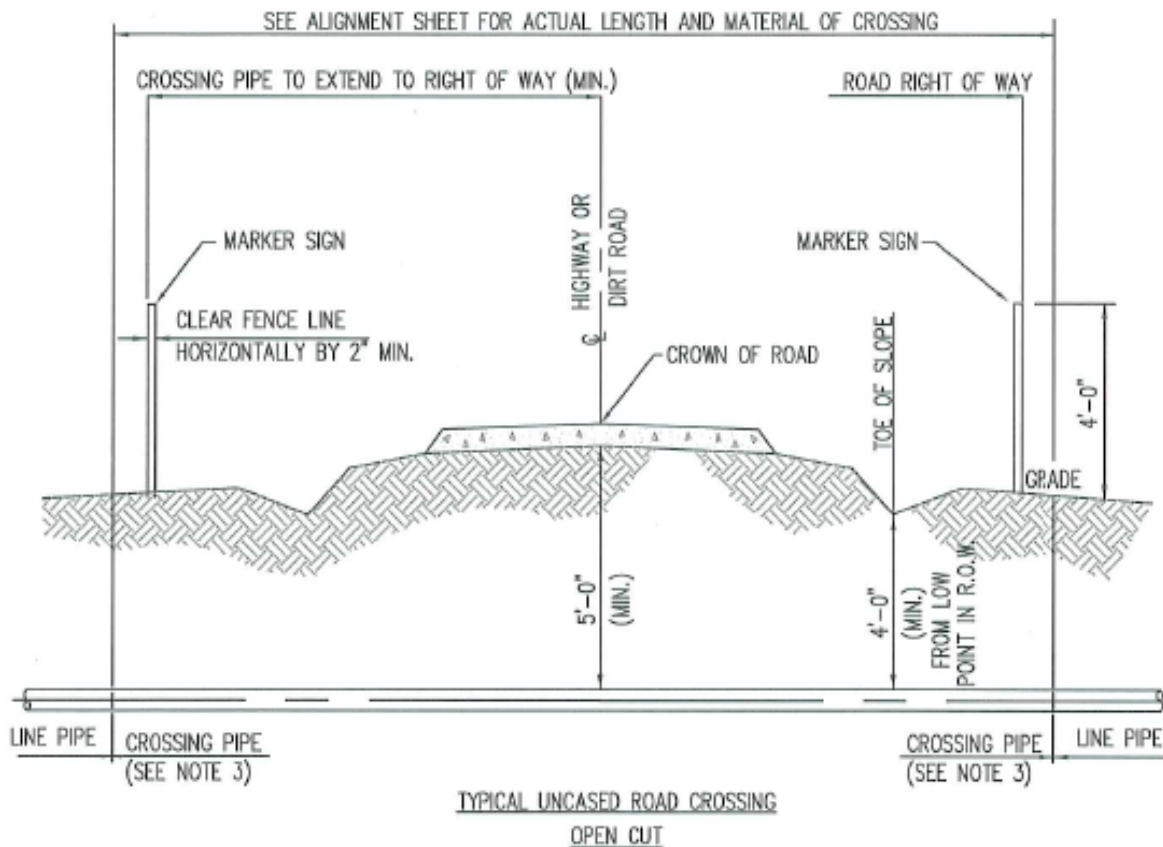
Wyoming Pipeline Corridor Initiative
Appendix A
Figure 8
Typical Pipeline Construction Sequence





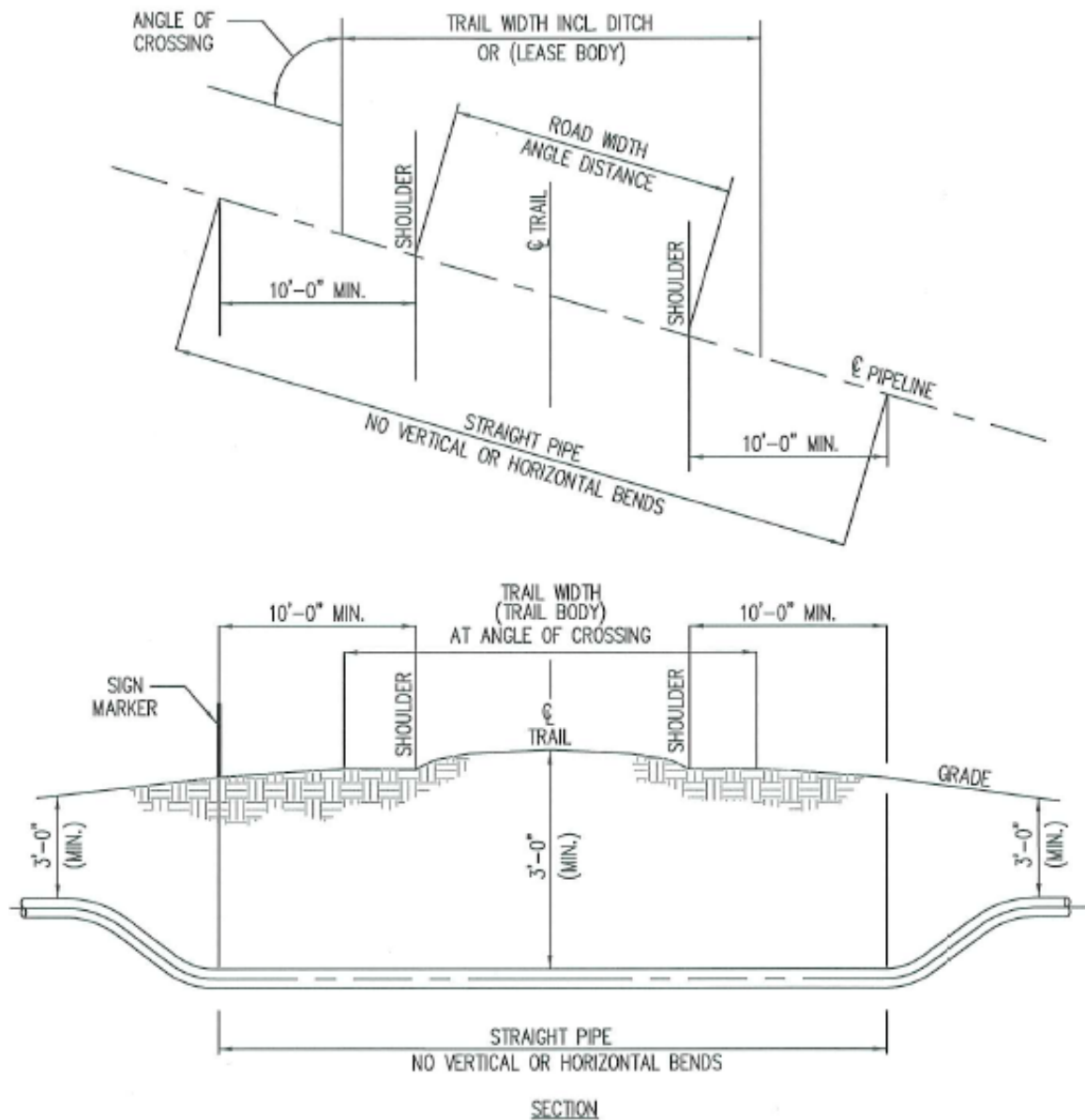
Wyoming Pipeline Corridor Initiative
Appendix A
Figure 9
Typical Uncased Road Crossing: Bored





Wyoming Pipeline Corridor Initiative
Appendix A
Figure 10
Typical Uncased Road Crossing: Open Cut





Wyoming Pipeline Corridor Initiative
Appendix A
Figure 11
Typical Trail and Two-Track Road Crossing



Appendix B

Tables

Table 1 - Landownership (Miles Crossed) of Each Segment of WPCI

Table 2 - Authorizing Actions Which May be Necessary to Construct Pipelines in the WPCI Corridors

Table 3 - Construction Timing Restrictions Which will be Observed for Construction Activities in the WPCI Corridors

Table 4 - Locations of Extra Temporary Work Spaces Necessary to Construct Pipelines in the WPCI Corridors

Table 5 - Land Requirements (Acres) for Each Segment of WPCI

Table 6 - Typical Construction Equipment List

| Appendix B Table 1 Landownership (Miles Crossed) of Each Segment of WPCI | | | | | | | | | |
|--|---|-------------------------|---------------|---------------|----------------|-------------|--------------|-------------|----------------|
| Segment | Counties | WPCI Width (feet) | Miles Crossed | | | | | | |
| | | | Private | State | BLM | USFS | BOR | DOD | Total |
| 1 | Lincoln, Sublette, Sweetwater | 200 | 65.30 | 2.85 | 64.90 | 1.05 | 10.16 | 0.00 | 144.25 |
| 2 | Carbon, Sweetwater | 200 | 67.63 | 4.07 | 53.70 | 0.00 | 0.00 | 0.00 | 125.40 |
| 3 | Fremont, Sweetwater | 300 | 13.90 | 1.00 | 35.60 | 0.00 | 0.00 | 0.00 | 50.50 |
| 4 | Bighorn, Fremont, Hot Springs, Park, Sweetwater, Washakie | 300 | 70.18 | 16.48 | 233.30 | 0.00 | 3.05 | 0.00 | 323.01 |
| 5 | Sublette, Sweetwater | 200 | 3.22 | 7.70 | 112.35 | 0.00 | 0.00 | 0.00 | 123.27 |
| 6 | Carbon, Natrona | 300 | 39.58 | 8.55 | 31.96 | 0.00 | 4.63 | 0.00 | 84.72 |
| 7 | Carbon, Fremont, Sweetwater | 300 | 10.70 | 3.26 | 45.00 | 0.00 | 0.00 | 0.00 | 58.96 |
| 8 | Fremont, Sweetwater | 200 | 2.01 | 1.94 | 34.25 | 0.00 | 0.00 | 0.00 | 38.20 |
| 9 | Fremont | 200 | 3.11 | 1.83 | 38.99 | 0.00 | 0.00 | 0.00 | 43.93 |
| 10 | Fremont, Natrona | 200 | 23.70 | 3.89 | 76.90 | 0.00 | 0.00 | 0.00 | 104.50 |
| 11 | Fremont, Natrona | 300 | 44.12 | 5.13 | 19.92 | 0.00 | 0.00 | 0.00 | 69.18 |
| 12 | Fremont, Natrona | 200 | 28.30 | 4.17 | 23.17 | 0.00 | 0.00 | 0.00 | 55.64 |
| 13 | Fremont | 200 | 3.62 | 1.52 | 22.45 | 0.00 | 0.00 | 0.00 | 27.60 |
| 14 | Fremont | 200 | 2.04 | 0.84 | 20.06 | 0.00 | 0.00 | 0.00 | 22.94 |
| 15 | Freemont, Natrona | 200 | 13.70 | 4.50 | 34.39 | 0.00 | 0.00 | 0.00 | 52.59 |
| 16 | Johnson, Natrona | 200 | 49.99 | 16.18 | 8.35 | 0.00 | 0.00 | 0.00 | 74.52 |
| 17 | Johnson, Natrona | 300 | 73.57 | 10.86 | 38.88 | 0.00 | 0.00 | 0.00 | 123.31 |
| 18 | Campbell, Johnson | 200 | 54.39 | 4.52 | 5.91 | 0.00 | 0.00 | 0.00 | 64.82 |
| 19 | Bighorn, Hot Springs, Park | 300 | 29.89 | 6.81 | 73.34 | 0.00 | 8.08 | 0.00 | 118.13 |
| 20 | Bighorn, Hot Springs, Washakie | 200 | 1.36 | 2.12 | 35.93 | 0.00 | 0.00 | 0.00 | 39.41 |
| 21 | Hotsprings, Park | 200 | 40.80 | 4.40 | 42.97 | 0.00 | 16.58 | 0.00 | 104.75 |
| 22 | Bighorn | 200 | 5.70 | 0.10 | 18.35 | 0.00 | 0.00 | 0.00 | 24.15 |
| 23 | Park | 200 | 23.92 | 3.44 | 3.64 | 0.00 | 0.00 | 0.00 | 30.99 |
| 24 | Park | 200 | 15.61 | 1.19 | 9.21 | 0.00 | 0.00 | 0.00 | 26.02 |
| 25 | Bighorn | 200 | 3.69 | 1.02 | 21.14 | 0.00 | 0.00 | 0.02 | 25.87 |
| Totals | | | 690.03 | 118.37 | 1104.67 | 1.05 | 42.51 | 0.02 | 1956.64 |

| Appendix B Table 2 Authorizing Actions Which May be Necessary to Construct Pipelines in the WPCI Corridors | | |
|---|--|--|
| Agency | Nature of Authorizing Action | Authority |
| Federal Permits, Approvals, and Reviews | | |
| Bureau of Land Management | Amends Resource Management Plan | Federal Land Policy and Management Act of 1976 |
| | Grant right-of-ways and issue temporary use permits | Section 28 of the Mineral Leasing Act of 1920 |
| | Issue materials sales contracts | Materials Act of 1947, as amended; 30 U.S.C. 601, 602; 43 |
| | Issue antiquities and cultural resource use permit to excavate or remove cultural resources on federal lands | Antiquities Act of 1906, 16 U.S.C. Section 431-433; Archaeological Resources Public Protection Act of 1979, 16 U.S.C. Section 470aa- |
| | Approve herbicide use on federal lands | BLM Manual 9011.1, Guidelines for Conducting Chemical Pest Control Program |
| U.S. Fish and Wildlife Service | Section 7 Consultation process for endangered or threatened | Endangered Species Act of 1973; 16 U.S.C. 1531 et seq. |
| Federal Highway Administration | Issue permits to cross federal-aid highways | 23 U.S.C. Sections 116, 123, 23 CFR Part 645 Subpart B |
| U.S. Army Corps of Engineers | Issue Section 404 permit (nationwide) for placement of dredged or filled material in waters of the U.S. | Section 404 of the Clean Water Act of 1972 (40 CFR 122-123); 33 U.S.C. Section 1344; 33 CFR Parts 323, 325 |
| Bureau of Alcohol, Tobacco and Firearms | Issue permits to purchase, store, and use explosives | Section 1102(a) of the Organized Crime Control Act of 1970, 18 U.S.C. Section 841-848; 27 CFR Part 181 |
| Advisory Council on Historic Preservation | Review and compliance activities related to cultural resources | Section 106 National Historic Preservation Act (16 U.S.C. 470) (36 CFR Part 80) |
| State of Wyoming and Local | | |
| Department of Environmental Quality – Water Quality Division | Issue National Pollution Discharge Elimination System (NPDES) Permit for discharges; approve Storm Water Pollution Prevention Plan | Wyoming Environmental Quality Act, W.S. 35-11-301 |
| | 401 Water Quality Certification | Section 401 of the Clean Water Act |
| Wyoming Highway Department | Issue permits for oversize and overweight loads | Chapters 17 and 20 of the Wyoming Highway Department Rules and Regulations |
| | Issue encroachment permits for state highways | Chapter 12 of the Wyoming Highway Department Rules and Regulations |
| State Land Board | Issue easements to cross state lands | W.S. 35-20 and 36-20 |
| Wyoming State Engineer's Office | Grant permit to appropriate water for hydrostatic testing, dust control, and other uses | W.S.41-121 through 147 |
| State Historic Preservation Office | Review compliance activities related to cultural resources | Section 106 National Historic Preservation Act (16 U.S.C. 470) |
| County Commissioners | Road crossing permits, land use permits, and licenses | County zoning regulations |
| County Health Departments | Temporary sanitation facilities | County sanitation regulations |

| Appendix B Table 3 Construction Timing Restrictions Which will be Observed for Construction Activities in the WPCI Corridors | | |
|--|------------------------|---------------------------|
| Common Name | Spatial Buffer (miles) | Seasonal Stipulation |
| Golden Eagle | 0.5 | January 15 - July 31 |
| Ferruginous Hawk | 1 | March 15 - July 31 |
| Swainson's Hawk | 0.25 | April 1 - August 31 |
| Bald Eagle | 0.5 | January 1 – August 15 |
| Prairie Falcon | 0.5 | March 1 - August 15 |
| Peregrine Falcon | 0.5 | March 1 - August 15 |
| Short-eared Owl | 0.25 | March 15- August 1 |
| Burrowing Owl | 0.25 | April 1 – September 15 |
| Northern Goshawk | 0.5 | April 1 - August 15 |
| Osprey | 0.25 | April 1 - August 31 |
| Cooper's Hawk | 0.25 | March 15 – August 31 |
| Sharp-shinned Hawk | 0.25 | March 15 – August 31 |
| Red-tailed Hawk | 0.25 | February 1 – August 15 |
| Rough-legged Hawk (winter resident only) | ---- | ---- |
| Northern Harrier | 0.25 | April 1 - August 15 |
| Merlin | 0.5 | April 1 - August 15 |
| American Kestrel | 0.125 | April 1 – August 15 |
| Common Barn Owl | 0.125 | February 1 – September 15 |
| Northern Saw-whet Owl | 0.25 | March 1 - August 31 |
| Boreal Owl | 0.25 | February 1 – July 31 |
| Long-eared Owl | 0.25 | February 1 – August 15 |
| Great Horned Owl | 0.125 | December 1 – September 31 |
| Northern Pygmy-Owl | 0.25 | April 1 – August 1 |
| Eastern Screech -owl | 0.125 | March 1 – August 15 |
| Western Screech-owl | 0.125 | March 1 – August 15 |
| Great Gray Owl | 0.25 | March 15 – August 31 |
| Sage Grouse Core Area Leks | 0.6 | No Surface Occupancy |
| Sage Grouse Non-Core Area Leks | 0.25 | No Surface Occupancy |
| Sage Grouse Core Area | Entire Delineated Area | March 15 – June 30 |
| Sage Grouse Non-Core Area Leks | 2 | March 15 – June 30 |
| Sage Grouse Winter Concentration Areas | Entire Delineated Area | November 15 – March 14 |
| Deer, Elk, and Pronghorn Crucial Winter Range | Entire Delineated Area | November 15 – April 30 |
| Sharp-tail Grouse Leks | 0.25 | No Surface Occupancy |
| Sharp-tail Grouse Leks | 2 | April 1 – July 15 |

* **Note:** Construction stipulations will apply to species if previously collected data verifies their presence. Additional surveys will be conducted for species, as determined by applicable resource agencies.

| Appendix B Table 4 Locations of Extra Temporary Workspaces Necessary to Construct Pipelines in the WPCI Corridors | | | |
|---|----------|------------------------|----------------------------|
| Segment | Milepost | Purpose | Feature Name |
| 1 | 1.15 | I 80 | Interstate |
| 1 | 1.41 | Union Pacific Railroad | Railroad |
| 1 | 1.78 | Union Pacific Railroad | Railroad |
| 1 | 15.30 | Bitter Creek | StreamRiver - Perennial |
| 1 | 39.27 | SR 430 | State Highway |
| 1 | 40.20 | Salt Wells Creek | StreamRiver - Intermittent |
| 1 | 57.45 | Little Bitter Creek | StreamRiver - Intermittent |
| 1 | 59.55 | US 191 | US Highway |
| 1 | 64.25 | Green River | Artificial Path |
| 1 | 70.81 | SR 530 | State Highway |
| 1 | 77.44 | Union Pacific Railroad | Railroad |
| 1 | 77.47 | Union Pacific Railroad | Railroad |
| 1 | 77.85 | SR 374 | State Highway |
| 1 | 78.01 | I 80 | Interstate |
| 1 | 79.23 | SR 372 | State Highway |
| 1 | 80.40 | SR 372 | State Highway |
| 1 | 84.73 | SR 372 | State Highway |
| 1 | 89.01 | Union Pacific Railroad | Railroad |
| 1 | 116.92 | SR 372 | State Highway |
| 1 | 118.88 | Green River | Artificial Path |
| 2 | 6.70 | SR 71 | State Highway |
| 2 | 8.98 | Sugar Creek | StreamRiver - Intermittent |
| 2 | 20.19 | Separation Creek | StreamRiver - Intermittent |
| 2 | 32.22 | SR 789 | State Highway |
| 2 | 59.33 | Union Pacific Railroad | Railroad |
| 2 | 59.52 | | RAMP |
| 2 | 59.54 | I 80 | Interstate |
| 2 | 59.57 | | RAMP |
| 2 | 85.01 | Union Pacific Railroad | Railroad |
| 2 | 98.20 | SR 371 | State Highway |
| 2 | 113.21 | Uss Company Railroad | Railroad |
| 2 | 113.37 | Killpecker Creek | StreamRiver - Intermittent |
| 2 | 117.49 | US 191 | US Highway |
| 3 | 3.27 | Union Pacific Railroad | Railroad |
| 3 | 4.10 | I 80 | Interstate |
| 4 | 0.50 | SR 372 | State Highway |
| 4 | 4.90 | Green River | Artificial Path |
| 4 | 25.82 | US 191 | US Highway |
| 4 | 33.63 | Uss Company Railroad | Railroad |

| | | | |
|---|--------|------------------------------|----------------------------|
| 4 | 35.01 | Killpecker Creek | StreamRiver - Intermittent |
| 4 | 79.26 | Bush Creek | StreamRiver - Intermittent |
| 4 | 80.60 | Bear Creek | StreamRiver - Intermittent |
| 4 | 82.49 | Red Creek | StreamRiver - Perennial |
| 4 | 99.09 | Lost Creek | StreamRiver - Intermittent |
| 4 | 103.59 | Arapahoe Creek | StreamRiver - Intermittent |
| 4 | 106.31 | Arapahoe Creek | StreamRiver - Intermittent |
| 4 | 108.27 | Arapahoe Creek | StreamRiver - Intermittent |
| 4 | 110.95 | West Fork Crooks Creek | StreamRiver - Intermittent |
| 4 | 113.44 | Spring Creek | StreamRiver - Intermittent |
| 4 | 116.98 | Mason Creek | StreamRiver - Intermittent |
| 4 | 117.68 | Unnamed | StreamRiver - Intermittent |
| 4 | 118.19 | Unnamed | StreamRiver - Intermittent |
| 4 | 124.72 | US 287 | US Highway |
| 4 | 127.08 | Sweetwater River | Artificial Path |
| 4 | 130.44 | Buffalo Creek | StreamRiver - Intermittent |
| 4 | 145.55 | Coyote Creek | StreamRiver - Intermittent |
| 4 | 146.89 | Dry Coyote Creek | StreamRiver - Intermittent |
| 4 | 152.19 | SR 136 | State Highway |
| 4 | 173.19 | Poison Creek | StreamRiver - Intermittent |
| 4 | 173.87 | US 20 | US Highway |
| 4 | 180.37 | Unnamed | StreamRiver - Intermittent |
| 4 | 180.79 | Alkali Creek | Artificial Path |
| 4 | 181.13 | Burlington Northern Railroad | Railroad |
| 4 | 181.97 | Unnamed | StreamRiver - Intermittent |
| 4 | 184.33 | South Fork Sand Creek | StreamRiver - Intermittent |
| 4 | 185.25 | Sand Creek | Artificial Path |
| 4 | 186.39 | South Fork Badwater Creek | Artificial Path |
| 4 | 187.84 | Badwater Creek | StreamRiver - Perennial |
| 4 | 191.14 | Cottonwood Creek | StreamRiver - Intermittent |
| 4 | 193.54 | Bridger Creek | StreamRiver - Perennial |
| 4 | 200.56 | Unnamed | StreamRiver - Intermittent |
| 4 | 204.44 | South Bridger Creek | StreamRiver - Perennial |
| 4 | 207.66 | West Bridger Creek | StreamRiver - Perennial |
| 4 | 214.20 | West Kirby Creek | StreamRiver - Perennial |
| 4 | 220.08 | Kirby Creek | StreamRiver - Intermittent |
| 4 | 224.59 | Lake Creek | StreamRiver - Intermittent |
| 4 | 224.61 | Lake Creek | StreamRiver - Intermittent |
| 4 | 224.67 | Lake Creek | StreamRiver - Intermittent |
| 4 | 232.28 | Nowater Creek | StreamRiver - Intermittent |
| 4 | 239.47 | East Fork Nowater Creek | StreamRiver - Intermittent |

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|---|--------|------------------------------|----------------------------|
| 4 | 246.20 | Slick Creek | StreamRiver - Intermittent |
| 4 | 247.14 | US 16 | US Highway |
| 4 | 262.73 | US 20 | US Highway |
| 4 | 263.04 | Burlington Northern Railroad | Railroad |
| 4 | 264.14 | Bighorn River | Artificial Path |
| 4 | 264.86 | Alamo Creek | StreamRiver - Intermittent |
| 4 | 265.14 | Alamo Creek | StreamRiver - Intermittent |
| 4 | 265.26 | Alamo Creek | StreamRiver - Intermittent |
| 4 | 265.39 | Alamo Creek | StreamRiver - Intermittent |
| 4 | 265.72 | SR 433 | State Highway |
| 4 | 266.58 | Alamo Creek | StreamRiver - Intermittent |
| 4 | 266.58 | Alamo Creek | StreamRiver - Intermittent |
| 4 | 266.64 | Alamo Creek | StreamRiver - Intermittent |
| 4 | 269.52 | Dobie Creek | StreamRiver - Intermittent |
| 4 | 272.46 | Elk Creek | StreamRiver - Intermittent |
| 4 | 272.51 | Elk Creek | StreamRiver - Intermittent |
| 4 | 272.62 | Elk Creek | StreamRiver - Intermittent |
| 4 | 276.16 | Antelope Creek | StreamRiver - Intermittent |
| 4 | 278.76 | SR 30 | State Highway |
| 4 | 282.04 | Greybull River | Artificial Path |
| 4 | 282.17 | Greybull River | Artificial Path |
| 4 | 282.27 | Greybull River | Artificial Path |
| 4 | 286.79 | Dry Creek | StreamRiver - Perennial |
| 4 | 287.73 | US 14 | US Highway |
| 4 | 290.07 | Little Dry Creek | StreamRiver - Intermittent |
| 4 | 302.16 | Little Dry Creek | StreamRiver - Intermittent |
| 4 | 309.61 | Unnamed | StreamRiver - Intermittent |
| 4 | 309.65 | Unnamed | StreamRiver - Intermittent |
| 4 | 309.69 | Unnamed | StreamRiver - Intermittent |
| 4 | 309.71 | Unnamed | StreamRiver - Intermittent |
| 4 | 309.76 | Unnamed | StreamRiver - Intermittent |
| 4 | 312.91 | SR 32 | State Highway |
| 4 | 314.11 | Shoshone River | Artificial Path |
| 4 | 314.68 | US 14A | US Highway |
| 5 | 17.27 | Bush Creek | StreamRiver - Perennial |
| 5 | 19.25 | Jack Parnell Creek | StreamRiver - Intermittent |
| 5 | 25.38 | Rock Cabin Creek | StreamRiver - Perennial |
| 5 | 40.33 | Pacific Creek | StreamRiver - Perennial |
| 5 | 40.49 | North Pacific Creek | StreamRiver - Intermittent |
| 5 | 40.59 | Uss Company Railroad | Railroad |
| 5 | 42.06 | SR 28 | State Highway |

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|---|--------|------------------------|----------------------------|
| 5 | 44.60 | Dry Sandy Creek | StreamRiver - Intermittent |
| 5 | 46.44 | Little Sandy Creek | StreamRiver - Perennial |
| 5 | 60.25 | Big Sandy River | Artificial Path |
| 5 | 60.36 | US 191 | US Highway |
| 5 | 94.49 | Green River | Artificial Path |
| 5 | 95.71 | US 189 | US Highway |
| 5 | 100.96 | Birch Creek | StreamRiver - Intermittent |
| 5 | 103.61 | Birch Creek | StreamRiver - Intermittent |
| 5 | 105.28 | Dry Piney Creek | StreamRiver - Perennial |
| 5 | 108.33 | Fogarty Creek | StreamRiver - Perennial |
| 5 | 119.21 | Beaver Creek | StreamRiver - Perennial |
| 5 | 120.20 | Spring Creek | StreamRiver - Perennial |
| 6 | 2.03 | Union Pacific Railroad | Railroad |
| 6 | 2.16 | SR 76 | State Highway |
| 6 | 2.35 | I 80 Ramp | RAMP |
| 6 | 2.39 | I 80 | Interstate |
| 6 | 2.41 | I 80 Ramp | RAMP |
| 6 | 5.18 | Sugar Creek | StreamRiver - Perennial |
| 6 | 9.50 | North Platte River | Artificial Path |
| 6 | 11.12 | North Platte River | Artificial Path |
| 6 | 28.27 | Hurt Creek | StreamRiver - Perennial |
| 6 | 33.39 | Morgan Creek | StreamRiver - Perennial |
| 6 | 37.47 | North Platte River | Artificial Path |
| 6 | 40.72 | Sage Creek | StreamRiver - Perennial |
| 6 | 54.37 | Canyon Creek | StreamRiver - Perennial |
| 6 | 69.84 | Bolton Creek | StreamRiver - Intermittent |
| 6 | 73.94 | Stinking Creek | Artificial Path |
| 6 | 75.63 | Bates Creek | StreamRiver - Perennial |
| 6 | 75.97 | SR 487 | State Highway |
| 7 | 0.23 | Sugar Creek | StreamRiver - Perennial |
| 7 | 32.88 | US 287 | US Highway |
| 7 | 43.86 | Lost Soldier Creek | StreamRiver - Intermittent |
| 7 | 44.76 | Lost Soldier Creek | StreamRiver - Intermittent |
| 7 | 53.19 | Crooks Creek | StreamRiver - Perennial |
| 7 | 58.63 | Crooks Creek | StreamRiver - Perennial |
| 8 | 13.15 | East Alkali Creek | StreamRiver - Intermittent |
| 8 | 22.86 | Warm Springs Creek | StreamRiver - Perennial |
| 8 | 25.98 | US 287 | US Highway |
| 8 | 26.19 | Sweetwater River | Artificial Path |
| 9 | 3.25 | O'Brian Creek | StreamRiver - Intermittent |
| 9 | 4.22 | Nancy Creek | StreamRiver - Intermittent |

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|----|--------|------------------------------|----------------------------|
| 9 | 7.32 | US 287 | US Highway |
| 9 | 9.41 | Ice Slough | StreamRiver - Intermittent |
| 9 | 15.10 | Sweetwater River | Artificial Path |
| 9 | 25.44 | West Fork Long Creek | StreamRiver - Intermittent |
| 9 | 31.56 | SR 135 | State Highway |
| 10 | 0.24 | I 25 | Interstate |
| 10 | 3.41 | Scott Creek | StreamRiver - Intermittent |
| 10 | 3.66 | Lane Creek | StreamRiver - Intermittent |
| 10 | 7.16 | Government Creek | StreamRiver - Intermittent |
| 10 | 7.81 | Government Creek | StreamRiver - Intermittent |
| 10 | 39.97 | Burlington Northern Railroad | Railroad |
| 10 | 40.10 | US 20 | US Highway |
| 10 | 49.33 | Middle Fork Casper Creek | StreamRiver - Perennial |
| 10 | 56.21 | South Fork Casper Creek | StreamRiver - Intermittent |
| 10 | 59.49 | Poison Spider Creek | StreamRiver - Perennial |
| 10 | 61.50 | Soap Creek | StreamRiver - Intermittent |
| 10 | 65.88 | Cabin Creek | StreamRiver - Intermittent |
| 10 | 69.77 | Horse Creek | StreamRiver - Intermittent |
| 10 | 78.04 | Cottonwood Creek | StreamRiver - Intermittent |
| 10 | 78.11 | Dry Creek | StreamRiver - Intermittent |
| 10 | 88.61 | Sage Hen Creek | StreamRiver - Intermittent |
| 10 | 94.13 | West Sage Hen Creek | StreamRiver - Intermittent |
| 10 | 97.44 | Unnamed | StreamRiver - Intermittent |
| 10 | 97.85 | Unnamed | StreamRiver - Intermittent |
| 10 | 103.93 | Unnamed | StreamRiver - Intermittent |
| 11 | 13.09 | South Fork Casper Creek | StreamRiver - Intermittent |
| 11 | 24.59 | Middle Fork Casper Creek | StreamRiver - Perennial |
| 11 | 33.00 | South Fork Powder River | StreamRiver - Intermittent |
| 11 | 35.07 | US 20 | US Highway |
| 11 | 45.79 | Poison Creek | StreamRiver - Intermittent |
| 11 | 49.19 | Alkali Creek | StreamRiver - Intermittent |
| 11 | 50.06 | Burlington Northern Railroad | Railroad |
| 11 | 50.18 | E-K Creek | StreamRiver - Intermittent |
| 11 | 55.40 | Red Creek | StreamRiver - Intermittent |
| 11 | 63.97 | South Fork Sand Creek | StreamRiver - Intermittent |
| 11 | 66.65 | Sand Creek | Artificial Path |
| 11 | 67.27 | Sand Creek | Artificial Path |
| 11 | 67.39 | Sand Creek | Artificial Path |
| 12 | 19.57 | South Fork Casper Creek | StreamRiver - Intermittent |
| 12 | 19.64 | South Fork Casper Creek | StreamRiver - Intermittent |
| 12 | 19.66 | South Fork Casper Creek | StreamRiver - Intermittent |

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|----|-------|------------------------------|----------------------------|
| 12 | 27.11 | Middle Fork Casper Creek | StreamRiver - Perennial |
| 12 | 33.63 | Wallace Creek | StreamRiver - Perennial |
| 12 | 44.71 | Deer Creek | StreamRiver - Perennial |
| 12 | 47.54 | East Canyon Creek | StreamRiver - Intermittent |
| 12 | 48.81 | West Canyon Creek | StreamRiver - Intermittent |
| 12 | 55.56 | SR 136 | State Highway |
| 13 | 0.13 | SR 136 | State Highway |
| 13 | 1.48 | Muskrat Creek | Artificial Path |
| 13 | 7.11 | Unnamed | StreamRiver - Intermittent |
| 13 | 8.84 | Unnamed | StreamRiver - Intermittent |
| 13 | 9.56 | Unnamed | StreamRiver - Intermittent |
| 13 | 17.88 | Rock Creek | StreamRiver - Perennial |
| 13 | 19.09 | Conant Creek | StreamRiver - Perennial |
| 14 | 2.03 | Muskrat Creek | Artificial Path |
| 14 | 7.31 | Horseshoe Creek | Artificial Path |
| 14 | 12.09 | Conant Creek | StreamRiver - Intermittent |
| 14 | 15.81 | Oil Springs Creek | StreamRiver - Intermittent |
| 14 | 17.75 | SR 136 | State Highway |
| 14 | 19.21 | Dry Cheyenne Creek | StreamRiver - Intermittent |
| 15 | 5.32 | Poison Creek | StreamRiver - Intermittent |
| 15 | 46.85 | US 20 | US Highway |
| 15 | 47.06 | Poison Creek | Artificial Path |
| 16 | 0.07 | Castle Creek | StreamRiver - Intermittent |
| 16 | 4.31 | Unnamed | StreamRiver - Intermittent |
| 16 | 6.09 | SR 387 | State Highway |
| 16 | 8.00 | I 25 | Interstate |
| 16 | 10.44 | I 25 | Interstate |
| 16 | 10.79 | Dugout Creek | StreamRiver - Intermittent |
| 16 | 11.10 | Unnamed | StreamRiver - Intermittent |
| 16 | 16.87 | I 25 | Interstate |
| 16 | 23.95 | I 25 | Interstate |
| 16 | 24.51 | South Fork Powder River | StreamRiver - Intermittent |
| 16 | 30.13 | Middle Fork Powder River | Artificial Path |
| 16 | 30.92 | SR 191 | State Highway |
| 16 | 31.77 | SR 196 | State Highway |
| 16 | 31.90 | I 25 | Interstate |
| 16 | 35.92 | North Fork Powder River | StreamRiver - Perennial |
| 16 | 41.39 | SR 196 | State Highway |
| 16 | 53.27 | South Fork Crazy Woman Creek | StreamRiver - Perennial |
| 16 | 56.56 | North Fork Crazy Woman Creek | StreamRiver - Perennial |
| 16 | 65.07 | I 25 | Interstate |

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|----|--------|------------------------------|----------------------------|
| 17 | 21.65 | East Teapot Creek | StreamRiver - Intermittent |
| 17 | 28.00 | Teapot Creek | StreamRiver - Intermittent |
| 17 | 28.17 | SR 259 | State Highway |
| 17 | 31.87 | Castle Creek | StreamRiver - Intermittent |
| 17 | 31.89 | Castle Creek | StreamRiver - Intermittent |
| 17 | 31.95 | Castle Creek | StreamRiver - Intermittent |
| 17 | 36.90 | Unnamed | StreamRiver - Intermittent |
| 17 | 37.70 | SR 387 | State Highway |
| 17 | 48.51 | Salt Creek | StreamRiver - Perennial |
| 17 | 49.21 | Meadow Creek | StreamRiver - Perennial |
| 17 | 55.82 | Salt Creek | StreamRiver - Perennial |
| 17 | 57.32 | Powder River | Artificial Path |
| 17 | 58.30 | SR 192 | State Highway |
| 17 | 102.07 | I 90 | Interstate |
| 17 | 105.43 | I 90 | Interstate |
| 17 | 113.45 | Crazy Woman Creek | StreamRiver - Perennial |
| 18 | 3.47 | Wild Horse Creek | StreamRiver - Intermittent |
| 18 | 24.96 | Powder River | StreamRiver - Perennial |
| 18 | 34.30 | Crazy Woman Creek | StreamRiver - Perennial |
| 18 | 51.76 | Clear Creek | Artificial Path |
| 18 | 59.19 | Rock Creek | StreamRiver - Perennial |
| 18 | 59.34 | Rock Creek | StreamRiver - Perennial |
| 18 | 59.44 | Rock Creek | StreamRiver - Perennial |
| 18 | 59.85 | Clear Creek | StreamRiver - Perennial |
| 18 | 62.99 | I 90 | Interstate |
| 19 | 0.27 | Kirby Creek | StreamRiver - Intermittent |
| 19 | 3.94 | Kirby Creek | Artificial Path |
| 19 | 5.56 | Kirby Creek | StreamRiver - Intermittent |
| 19 | 6.99 | Unnamed | StreamRiver - Intermittent |
| 19 | 11.65 | Kirby Creek | StreamRiver - Intermittent |
| 19 | 11.72 | SR 172 | State Highway |
| 19 | 16.39 | Bighorn River | Artificial Path |
| 19 | 16.60 | Burlington Northern Railroad | Railroad |
| 19 | 16.63 | Unnamed | StreamRiver - Intermittent |
| 19 | 17.57 | US 20 | US Highway |
| 19 | 18.04 | | |
| 19 | 19.79 | Unnamed | StreamRiver - Intermittent |
| 19 | 28.45 | Cottonwood Creek | StreamRiver - Perennial |
| 19 | 31.00 | Grass Creek | StreamRiver - Perennial |
| 19 | 31.09 | Grass Creek | StreamRiver - Perennial |
| 19 | 41.37 | SR 431 | State Highway |

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|----|--------|------------------------------------|----------------------------|
| 19 | 42.32 | Gooseberry Creek | StreamRiver - Perennial |
| 19 | 54.40 | Fifteen mile Creek | StreamRiver - Intermittent |
| 19 | 54.43 | Fifteen mile Creek | StreamRiver - Intermittent |
| 19 | 54.52 | Fifteen mile Creek | StreamRiver - Intermittent |
| 19 | 64.35 | Greybull River | Artificial Path |
| 19 | 70.76 | Dry Creek | StreamRiver - Intermittent |
| 19 | 83.22 | North Fork Dry Creek | StreamRiver - Intermittent |
| 19 | 88.03 | US 14 | US Highway |
| 19 | 101.08 | Whistle Creek | StreamRiver - Intermittent |
| 19 | 106.42 | SR 295 | State Highway |
| 19 | 109.18 | Unnamed | StreamRiver - Intermittent |
| 19 | 109.49 | Unnamed | StreamRiver - Intermittent |
| 19 | 109.92 | Shoshone River | Artificial Path |
| 19 | 110.90 | Bitter Creek | Artificial Path |
| 19 | 112.32 | Unnamed | StreamRiver - Perennial |
| 19 | 112.42 | US 14A | US Highway |
| 20 | 5.54 | Cottonwood Creek | StreamRiver - Perennial |
| 20 | 9.28 | Little Gooseberry Creek | StreamRiver - Perennial |
| 20 | 10.31 | North Fork Little Gooseberry Creek | StreamRiver - Perennial |
| 20 | 12.61 | Gooseberry Creek | StreamRiver - Perennial |
| 20 | 13.65 | SR 431 | State Highway |
| 20 | 18.94 | Fifteen mile Creek | Artificial Path |
| 20 | 27.79 | Sixmile Creek | StreamRiver - Intermittent |
| 20 | 28.93 | Fivemile Creek | StreamRiver - Intermittent |
| 20 | 34.13 | South Fork Elk Creek | StreamRiver - Intermittent |
| 20 | 36.16 | Elk Creek | StreamRiver - Intermittent |
| 21 | 0.51 | SR 120 | State Highway |
| 21 | 0.67 | Grass Creek | StreamRiver - Perennial |
| 21 | 1.45 | Grass Creek | StreamRiver - Perennial |
| 21 | 12.37 | Gooseberry Creek | StreamRiver - Perennial |
| 21 | 17.90 | Little Buffalo Creek | StreamRiver - Intermittent |
| 21 | 24.39 | SR 120 | State Highway |
| 21 | 29.59 | Greybull River | Artificial Path |
| 21 | 30.02 | SR 120 | State Highway |
| 21 | 31.52 | Unnamed | StreamRiver - Intermittent |
| 21 | 34.61 | Cottonwood Creek | StreamRiver - Intermittent |
| 21 | 36.66 | South Fork Dry Creek | StreamRiver - Intermittent |
| 21 | 46.20 | Sage Creek | StreamRiver - Perennial |
| 21 | 55.32 | Sulphur Creek | StreamRiver - Perennial |
| 21 | 55.52 | SR 291 | State Highway |
| 21 | 57.66 | US 14 | US Highway |

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|----|--------|------------------------------|----------------------------|
| 21 | 57.76 | Shoshone River | Artificial Path |
| 21 | 59.01 | Trail Creek | StreamRiver - Perennial |
| 21 | 60.74 | Dry Creek | StreamRiver - Perennial |
| 21 | 61.55 | Heart Mountain Canal | Artificial Path |
| 21 | 62.94 | SR 120 | State Highway |
| 21 | 63.20 | Cottonwood Creek | StreamRiver - Perennial |
| 21 | 64.40 | North Fork Cottonwood Creek | StreamRiver - Perennial |
| 21 | 65.13 | Idaho Creek | StreamRiver - Perennial |
| 21 | 70.88 | Iron Creek | StreamRiver - Intermittent |
| 21 | 72.82 | Buck Creek | StreamRiver - Intermittent |
| 21 | 75.94 | Alkali Creek Patch | StreamRiver - Intermittent |
| 21 | 85.20 | Unnamed | StreamRiver - Intermittent |
| 21 | 87.40 | SR 294 | State Highway |
| 21 | 98.32 | SR 295 | State Highway |
| 21 | 102.14 | SR 114 | State Highway |
| 21 | 102.94 | Unnamed | StreamRiver - Perennial |
| 21 | 102.95 | Burlington Northern Railroad | Railroad |
| 22 | 2.63 | Nowood River | Artificial Path |
| 22 | 4.12 | SR 31 | State Highway |
| 22 | 20.27 | Bighorn River | Artificial Path |
| 22 | 20.52 | Burlington Northern Railroad | Railroad |
| 22 | 20.67 | US 20 | US Highway |
| 23 | 1.74 | Meeteetse Creek | StreamRiver - Perennial |
| 23 | 5.59 | Spring Creek | StreamRiver - Perennial |
| 23 | 11.43 | Spring Creek | StreamRiver - Perennial |
| 23 | 13.35 | Rush Creek | StreamRiver - Perennial |
| 23 | 15.18 | Short Fork Meeteetse Creek | StreamRiver - Perennial |
| 23 | 16.14 | Meeteetse Creek | StreamRiver - Perennial |
| 23 | 19.46 | South Fork Sage Creek | StreamRiver - Perennial |
| 23 | 20.48 | Sage Creek | StreamRiver - Perennial |
| 23 | 23.10 | Hoodoo Creek | StreamRiver - Perennial |
| 24 | 1.56 | South Fork Dry Creek | StreamRiver - Intermittent |
| 24 | 3.76 | SR 120 | State Highway |
| 24 | 6.18 | South Fork Dry Creek | StreamRiver - Intermittent |
| 24 | 8.19 | Cottonwood Creek | StreamRiver - Intermittent |
| 24 | 11.09 | Unnamed | StreamRiver - Intermittent |
| 24 | 11.88 | Horse Creek | StreamRiver - Intermittent |
| 24 | 12.71 | Meeteetse Creek | Artificial Path |
| 24 | 14.30 | Rush Creek | StreamRiver - Perennial |
| 24 | 15.82 | Spring Creek | StreamRiver - Perennial |
| 24 | 17.65 | Unnamed | StreamRiver - Intermittent |

| | | | |
|----|-------|------------------------------|----------------------------|
| 24 | 17.76 | Rawhide Creek | StreamRiver - Perennial |
| 24 | 22.74 | Rose Creek | StreamRiver - Perennial |
| 24 | 25.03 | Pickett Creek | StreamRiver - Perennial |
| 24 | 25.77 | Greybull River | Artificial Path |
| 25 | 0.98 | Five Springs Creek | StreamRiver - Perennial |
| 25 | 2.60 | Elk Springs Creek | StreamRiver - Intermittent |
| 25 | 5.50 | US 14A | US Highway |
| 25 | 5.69 | Five Springs Creek | StreamRiver - Perennial |
| 25 | 12.47 | Bighorn River | Artificial Path |
| 25 | 12.49 | Burlington Northern Railroad | Railroad |
| 25 | 18.89 | US 310 | US Highway |
| 25 | 18.97 | Unnamed | StreamRiver - Intermittent |
| 25 | 25.78 | Unnamed | StreamRiver - Intermittent |

| Appendix B Table 5 Land Requirements for Each Segment of WPCI (Acres) | | | | | | | | |
|---|---|-----------------|----------------|-----------------|--------------|----------------|-------------|-----------------|
| Segment Name | Counties | Private | State | BLM | USFS | BOR | DOD | Total |
| 1 | Lincoln, Sublette, Sweetwater | 1583.34 | 72.15 | 1565.48 | 25.36 | 247.37 | 0.00 | 3493.70 |
| 2 | Carbon, Sweetwater | 1642.51 | 98.61 | 1295.83 | 0.00 | 0.00 | 0.00 | 3036.95 |
| 3 | Fremont, Sweetwater | 505.31 | 36.43 | 1293.90 | 0.00 | 0.00 | 0.00 | 1835.64 |
| 4 | Bighorn, Fremont, Hot Springs, Park, Sweetwater, Washakie | 2583.19 | 600.17 | 8451.91 | 0.00 | 110.91 | 0.00 | 11746.18 |
| 5 | Sublette, Sweetwater | 80.66 | 186.59 | 2719.96 | 0.00 | 0.00 | 0.00 | 2987.21 |
| 6 | Carbon, Natrona | 1439.88 | 311.58 | 1161.37 | 0.00 | 168.24 | 0.00 | 3081.06 |
| 7 | Carbon, Fremont, Sweetwater | 383.22 | 117.85 | 1637.79 | 0.00 | 0.00 | 0.00 | 2138.86 |
| 8 | Fremont, Sweetwater | 48.70 | 47.30 | 828.30 | 0.00 | 0.00 | 0.00 | 924.31 |
| 9 | Fremont | 73.46 | 44.46 | 945.95 | 0.00 | 0.00 | 0.00 | 1063.87 |
| 10 | Fremont, Natrona | 571.56 | 93.87 | 1863.83 | 0.00 | 0.00 | 0.00 | 2529.26 |
| 11 | Fremont, Natrona | 1605.42 | 186.71 | 723.20 | 0.00 | 0.00 | 0.00 | 2515.34 |
| 12 | Fremont, Natrona | 685.05 | 101.23 | 559.95 | 0.00 | 0.00 | 0.00 | 1346.23 |
| 13 | Fremont | 87.70 | 36.90 | 543.16 | 0.00 | 0.00 | 0.00 | 667.75 |
| 14 | Fremont | 48.72 | 20.26 | 486.40 | 0.00 | 0.00 | 0.00 | 555.38 |
| 15 | Freemont, Natrona | 331.47 | 108.67 | 832.52 | 0.00 | 0.00 | 0.00 | 1272.66 |
| 16 | Johnson, Natrona | 1212.65 | 388.98 | 202.74 | 0.00 | 0.00 | 0.00 | 1804.37 |
| 17 | Johnson, Natrona | 2675.09 | 395.09 | 1414.93 | 0.00 | 0.00 | 0.00 | 4485.11 |
| 18 | Campbell, Johnson | 1318.75 | 108.86 | 143.11 | 0.00 | 0.00 | 0.00 | 1570.72 |
| 19 | Bighorn, Hot Springs, Park | 1087.48 | 247.82 | 2664.48 | 0.00 | 293.01 | 0.00 | 4292.79 |
| 20 | Bighorn, Hot Springs, Washakie | 33.06 | 51.27 | 868.69 | 0.00 | 0.00 | 0.00 | 953.03 |
| 21 | Hotsprings, Park | 988.58 | 106.90 | 1041.03 | 0.00 | 400.97 | 0.00 | 2537.48 |
| 22 | Bighorn | 137.46 | 2.03 | 444.18 | 0.00 | 0.00 | 0.00 | 583.67 |
| 23 | Park | 579.15 | 83.38 | 87.74 | 0.00 | 0.00 | 0.00 | 750.27 |
| 24 | Park | 375.88 | 29.25 | 222.31 | 0.00 | 0.00 | 0.00 | 627.44 |
| 25 | Bighorn | 91.46 | 24.80 | 509.29 | 0.00 | 0.00 | 0.87 | 626.41 |
| Totals | | 20169.75 | 3501.15 | 32508.06 | 25.36 | 1220.50 | 0.87 | 57425.68 |

| Appendix B Table 6 Typical Construction Equipment List |
|---|
| Dozer with Ripper |
| Dozer with Winch and Angle Blade |
| Tow Tractor |
| Sideboom |
| Back hoe (3/4-yard) |
| Ditching Machine |
| Padding Machine |
| Motor Grader |
| Motor Crane |
| Bending Machine |
| Boring Machine |
| Air Compressor |
| Pipe Coating Trucks |
| Pumps |
| Flatbed Truck w/ Winch |
| Pickup |
| Stringing Truck |
| Crew Truck |
| Skid Truck |
| Dump Truck |
| Tractor with Lowboy |
| Mechanic's Truck |
| Fuel/Grease Truck |
| Water Truck with Sprinkler |
| Office Trailer |
| Warehouse Trailer |
| Welding Machines (200 amp, tractor-mounted) |
| Welder's Trucks (1 ton) |
| Tractor (reclamation) |
| Disc ploughs (reclamation) |
| Chisel ploughs (reclamation) |
| Reseeding equipment (reclamation) |

Appendix C

Waste and Spill Management Specifications

Introduction

These waste and spill specifications apply to all work within the WPCI where waste may be generated or a spill may occur. Project specific waste and spill specifications, beyond those outlined in this document, may be applied by individual project proponents.

Contractors will attend pre-construction meetings to review environmental issues and requirements relating to jobs, prior to initiating construction activities. During pre-construction meetings, requirements for proper waste management, spill reporting, and cleanup will be reviewed. Contractors will comply with requirements set forth below and identified in their contract's Scope of Work.

Waste and Spill Management Plan Templates will be completed by Proponents' Contractors. Contractors will comply with environmental guidance provided by Proponents, in addition to all applicable federal, state, and local regulations.

Contractors will be responsible for ensuring that applicable personnel, including subcontractors, understand spill prevention procedures and how to handle, store, transport, and dispose of wastes per these specifications. Contractors will keep records of training and provide copies of such records to Proponents and applicable regulatory agencies, upon request.

Waste Management – Proponents Responsibilities

Before Work Begins

For all wastes that are anticipated to be generated, Proponents will determine their classification (hazardous, non-hazardous, or special waste). Proponents will notify Contractors of waste classifications.

If waste classification is unknown, Proponents will arrange for sampling to determine waste classification as soon as possible, but this may occur after work has begun.

Contractors will review and approve Contractors' Waste management Plan, prior to pre-construction meetings.

Proponents will conduct pre-job meetings to review Waste Management Plans and responsibilities, and review authorized personnel and environmental contacts.

Proponents will make all required notifications, unless otherwise specified in Scopes of Work.

Before Generating Waste

Proponents will inspect all secondary containment provided by Contractors

Proponents will provide the U.S. Environmental Protection Agency (EPA) a generator number for all hazardous wastes generated and a hazardous waste contingency plan, if necessary.

During Waste Generation

For unanticipated wastes generated during construction activities, Proponents and Contractors will confer regarding classification responsibilities as soon as possible, after the waste is generated. Wastes will be managed in accordance with applicable federal, state, and local regulations. Proponents will obtain EPA hazardous waste ID numbers, if necessary.

After Waste Generation

Proponents will arrange for all hazardous and special wastes generated during construction activities to be transported by a licensed waste hauler, to a permitted waste disposal facility.

Waste Management – Contractor Responsibilities

Before Work Begins

Contractors will develop Waste Management Plans for all wastes anticipated during projects and submit them to Proponents for approval. At the Proponents' discretion, Waste Management Plans may cover multiple activities of similar scope. Construction work will not commence prior to obtaining Proponents' approval of Waste Management Plans. If potentially hazardous wastes are addressed, Contractors will receive training in accordance with federal, state, and local requirements.

Contractors will minimize waste generated during projects by purchasing and using the appropriate amount of material. All excess materials purchased by Contractors will be removed by Contractors at the end of projects.

Contractors will furnish Proponents with copies of any permits, clearances, or authorizations obtained by Contractors.

Before Generating Waste

Contractors will be familiar with federal, state, and local environmental requirements.

Contractors will provide all drums (DOT Spec. 1A1 or 1A2), roll-off bins, or other containers necessary to contain wastes generated during the performance of work, including wastes generated in response to spill response and cleanup activities, unless otherwise specific in Scopes of Work. All containers will be approved by Proponents, as necessary.

Contractors will collect all waste near the close of each workday and place it in appropriate containers, which will be in Proponent approved locations.

During Waste Generation

Contractors will be responsible for general housekeeping activities in work areas.

Contractors will notify Proponents prior to placing any potentially hazardous or special waste in storage so that Proponents may conduct sampling and analyses, if necessary.

Contractors will be responsible for proper packaging, labeling, marking, and storing of waste.

Contractors will keep hazardous, non-hazardous, special and general trash wastes separate. These specific waste streams will not be mixed.

Contractors will keep waste logs, identifying location at which wastes are generated, volume and type of waste generated, date waste generated, and where applicable location to which waste was transported or stored (general, non-hazard classified trash excluded). Contractors will provide waste logs to Proponents' authorized representative weekly. Any waste shipped will be accompanied by a log.

For unanticipated wastes generated during construction activities, Proponents and Contractors will confer on classification responsibilities as soon as possible, after waste is generated.

If classification of waste is unknown, all waste will be assumed to be hazardous until final classification is received by Proponents. Contractors will label, store, and transport waste accordingly.

In accordance with Contractors' approved Waste Management Plan, they will be responsible for handling, storing, and transporting non-hazardous wastes generated by Contractors during execution of their contract.

Any proposed changes to approved Waste Management Plans will be submitted in writing and agreed to by both Contractors and Proponents, prior to instituting the change.

After Waste Generation

Contractors will notify Proponents prior to moving any waste off site.

Contractors will be responsible for ensuring that hazardous and special wastes are transported by Proponent authorized, licensed transporters only, and that all waste is accompanied by appropriate shipping papers, complete with required information and signatures.

Contractors are prohibited from transporting hazardous waste.

Contractors will submit all waste shipping papers to Proponents.

Contractors will supply disposal containers for general trash generated by their personnel and subcontractors associated with their projects, and will transport general trash to disposal facilities in accordance with their Waste Management Plan.

Spill Management – Proponent Responsibilities

Proponents will review spill prevention and response as part of pre-construction meetings.

In the event of a reportable spill, or release which involves Proponents processed materials (e.g. pipeline liquids, used oil, etc.), Proponents will notify appropriate federal and state agencies.

Proponents will provide copies of release reports, required by federal or state agencies, to any jurisdictional land management agency.

Spill Management – Contractor Responsibilities

Contractors will comply with spill prevention, control, and containment procedures set forth below, and in Scopes of Work for all work associated with execution of their contract.

Contractors will ensure that their personnel and subcontractors are aware of spill prevention and containment responsibilities.

Contractors will develop lists of all emergency contacts within Contractor's and subcontractors' organizations, and descriptions of emergency response equipment that will be provided by Contractors.

Contractors will have copies of Material Safety Data Sheets (MSDS) for each chemical to be used during their projects. They will be available for review, if requested by Proponents or regulatory entities.

Spill Prevention – Contractor Responsibilities

Contractors will install lined, secondary containment, impervious to materials being stored, around liquids materials handling and storage areas to prevent spilled materials from reaching waters of the state. Areas that require containment structures include:

- Liquid and hazardous waste drum storage areas,
- Bulk storage tanks,
- Tanker trucks if parked at one location for more than two days, and
- Liquids handling and operations areas.

Proponents and Contractors will structure operations in a manner that reduces risk of spills or accidental exposure of fuels or hazardous materials to waterbodies or wetlands. Proponents and their contractors must, at a minimum, ensure the following:

- All employees handling fuels and other hazardous materials are properly trained;

- All equipment is in good operating order and inspected on a regular basis;
- Trucks transporting fuel to on-site equipment travel only on approved access roads;
- All equipment is parked overnight and/or fueled at least 500 feet from a water supply well or spring, a waterbody, or a wetland boundary. These activities can occur closer only if EI concludes, in advance, no reasonable alternative and Proponents and their Contractors have taken appropriate steps to prevent spills and provide for prompt cleanup, if necessary.
- Specifically, in certain instances, refueling or fuel storage may be unavoidable due to site specific conditions or unique construction requirements (e.g. continuously operating pumps). The following precautions will be taken within 500 feet of water supply wells or springs, waterbodies, or wetland boundaries:
 - Adequate amounts of absorbent materials and containment booms must be kept on hand by each crew to enable rapid cleanup of any spill that may occur;
 - Fuel and lubricating oils may not be stored in wetlands or waterbodies;
 - Secondary containment structures must be lined with suitable plastic sheeting, provide a containment volume of at least 150 percent of the storage vessel, and allow for at least one foot of freeboard; and
 - Provide for adequate lighting of locations and activities.
- Hazardous materials are not stored within 500 feet of water supply wells or springs, waterbodies, or wetland boundaries without prior approval of applicable governmental authorities.
- Concrete coating activities are not performed within 500 feet of water supply wells or springs, waterbodies, or wetland boundaries, unless within an existing industrial site designated for such uses.
- Adequate amounts of absorbent materials and containment booms will be kept on crew to enable rapid cleanup of any spill that may occur.
- Secondary containment structures will be lined with suitable plastic sheeting and provide containment volume of at least 150 percent of storage vessels, and allow at least one foot of freeboard.
- Adequate lighting will be provided for all locations and activities.

Contractors will install drip pans or other suitable containment devices to collect all fluids when performing on-site maintenance. All waste fluids will be removed from work sites by Contractors and disposed of properly.

Contractors will inspect equipment for integrity, including but not limited to, valves, hoses, and fittings. Contractors will monitor all loading and unloading operations of chemicals and fuels to ensure proper response and to prevent spills. Contractors' personnel will inspect equipment prior to each use.

Spill Response – Contractor Responsibilities

Contractors will provide immediate notice to Proponents' Authorized Representatives in the event of a spill, or other emergency. All spills occurring on land or in waterbodies (wet or dry) or wetlands, regardless of quantity will be cleaned up immediately.

If releases or spills occur, Contractors will stop operations and take immediate measures to control their release and prevent dispersal of spilled materials. For spills to land, Contractors will initiate cleanup of affected areas by removing the soil and placing it into new or reconditioned DOT approved drums, or other suitable containers, as determined appropriate by Proponents. Contractors will be deemed the generator of wastes resulting from spills. Contractors will excavate and remediate areas of spilled material. For spills that enter water, Contractors will contain spills and remove spilled material using pumps or absorbent materials.

With the exception of spills/releases that involve Proponent processed materials, Contractors will be responsible for making necessary notifications to the appropriate federal agencies for any release or spill of hazardous substances in excess of reportable quantities, established by 40 CFR 117, 40 CFR 302, and 40 CFR 355, or releases of oil as defined by 40 CFR 110, which occurs as a result of Contractors' or their subcontractors' activities.

Contractors will be responsible for making any necessary notifications to state agencies, as per state requirements.

Contractors will be responsible for making any necessary notifications to appropriate land management agencies or landowners' whose property may be impacted by spills.

Contractors will document and record all spills. Copies of the documentation will be provided to Proponents' Authorized Representatives.

Appendix D

Hydrostatic Testing and Discharge Plan

Introduction

Once Proponents construct pipelines, they must be pressure tested in accordance with Code of Federal Regulations (CFR) Part 192 requirements, in order to be in compliance with DOT regulations. Proponents will hydrostatically test their completed pipelines using water pressurized to the appropriate level, and in accordance with specifications outlined in this plan and any additional project specific information that will be required of Proponents.

Agency Consultation

Proponents will consult with state agencies regarding state requirements for water withdrawal and discharge. Proponents will consult with agencies regarding project specific requirements.

The following Wyoming Game and Fish Department (WGFD) recommendations for discharging surface waters used for hydrostatic testing will be followed for projects using the WPCI corridors:

Hydrostatic test waters released during pipeline construction could cause alterations of stream channels, increased sediment loads and introduction of potentially toxic chemicals into drainages, thereby resulting in adverse impacts to aquatic biota. Furthermore, release of water into drainages other than the source drainage can result in the introduction of aquatic invasive species (New Zealand mud snail, European ear snail, whirling disease spores, etc.). Introduction of aquatic invasive species can be devastating to the ecosystems of vast basins in the receiving waters. To minimize impacts, direct discharge of hydrostatic test waters to streams other than the source water will be prohibited. Discharge will occur into the source drainage in a manner that does not increase erosion or alter stream channels. Discharge will occur into temporary sedimentation basins and the dewatering of the temporary sedimentation basin will be done in a manner that precludes erosion.

To prevent the spread of aquatic invasive species (AIS), the following will be required:

- If equipment has been used in a high risk infested water [a water known to contain Dreissenid mussels (zebra/quagga mussels)], the equipment must be inspected by an authorized aquatic invasive species inspector recognized by the state of Wyoming prior to its use in any Wyoming water.
- Any equipment entering the state from March through November (regardless of where it was last used), must be inspected by an authorized aquatic invasive species inspector prior to its use in any Wyoming water.
- If aquatic invasive species are found, the equipment will be decontaminated by an authorized aquatic invasive species inspector.
- Any time equipment is moved from one 4th level (8-digit Hydrological Unit Code) watershed to another within Wyoming, the following will occur:

- DRAIN: Drain all water from watercraft, gear, equipment, and tanks. Leave wet compartments open to dry.
- CLEAN: Clean all plants, mud, and debris from vehicle, tanks, watercraft, and equipment.
- DRY: Dry everything thoroughly. In Wyoming, it is recommended that drying occur for 5 days in summer (June - August); 18 days in Spring (March - May) and Fall (September - November); or 3 days in Winter (December - February) when temperatures are at or below freezing.

Uptake

Proponents will withdraw water for use during hydrostatic testing at project specific locations in the vicinity of the WPCI corridor. All surface water used in hydrostatic testing will be discharged within the same watershed (8-digit HUC) from which it is withdrawn.

Applications for withdrawal of hydrostatic test water will identify the following:

- Location (legal description and relation to closest pipeline milepost)
- Source (river, water body or well)
- County
- Amount withdrawn
- Sensitive fish species present in source, if any
- Known water quality issues (i.e., 303d listed waters or other pollutants present)
- Locations of potable water intakes within three miles of withdrawal site.

Surface water intakes will be set in areas of flowing water to avoid sedimentation and the rate of extraction will assure continued flow in surface water sources. Up to 2,500 gallons per minute (5.6 cfs) or no more than 10 percent of a waterbody's base flow will be withdrawn for testing purposes. Water will be drawn out with low pressure pumps, pumping into the suction side of a high pressure pump that moves water into pipelines. All pumps will be set in fuel/oil containment areas (see Appendix C).

In the instances where hydrostatic test waters are located at some distance from the construction ROW, Proponents will lay temporary pipelines to convey water from their source to hydrostatic test areas. There will also be instances where temporary hard piping is required to move water to Proponents' hydrostatic test locations. All temporary hard piping will be laid on the ground surface, unless regulatory or landowner requirements prohibit it.

Proponents will be aware and considerate of the concern that appropriation of groundwater could cause detrimental effects to areas with limited water resources. Proponents applying for temporary use of water rights for water sources will only utilize water sources that are authorized and approved by the Wyoming State Engineer's Office. Proponents will comply with all limitations or conditions on withdrawal imposed by the agencies. Any additional restrictions issued by appropriate federal, state, or local jurisdictions, regarding water withdrawal activities, will be observed by Proponents.

Discharge

Hydrostatic Testing Water Discharge Locations

Proponents will test their pipelines in as many sections as necessitated by elevation changes, watershed boundaries, and water source availability. Locations of water sources, watershed boundaries, and elevations changes will be used to locate manifolds for water uptake and discharge.

Moving water back across elevation changes following testing is only accomplished by using high pressure air. Compressor cannot efficiently maintain pressures required to move test water over large elevation changes and long distances. Further, high pressure air has a tendency to become entrained within discharge water, creating unpredictable and unsafe conditions at discharge locations. In the event that situations such as this arise, proponents will be permitted to use surface water from outside of the HUC-8 watershed in which they are located, for testing purposes, if it will mitigate dangers such as those previously described. Proponents will however have to return test water to the HUC-8 from which it was withdrawn for discharge.

Treatment

Proponents will discharge hydrostatic test water to open ground. It may be possible at some discharge points for hydrostatic test water to migrate to nearby surface waterbodies, depending on the volume of water discharged and proximity of the surface water body source. When test water is obtained from potable water sources, or surface waters confirmed as not containing AIS and/or pathogens, AIS and pathogens will not be a concern for discharge, so only erosion and sedimentation controls will be employed. If surface water is used for testing that is either confirmed as containing AIS or is unknown as containing AIS, Proponents will employ measures to prevent their discharge and subsequent migration to other waterbodies.

Treatment methods used to prevent introduction or spread of AIS will be dependent upon the best available science at the time Proponents are developing their projects, which will be directed by WGFD, or other appropriate regulatory entities. Potential impacts associated with AIS treatment tools (e.g. biocide) will be determined prior to their selection and their effects will be mitigated to the greatest extent possible.

Discharge Permits and Monitoring

Typically, hydrostatic test water will pick up some iron oxide (rust) from new pipelines, depending on the total time water remains in pipelines. Quantities are likely to be small, but may give discharge water a slightly red color. Test water may also pick up sand or dirt left over from installation.

Proponents will discharge hydrostatic test water in a manner that precludes erosion. If a discharge point is less than 0.5 miles from a perennial stream and/or flow is more than 0.5 cfs, Proponents will discharge test water into a temporary sediment basin, or other approved structure to minimize erosion and control sedimentation. Any contaminants in discharge water

will likely be below regulatory levels, however, test water will be collected and tested at a certified water testing laboratory. To minimize erosion concerns, discharge locations will be nearly level, or gently rolling, vegetated upland areas. Sites with restrictive drainage features (e.g. bedrock) will be avoided.

WDEQ authorizes hydrostatic testing of pipes under their General Permit to Discharge Wastewater. General Permits for Temporary Discharges require the following:

- Discharged water must be relatively uncontaminated and must not have the potential to contribute to non-conventional or toxic pollutant loadings to receiving waters;
- No trans-basin transfer of surface water will be allowed, in order to prevent spreading of AIS;
- Discharges must be of short duration, lasting no longer than one year.

Proponents will submit a Notice of Intent (NOI) of any anticipated discharge at least 30 days in advance of their proposed activity. NOIs are reviewed by WDEQ and a written response (facility certification form) will be provided, indicating that projects are covered under a General Permit. Facility certification forms list effluent limitations and monitoring requirements.

Once temporary discharge is completed, Proponents will be required to provide a Notice of Termination and water analytical results to WDEQ. WDEQ then terminates coverage, denies termination, or requests additional data.

Appendix E

Upland Erosion Control, Revegetation, and Maintenance Plan

Introduction

This Upland Erosion Control, Revegetation, and Maintenance Plan (Plan) describes measures for minimizing erosion and enhancing revegetation. Alternative measures may be approved so long as they:

- Provide equal or better environmental protection;
- Are necessary due to a portion of this plan being infeasible or unworkable based on project specific conditions; or
- Are specifically required in writing by a federal or state land management agency for the portion of a project on their land or under their jurisdiction.

Supervision and Inspection

Environmental Inspection

- Proponents will participate in a third party compliance monitoring program for federal and non-federal land along the length of their projects;
- EIs will have peer status with all other activity inspectors; and
- EIs will have authority to stop activities that violate environmental conditions of the ROW agreement or project specific approval documents, federal and state environmental permit conditions, or landowner requirements; and to order appropriate corrective action.

Responsibilities of Environmental Inspectors

At a minimum, EIs will be responsible for the following:

- Ensuring compliance with requirements of this Plan, environmental conditions of project authorizations, other environmental permits and approvals, and environmental requirements in landowner easement agreements;
- Identifying, documenting, and overseeing corrective actions, as necessary, to bring an activity back into compliance;
- Verifying that the limits of authorized construction work areas and locations of access roads are properly marked before clearing;
- Verifying the location of signs and highly visible flagging marking boundaries of sensitive resource areas, waterbodies, wetlands, or areas with special requirements along construction work areas;
- Identifying erosion and sediment control and soil stabilization needs in all areas;
- Ensuring that locations of dewatering structures and slope breakers will not direct water onto known cultural resource sites or locations of sensitive species;

- Verifying that trench dewatering activities do not result in deposition of sand, silt, and/or sediment near points of discharge into wetlands or waterbodies. If such deposition occurs, dewatering activities will be stopped and the design of discharge changed to prevent reoccurrence;
- Ensuring that subsoil and topsoil are tested in agricultural areas to measure compaction and determine need for corrective action;
- Advising Chief Construction Inspectors when conditions (e.g. wet weather) make it advisable to restrict construction activities to avoid excessive rutting;
- Ensuring restoration of contours and topsoil;
- Verifying that soils imported for agricultural or residential use have been certified as free of noxious weeds and soil pests, unless otherwise approved by private landowners;
- Determining need for and ensuring that erosion controls are properly installed and maintained, as necessary, to prevent sediment flow into wetlands, waterbodies, sensitive areas, and onto roads;
- Inspecting and ensuring the maintenance of temporary erosion control measures, at least:
 - On a daily basis in areas of active construction or equipment operation;
 - On a weekly basis in areas with no construction or equipment operation; and
 - Within 24 hours of each 0.5 inch of rainfall;
- Ensuring repair of all ineffective temporary erosion control measures within 24 hours of identification;
- Keeping records of compliance with environmental conditions in project authorizations, and mitigation measures during active construction and restoration; and
- Identifying areas that will be given special attention to ensure stabilization and restoration after construction phases.

Preconstruction Planning

Proponents will do the following before construction activities commence:

Construction Work Areas

Identify all construction work areas that will be needed for safe construction and ensuring that appropriate cultural and biological resource surveys have been completed.

Grazing Deferment

Develop grazing deferment plans with willing landowners, grazing permittees, and land management agencies to minimize grazing disturbance of revegetation efforts.

Road Crossings and Access Points

Develop plans for safe and accessible conditions at all roadway crossings and access points during construction and restoration activities.

Disposal Planning

Determine methods and locations for disposal of construction debris consistent with the requirements of Appendix C.

Agency Coordination

Proponents will coordinate with appropriate federal, state, and local agencies, as outlined in this Plan.

- Obtain written recommendations from local conservation authorities or land management agencies regarding permanent erosion control and revegetation specifications.
- Develop specific procedures in coordination with appropriate agencies to prevent introduction and/or spread of invasive or noxious plants and soil pests that result from construction and restoration activities.

Stormwater Pollution Prevention Plan (SWPPP)

Make available SWPPPs that are prepared for project specific compliance with the Clean Water Act's Stormwater Program General Permit requirements.

Installation

Approved Areas of Disturbance

- Ground disturbance will be limited to construction of ROW, ETWSs, pipe storage yards, borrow and disposal areas, access roads, and other project specific approved areas. Any ground disturbing activities outside of these approved areas, except those required to comply with regulatory requirements (e.g. dewatering structures), will require approval by appropriate agencies. All construction or restoration outside of approved areas is subject to prescribed survey and mitigation requirements.
- Construction ROW width will not exceed that which is authorized by the grant. In the event that additional width is required, Proponents will make their requests through EIs, who will process them accordingly. At no time will ROW width be allowed to increase if the action is not consistent with applicable survey and mitigation requirements. Additional ROW areas will be explained in weekly and bi-weekly environmental reports.

Topsoil Segregation

Mixing topsoil with subsoil will be prohibited without approval from applicable land management agencies or private landowners. In deep soils (greater than 12 inches of topsoil), at least 12 inches of topsoil will be segregated. Where topsoil segregation is required, separation will be maintained throughout all construction activities. Segregated topsoil cannot be used for padding pipelines.

The ditch-plus-spoil-side topsoiling is the preferred method for projects. There are a number of instances where this method may not be possible (e.g. steep slopes, weed infestations, etc.). Use of alternative topsoiling methods must be specifically identified and requested in the ROW application or supported by the project proponent's environmental analysis. A description of the various topsoiling methods follows.

- Ditch-Plus-Spoil-Side: Proponents will mow the working side of the ROW, leaving topsoil in place. There will be no additional ROW required for topsoil storage. Topsoil will be stored on undisturbed topsoil. If the working side is rough, light blading will be necessary to smooth the surface for safety purposes. This method will generally preserve most root structures.
- Full-ROW: Proponents will topsoil the full ROW, with the exception of the area necessary for topsoil placement. If topsoil is deep, then additional ROW may be needed for topsoil placement. If topsoil is shallow, there will be room to use the approved ROW to store topsoil. The additional ROW will only be used for topsoil storage, and no additional surface disturbance will be required.
- Ditch-Plus-Working-Side: Proponents will mow the entire construction ROW. They will topsoil the working side and ditch portions of the ROW. Topsoil will be stored on undisturbed topsoil at the outer edge of the working side of the construction ROW. No additional ROW will be necessary for workspace.
- Full-ROW: Proponents will mow the entire construction ROW. Proponents will then topsoil the entire ROW, with the exception of where topsoil is stored. Half of the topsoil will be stored on the working side and the other half on the spoil side, and it will be stored on undisturbed ROW.

In addition to topsoil segregation methods, other topsoil mitigation measures will be implemented during construction activities. Some examples include:

- If rutting occurs but topsoil and subsoil do not mix, Proponents will rip compacted topsoil up to 12 inches deep to de-compact topsoil after construction activities are complete and prior to reseeding ROWs.
- Prior to replacing segregated topsoil, Proponents will rip or disc compacted subsoil up to 12 inches deep, prior to replacing topsoil and reseeding.
- Where topsoil is lost, due to construction activities, Proponents will be responsible for replacing topsoil from a local source.

- No more than 12 inches of topsoil will be segregated. Ample native seed base is contained in the top 12 inches of topsoil, and additional topsoil depth segregated may inhibit native seed establishment (via dilution).
- Separation of topsoil and subsoil will be maintained throughout all construction activities. Topsoil cannot be used to pad pipelines.

Irrigation

Water flow in crop irrigation systems will be maintained, unless shutoff is coordinated with affected parties.

Temporary Erosion Control

Proponents will install temporary erosion controls immediately after initial disturbance of soil. Temporary erosion controls will be maintained daily, throughout construction, and reinstalled as necessary until replaced by permanent erosion controls, or restoration is complete.

- Temporary Slope Breakers (see Appendix E, Figure 1)
 - Temporary slope breakers are intended to reduce runoff velocity and diver water away from construction ROWs. They may be constructed of materials such as soil, silt fence, straw bales, or sand bags.
 - Temporary slope breakers will be installed on all disturbed areas, where necessary to avoid erosion. They must be installed on slopes greater than 5 percent where the base is less than 50 feet from waterbody, wetland, or road crossings, at the following spacing:

| <u>Slope (%)</u> | <u>Spacing (feet)</u> |
|------------------|-----------------------|
| 5 – 15 | 300 |
| >15 – 30 | 200 |
| >30 | 100 |

- Outfalls from each temporary slope breaker will be directed to stable, well vegetated areas, or the Proponent will construct energy dissipating devices at the end of the slope breaker and off the ROW.
 - Outfalls of each temporary slope breaker will be located to prevent sediment discharge into wetlands, waterbodies, or other sensitive resources.
- Sediment Barriers
 - Sediment barriers will be installed, where necessary, to stop flow of sediments and prevent deposition of sediments onto sensitive resources. They may be constructed of materials such as soil, silt fence, straw bales, or sand bags.
 - At a minimum, they will be installed and maintained across entire ROWs at the base of slopes greater than 5 percent, where the base of is less than 50 feet from waterbody, wetland, or road crossings, until revegetation is successful as defined

in this Plan. Adequate room will be maintained between the base of slopes and sediment barriers to accommodate ponding water and sediment deposition.

- Sediment barriers will be installed along edges of wetlands or waterbodies to prevent sediment flow from entering these resources.
- **Mulch**
 - Mulch will be applied on all slopes (except in actively cultivated cropland) concurrent with or immediately after seeding. Mulch will be spread uniformly over seeded areas to cover at least 75 percent of the surface at a rate of up to 2 tons/acre, unless land management agencies or private landowners approve otherwise.
 - Mulch will consist of weed free straw or hay, wood fiber hydromulch, erosion control fabric, or a functional equivalent.
 - Mulch will be used before seeding if:
 - Final grading and installation of permanent erosion control measures will not be completed with 20 days of construction activities concluding; or
 - Construction or restoration activity is interrupted for extended periods.
 - If mulching is used before seeding, application rates will be increased to 3 tons/acre.
 - If wood chips are used as mulch, not more than 1 ton/acre will be used and the equivalent of 11 lbs/acre available nitrogen (at least 50 percent of which is slow release) will be added.
 - Mulch will be adequately anchored to minimize loss due to wind and water.
 - Liquid mulch binders will not be used within 100 feet of wetlands or waterbodies; manufacturer use rates will be followed.
 - Erosion control fabric will be installed on wetland and waterbody banks at the time of final contouring. Erosion control fabric will be anchored with staples or other appropriate devices.

Restoration

Cleanup

- Cleanup operations will commence immediately following backfill operations. Final grading, topsoil replacement, and installation of permanent erosion control structures will be completed with 20 days after backfilling trenches (10 days in residential areas). If weather conditions prevent compliance with these timeframes, temporary erosion control structures will be maintained until conditions allow for final measures.
- Travel lanes may be left open temporarily to allow access by construction traffic if temporary erosion control structures are installed and maintained. Travel lanes will be removed and ROWs reclaimed when access is no longer required.

- Rock excavated from trenches will only be used to backfill trenches to the top of existing bedrock profiles. Rock not returned to trenches can only be distributed in ROWs in a manner that emulates adjacent undisturbed areas. Remaining rock will be disposed of in a manner that must be approved by appropriate land management agencies or private landowners.
- Excess rock will be removed from at least the top 12 inches of soil in all actively cultivated or rotated croplands and pastures and hayfields, as well as at other areas requested by applicable land management agencies or private landowners.
- Construction ROWs will be graded to restore pre-construction contours and leave soil in proper condition for planting.
- Construction debris will be removed from all construction work areas.
- Temporary sediment barriers will be removed when replaced by permanent erosion control measures, or when revegetation is successfully established.

Permanent Erosion Control Devices

- Trench Breakers (see Appendix E, Figure 2)
 - Trench breakers are intended to slow the flow of subsurface water along pipeline trenches. They may be constructed of materials such as sand bags or polyurethane foam. Topsoil will not be used in trench breakers.
 - Engineers, or similarly qualified professionals, will determine the need for and spacing of trench breakers.
 - In agricultural fields, where slope breakers are not typically required, trench breakers will be installed at the same spacing as if permanent slope breakers were required.
 - At a minimum, trench breakers will be installed at the base of slopes greater than 5 percent where the base is less than 50 feet from waterbodies or wetlands.
- Permanent Slope Breakers
 - Permanent slope breakers are intended to reduce runoff velocity, divert water off of construction ROWs, and prevent sediment deposition into sensitive resources. They may be constructed of materials such as soil, sand bags, or some functional equivalent.
 - Permanent slope breakers will be constructed in all areas, except cultivated areas, using recommendations from land managing agencies or local conservation authorities. In the absence of recommendations, spacing will be the same as previously described for Temporary Slope Breakers.
 - Outfalls from permanent slope breakers will be directed to stable, well vegetated areas, or energy dissipating devices will be constructed at the end of the slope breaker and off the ROW.
 - Outfalls of permanent slope breakers will be positioned to prevent sediment discharge into wetlands, waterbodies, or other sensitive resources.

- Soil Compaction Mitigation
 - Topsoil and subsoil will be tested for compaction at regular intervals in agricultural areas disturbed by construction activities, using penetrometers or similar devices. ROW soils will be compared to adjacent, undisturbed soils to determine mitigation needs.
 - Severely compacted agricultural areas will be plowed with deep tillage implements. In areas where topsoil is segregated, subsoil will be plowed prior to replacing topsoil.

- Revegetation
 - General
 - Proponents will be responsible for ensuring successful revegetation of soils disturbed by project related activities.
 - Soil Additives
 - Fertilizer and add soil pH modifiers will be used in accordance with written recommendations obtained from land management agencies, local conservation authorities, or private landowners. Recommended soil pH modifier and fertilizer will be incorporated into the top 2 inches of soil immediately after application.
 - Seeding Requirements – Seed mix recommendations are provided in Appendix F of this POD
 - Seedbeds in disturbed areas will be prepared to a depth of 3 to 4 inches using appropriate equipment to provide firm seedbeds. When hydroseeding will be used, seedbeds will be scarified to facilitate lodging and germination.
 - Disturbed areas will be seeded in accordance with written recommendations in Appendix F, or as prescribed by land management agencies or private landowners. Cultivated croplands will only be seeded if requested by landowners.
 - Seeding operations will be performed within species specific seeding dates. If timing does not allow for immediate seeding, temporary erosion control measures will be maintained until the beginning of appropriate seeding windows.
 - Seeding rates will be based on Pure Live Seed and seed will be used within 12 months of testing.

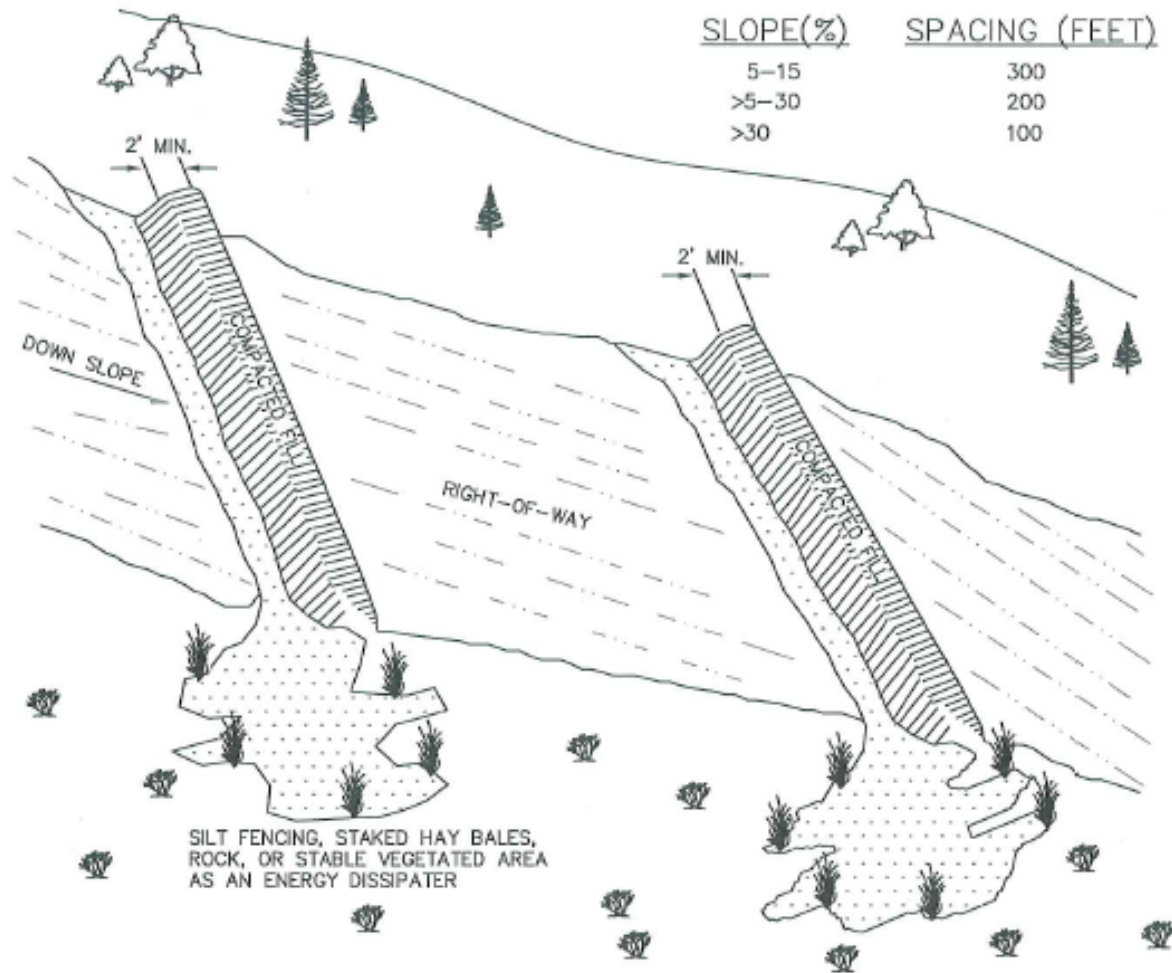
- Legume seed will be treated with a species specific inoculant in accordance with manufacturer's recommendations for the appropriate seeding method.
 - Seed drills, equipped with cultipackers will be used where possible for seed application. Broadcast or hydroseeding may be used, if necessary, at double the recommended seeding rates. If broadcasters are used, seedbeds will be firmed with cultipackers or imprinters after seeding. If site conditions limit the effectiveness of cultipackers and imprinters (e.g. rocky soil), alternative methods may be used to cover seed (e.g. chain drags).
- Off-Road Vehicle Control
 - Measures will be installed and maintained to control unauthorized vehicle access to ROWs, as prescribed by land management agencies or private landowners. These measures may include:
 - Signs;
 - Fences with locking gates;
 - Timber barriers, pipe barriers, or boulder barriers across ROWs; and
 - Trees or shrubs across ROWs.
- Post-Construction Activities
 - Proponents will cooperate with resource agencies and private landowners to provide protections that minimize disturbance of revegetation efforts, which may include the following:
 - Leaving ROW surfaces in roughened condition;
 - Including native, low palatable plant species in seeding mixes, such as sagebrush or western yarrow;
 - Negotiating with allotment permittees and agencies to limit grazing by ungulates in ROWs, by using options such as herding, salting, and fencing; or
 - Negotiating with allotment permittees and agencies to defer grazing, if appropriate.
- Monitoring and Maintenance
 - All disturbed areas will be inspected after the first and second growing seasons to determine success of revegetation.
 - Revegetation in non-agricultural areas will be considered successful if, upon visual survey, density and cover of non-nuisance vegetation are

similar in disturbed and adjacent undisturbed lands. In agricultural areas, revegetation will be considered successful if crop yields are similar in disturbed and adjacent undisturbed lands. In Sage Grouse Core Areas, revegetation will be considered successful if species composition, density, and cover meet the requirements established in Executive Order 2011-5, or applicable Executive Orders that may follow, and land management agency requirements.

- Proponents will continue revegetation efforts until appropriate vegetation is successfully established.
- Problems with drainage and irrigation systems that result from pipeline construction will be monitored and corrected.
- Routine vegetation maintenance will not be done more frequently than every 3 years. However, to facilitate routine pipeline corrosion and leak surveys, corridors not exceeding 10 feet in width, centered on pipelines, may be annually maintained in a native, herbaceous state.
- Unauthorized off-road vehicle access will be controlled throughout the life of pipelines.

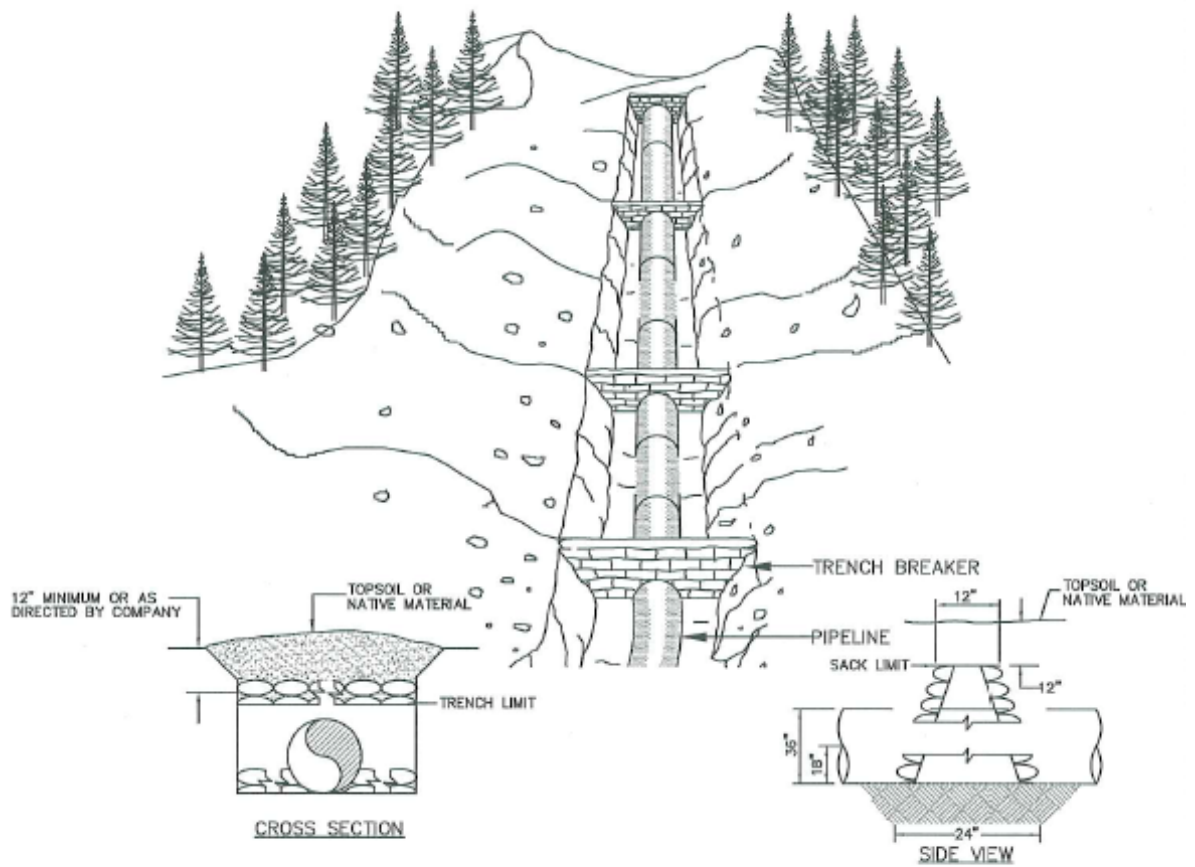
- Reporting

- Proponents will maintain records that identify the following, by project specific milepost:
 - Method of application, application rate, and type of fertilizer, pH modifying agent, seed, and mulch used;
 - Acreage treated;
 - Dates of backfilling and seeding;
 - Names of landowners that request special seed treatment and a description of follow-up actions; and
 - Problem areas, and how they are addressed.



Wyoming Pipeline Corridor Initiative
Appendix E
Figure 1
Temporary Slope Breakers





Wyoming Pipeline Corridor Initiative
Appendix E
Figure 2
Trench Breakers



Appendix F

Upland Restoration and Revegetation Plan

Introduction

This Restoration and Revegetation Plan (Plan) is specific to dominant ecological sites that will be encountered within the WPCI. Measures and methods in this plan will be applicable to all Proponents as they construct and operate within the WPCI. This Plan utilizes methods developed previously for pipeline projects that were approved within Wyoming. Proponents may adapt or update their methods using established and/or published protocols.

Purpose

This plan describes the measures and methods that should be implemented by Proponents to mitigate impacts to upland habitats that result from pipeline construction, within the WPCI. Riparian and wetland restoration will be described in Appendix G, in this POD.

The Plan is applicable to the ROW, ETWS, and sections of access roads that will be restored. Revegetation criteria standards are presented to judge plant establishment success.

Goals and Objectives

Short- and long-term restoration and revegetation goals will comply with BLM, Wyoming reclamation policy (**BLM IM No. WY-2012-032**: March 27, 2012, or more recent versions if applicable). Short- and long-term restoration goals will apply to the ROWs, ETWS, and access roads

The short-term goals of pipeline project restoration are to prevent weed infestations; stabilize disturbed areas using proper soil handling techniques and native plant species; and provide conditions necessary to achieve the long-term goal. The long-term goals of pipeline construction are to facilitate eventual native plant communities and ecosystem reconstruction to maintain a safe and stable landscape, and meet the desired outcomes of applicable land use plans. These goals will be met by implementing the following 10 Reclamation Requirements:

- Manage all waste materials;
- Ensure subsurface integrity, and eliminate sources of ground and surface water contamination;
- Re-establish slope stability, surface stability, and desired topographic diversity;
- Reconstruct and stabilize water courses and drainage features;
- Maintain the biological, chemical, and physical integrity of topsoil and subsoil;
- Prepare sites for revegetation;
- Establish desired self-perpetuating native plant communities;
- Reestablish a complementary visual composition;
- Manage invasive species; and
- Develop and implement a reclamation monitoring and reporting strategy.

In addition to BLM requirements for reclamation, the Governor of Wyoming has established greater sage grouse Core Areas for conservation of habitats, via Executive Order (EO) (State of Wyoming, Executive Order 2011-5: June 2, 2011). Proponents will comply with the directives set forth in the EO for all activities within Core Areas.

Schedule

Restoration of pipeline projects will be initiated once trench closure is finalized in construction segments. Restoration will include cleaning up, backfilling, grading, topsoiling, installing erosion control devices, preparing seedbeds, and establishing cover. Areas that will not be seeded within 14 days following final grading, due to seasonal limitations, slopes greater than 10 percent, erosive soils, or aesthetically sensitive areas will be seeded with sterile annual grasses or select species that will not offer competition to desirable, native plant communities. Seeding of native plants to establish permanent vegetation cover will occur during late fall to early winter to take advantage of winter and spring precipitation. Temporary plant cover will be incorporated into soils before permanent plants are seeded.

Process

ROW Clearing, Grading, and Topsoil Removal

Initial construction activities include surveying and staking construction ROWs, removal of vegetation and topsoil, and grading ROWs for safe construction passage. Dense stands of noxious and invasive weeds identified during pre-construction field surveys will be pretreated with approved herbicides before vegetation clearing begins. ROW surveying and staking will identify the width of excavation and blade work, including cut and fill locations. ROW vegetation will be removed along with topsoil and stockpiled.

Topsoil thickness will vary throughout construction ROWs, dependent upon soil type, etc. EIs will identify topsoil thickness for removal and stockpiling. Topsoil and vegetation mixtures will be stripped and stockpiled separately from subsoil stockpiles. Certified weed free erosion control blankets, straw bales, wood fiber, etc. will be used to limit erosion. Topsoil vegetation mixtures and subsoil will be replaced in proper order during backfilling and final grading operations. Topsoil vegetation mixtures will provide plant propagules to support plant re-establishment along ROWs, in addition to the seed mixtures or containerized seedlings that will be planted by Proponents.

Surface rocks, where present, will be windrowed adjacent to topsoil stockpiles. After seeding, rock will be separated from topsoil and then placed on the construction ROW in a manner that emulates adjacent undisturbed areas or OHV control if requested. Salvaged rock will be used to re-create rock outcrops and rock faces, to the extent possible. Excess rock will be removed and disposed of at approved locations.

During construction, all vehicle travel will be within approved construction ROWs and ETWSs, and on approved access roads. Cross-country vehicle travel outside of approved construction ROWs and workspaces on non-approved, existing access roads will not be allowed.

ROW, ETWS, and Access Road Restoration

Restoration of ROWs will involve backfilling the excavated trench, restoring pre-existing terrain contours, replacing stockpiled subsoil and topsoil/vegetation mixtures, installing erosion control devices, preparing seedbeds, and seeding. Appropriate seed mixes will correspond with surrounding vegetation types. In visually sensitive areas, ROW alignments will have an uneven edge by either leaving shrubs in place when clearing, or seeding/planting “clumps” of shrubs along the perimeter. ETWS restoration will follow similar steps as ROW restoration.

Access roads will be reclaimed according to BLM and landowner directions. To discourage OHV use of restored temporary access roads, the following deterrents will be used in consultation with BLM and WGFD:

- Leave the ROW surface in a roughened condition, especially within 200 feet from entryways such as roads
- Establish “keep off” signs with an explanation at entryways onto the ROW;
- Install rock barriers, earthen berms, or other barricades at existing authorized OHV routes that cross the ROW;
- Work closely with the BLM and private landowners, grazing lessees, local law enforcement personnel, and adjacent landowners to monitor and eliminate unauthorized access to the ROW; and
- Maintain, repair, or replace countermeasures during the life of the project.

Restoration will follow similar steps as ROW restoration.

Backfilling

Backfilling of subsoil materials will be required after pipelines are aligned in trenches and padded with screened subsoil, or other appropriate material. Excavated subsoil will be used to backfill trenches. Excessive subsoil will be feathered across construction ROWs, creating a roughened surface to capture precipitation, decrease erosion, and provide sites for plant establishment.

Compacted Soils

Compacted soils will typically be associated with ROW travel lanes, pipe laydown locations, and access roads. Subsoil decompaction will reduce soil bulk density. Areas that have a soil bulk density of at least 25 percent greater than adjacent non-disturbed soils will be treated. Identified locations will be decompacted to a minimum depth of 6-12 inches prior to topsoil replacement. Soil ripping will occur along contours to minimize erosion and facilitate soil-water retention to aid revegetation. ETWS and access roads will be treated the same as construction ROWs.

Terrain Contouring

Construction ROWs, ETWS, and access roads will be contoured to emulate their surrounding landscapes. Contouring will emphasize restoration of existing drainage and landform patterns, to the greatest extent possible.

Topsoil and Vegetation Mixture Replacement

Stockpiled topsoil/vegetation mixtures will be spread over construction ROWs after recontouring is completed. Topsoil and vegetation mixtures will provide seeds, vegetative propagules, and soil microbiota to facilitate plant re-establishment.

Mulch

Mulch cover will be used to minimize soil erosion, conserve soil moisture, and moderate surface temperatures to improve seed establishment success. Appropriate mulch materials will be selected dependent upon soil type, slope, etc. (see Appendix E).

Erosion Control

Erosion will be controlled via vegetation establishment, certified weed-free mulch, soil tackifiers, and water control devices. Proponents will establish a permanent plant cover as quickly as possible following construction, however, erosion control devices will be implemented in the interim to limit soil loss.

Water bars will be installed to control surface water flow in all areas, except agricultural and pasture lands. The purposes of water bars are:

- Decrease overland water velocities by reducing slope lengths;
- Remove water from disturbed areas in a controlled manner to reduce erosive power;
- Direct water into stabilized locations to minimize surface scour; and
- Maximize water infiltration in disturbed areas.

Water bars will be installed using the following spacing unless directed to vary from those criteria by land management agencies or private landowners:

| Typical Water Bar Spacing | |
|---------------------------|----------------|
| Slope | Spacing (feet) |
| <5 percent | None |
| 5 to 15 percent | 300 |
| 15 to 30 percent | 200 |
| >30 percent | 100 |

Water bars will consist of a one-foot-high berm with an upslope swale. They will gently angle downslope to divert stormwater runoff to stable, upland discharge points or energy dissipating devices. They will be reseeded consistent with construction ROWs.

Noxious and Invasive Weed Abatement

Noxious and invasive weeds reduce ROW revegetation success by competing for soil water, nutrients, space, and sunlight. Where project specific biological surveys identify noxious and/or invasive weed presence, control will occur prior to ground disturbance. Additionally, post

construction weed establishment will be controlled within project specific ROWs. The Noxious and Invasive Weed Control Plan (Appendix H) will address weed abatement specifically.

Revegetation

Vegetation types within the WPCI area are variable, based on a number of factors. . All disturbed areas will be seeded using species and seeding rates for vegetation types that correspond to adjacent undisturbed areas along the WPCI, or consistent with private landowner requirements. Seed will be obtained from commercial vendors or collected locally, whichever is most feasible. Seeds will be tested for purity and viability, and certified weed free.

The following criteria will be used for selecting appropriate seed mixes:

- Erosion control capability;
- NRCS ecological site descriptions, where available;
- Sage-grouse or other sensitive species requirements, if applicable;
- Land use;
- Seed availability;
- Wildlife habitat characteristics; and
- Livestock management requirements.

Seed Mixes

Pipelines will cross sagebrush-steppe, mountain big sagebrush, salt-desert shrub, shortgrass prairie, forested and agricultural based vegetation types. Native seed mixes will be used to restore vegetation on public lands. Forested vegetation community disturbance will be seeded as determined by appropriate land management agencies or landowners. Additionally, agricultural based private lands will be reseeded to the specifications of applicable landowners. All seed mixes on private lands will be consistent with adjacent undisturbed lands, and approved by applicable landowners.

Seeding Methods

NRCS guidelines for seeding native plants in arid and semi-arid rangelands will be followed by Proponents. The guidelines call for at least 20 – 40 pure live seeds per square foot for drilled seed, and double that for broadcast seeding.

The primary goals of all seeding methods will be to place seed in direct contact with soil at average depths of 0.5-inch, but not greater than 1-inch, cover seed with soil, and firm surrounding soil to eliminate air pockets. Some methods of seeding are more effective than others; type of terrain and slope can dictate seeding methods. All disturbed areas will be seeded, with the exception of exposed rock faces.

Drill seeding will be the preferred seeding methods for Proponents, as it places seed at uniform depths. Seed drills are limited to use on slopes less than 15 percent, in most instances.

In areas where slopes do not allow drilling seed, broadcast seeding will be used. Broadcast seeding will be followed by harrowing to cover the seed with soil. Broadcast seeding may use hand operated, cyclone type seeders; mechanical, broadcast seeders attached to imprinting devices; or specially designed blowers (if applicable and as approved by land management agency or landowner).

Hydroseeding and hydromulching use water with a slurry of seed, mulch, and tackifier. This is not an ideal seeding method. However, for steep slopes that do not allow equipment access, this method may be used.

Seeding and Transplanting Timing

Seeds must be planted at the correct times. Proponents will follow applicable seeding guidelines and land management agency reclamation requirements to maximize reclamation success.

Soil Amendments and Weed Control

Soil amendments will consist of fertilizers, mulch, tackifying agents, or soil stabilizing emulsions. Ideally Proponents will not apply fertilizers, as they may encourage weed growth, but they may become necessary in site specific situations. Mycorrhizal fungi will be used to inoculate soils in order to aid shrub establishment. Application of mycorrhizal propagules will be in accordance with manufacturers' recommendations.

Erodible Soils Restoration Treatment

Erodible soils may occur within the WPCI, and may require additional restorative inputs to minimize erosion. If these conditions are discovered in project specific surveys, the restoration objective will be to rapidly stabilize the soils with erosion control measures, including vegetative cover. Erosion control measures will include one or more of the following:

- Sterile annual grasses (6 – 8 pounds pure live seed per acre);
- Certified weed free straw bales or wattles;
- Fiber mats on highly erosive surfaces and steep slopes,;
- Silt fencing;
- Water bars;
- Soil tackifier; and/or
- Wetting compounds.

Appropriate erosion control measures will be implemented immediately after trench closure.

Livestock Grazing Control

Pipeline projects will traverse livestock grazing allotments on BLM land. Succulent grass and forb growth could attract livestock. Excessive grazing may cause plant establishment efforts to fail. The following management practices for livestock grazing will be implemented.

- Leave the ROW surface in a roughened condition.
- Include low palatable plant species in the seed mix such as sagebrush and western yarrow.
- Negotiate with allotment permittees the need to limit livestock grazing in the ROW by implementing one or more of the following in areas where grazing becomes problematic: herding or placing salt licks and/or protein blocks one mile from the ROW, deferring grazing for three years, closing pastures, utilizing seasonal deferments, fencing, and/or reducing stocking preference. The pipeline proponent may compensate permittees if reduced stocking preference or pasture closures occur.

Monitoring and Maintenance

The purpose of post restoration monitoring is to evaluate long-term soil stability, vegetative cover and density, habitat quality, and noxious and invasive weed densities. Proponents will monitor restoration success for a minimum of 5 years, or consistent with requirements of applicable land management agencies.

The primary requirements of monitoring will include the following:

- Assess the effectiveness of temporary and permanent erosion control structures to ensure stability of ROWs and ETWS, and to ensure that runoff is naturally controlled with no accelerated erosion or washouts. ROW monitoring for substantial and/or new erosion, or third party damage, will be completed by Proponents' aerial surveillance and will be completed throughout the life of their project.
- Monitor and assess, through quantitative analysis, the success of reseeding and transplanting efforts. Vegetation sample plots will be developed with appropriate land management agencies and/or private landowners, and used to measure plant density, cover, bare ground, and plant litter. Sample plots will be compared to appropriate control plots outside of the approved ROW.
- Monitor the survival of special plantings, and the extent to which the restored project are visually blends in with adjacent undisturbed areas.
- Monitor and assess weeds in accordance with the Noxious and Invasive Weed Control Plan (Appendix H). Weed colonies, which were not previously identified, will be reported to the appropriate land management agencies or landowners, and treated according to their specifications.
- Monitor and identify other situations that may hinder restoration success, and treat them appropriately.

Revegetation Performance Criteria

Upland revegetation of non-agricultural lands will generally be considered successful when vegetation within the ROW supports non-noxious/invasive plants that are similar in forb, graminoid, and woody plant cover and density to those growing on adjacent undisturbed lands. Vegetation and erosion monitoring will occur for a minimum of five years. Additional monitoring and restoration activity will occur as deemed necessary by appropriate land management

agencies and/or landowners. Determination of restoration success will be determined, based on Proponent monitoring data, by appropriate land management agencies and/or landowners.

Quantitative vegetative monitoring programs will document Proponents' reclamation progress in their ROW. Appropriate land management agencies and/or landowners will participate in selection of monitoring and control plots.

Revegetation will be considered successful when ROW herbaceous and woody plant cover is 80 percent of herbaceous and woody plant cover in control plots, unless more rigorous project specific criteria are required. The severity of soil erosion and weed establishment will be judged in reference and control plots using respective indicators from the BLM Rangeland Health Assessment Procedures Manual. Negligible disturbance to soil, vegetation, and cultural resources will occur during sampling.

Remedial Action and Maintenance

Proponents will address erosion problems as soon possible. Additional erosion control work will be performed as necessary. Temporary erosion control structures will be removed when sites are deemed stable and restoration is determined to be successful.

Reseeding or replanting efforts will occur, as deemed necessary by appropriate land management agencies and/or landowners, when monitoring identifies a restoration failure. Noxious and invasive weed control is included in maintenance requirements, and will be performed in accordance with the Noxious Weed Control Plan (Appendix H).

Reporting

Proponents will document their observations of restoration success following field inspections and provide summary reports to appropriate land management agencies, resource management agencies, and landowners. Areas that require additional restoration work will be identified by project specific mile post. Reports, including a summary of corrective actions proposed, will be submitted as soon as possible after their discovery. Areas where noxious and/or invasive weed control is necessary will be reported as well.

Appendix G
Wetland and Waterbody Construction
and Mitigation Plan

Proponents will follow procedures established for the Federal Energy Regulatory Commission (FERC), which are attached below (*Wetland and Waterbody Construction and Mitigation Procedures*). Since projects within WPCI do not require oversight of FERC, Proponents will not be required to implement the “Filing” requirements described in the procedures manual. Additionally, in instances where state or local regulations are more stringent than those described in the attached manual, Proponents will be required to adhere to those more stringent regulatory requirements.



**Federal Energy
Regulatory
Commission**

**Office of
Energy Projects**

May 2013

WETLAND AND WATERBODY CONSTRUCTION AND MITIGATION PROCEDURES

Washington, DC 20426

MAY 2013 VERSION

**WETLAND AND WATERBODY CONSTRUCTION AND
MITIGATION PROCEDURES**

TABLE OF CONTENTS

| | | |
|------|---|----|
| I. | <u>APPLICABILITY</u> | 1 |
| II. | <u>PRECONSTRUCTION FILING</u> | 2 |
| III. | <u>ENVIRONMENTAL INSPECTORS</u> | 3 |
| IV. | <u>PRECONSTRUCTION PLANNING</u> | 3 |
| V. | <u>WATERBODY CROSSINGS</u> | 5 |
| A. | NOTIFICATION PROCEDURES AND PERMITS | 5 |
| B. | INSTALLATION | 5 |
| 1. | Time Window for Construction | 5 |
| 2. | Extra Work Areas | 5 |
| 3. | General Crossing Procedures | 6 |
| 4. | Spoil Pile Placement and Control | 7 |
| 5. | Equipment Bridges | 7 |
| 6. | Dry-Ditch Crossing Methods | 8 |
| 7. | Crossings of Minor Waterbodies | 9 |
| 8. | Crossings of Intermediate Waterbodies | 10 |
| 9. | Crossings of Major Waterbodies | 10 |
| 10. | Temporary Erosion and Sediment Control | 10 |
| 11. | Trench Dewatering | 11 |
| C. | RESTORATION | 11 |
| D. | POST-CONSTRUCTION MAINTENANCE | 12 |
| VI. | <u>WETLAND CROSSINGS</u> | 13 |
| A. | GENERAL | 13 |
| B. | INSTALLATION | 14 |
| 1. | Extra Work Areas and Access Roads | 14 |
| 2. | Crossing Procedures | 15 |
| 3. | Temporary Sediment Control | 16 |
| 4. | Trench Dewatering | 17 |
| C. | RESTORATION | 17 |
| D. | POST-CONSTRUCTION MAINTENANCE AND REPORTING | 18 |
| VII. | <u>HYDROSTATIC TESTING</u> | 19 |
| A. | NOTIFICATION PROCEDURES AND PERMITS | 19 |
| B. | GENERAL | 19 |
| C. | INTAKE SOURCE AND RATE | 19 |
| D. | DISCHARGE LOCATION, METHOD, AND RATE | 20 |

**WETLAND AND WATERBODY
CONSTRUCTION AND MITIGATION PROCEDURES (PROCEDURES)**

I. APPLICABILITY

- A. The intent of these Procedures is to assist project sponsors by identifying baseline mitigation measures for minimizing the extent and duration of project-related disturbance on wetlands and waterbodies. Project sponsors shall specify in their applications for a new FERC authorization, and in prior notice and advance notice filings, any individual measures in these Procedures they consider unnecessary, technically infeasible, or unsuitable due to local conditions and fully describe any alternative measures they would use. Project sponsors shall also explain how those alternative measures would achieve a comparable level of mitigation.

Once a project is authorized, project sponsors can request further changes as variances to the measures in these Procedures (or the applicant's approved procedures). The Director of the Office of Energy Projects (Director) will consider approval of variances upon the project sponsor's written request, if the Director agrees that a variance:

1. provides equal or better environmental protection;
2. is necessary because a portion of these Procedures is infeasible or unworkable based on project-specific conditions; or
3. is specifically required in writing by another federal, state, or Native American land management agency for the portion of the project on its land or under its jurisdiction.

Sponsors of projects planned for construction under the automatic authorization provisions in the FERC's regulations must receive written approval for any variances in advance of construction.

Project-related impacts on non-wetland areas are addressed in the staff's Upland Erosion Control, Revegetation, and Maintenance Plan (Plan).

B. DEFINITIONS

1. "Waterbody" includes any natural or artificial stream, river, or drainage with perceptible flow at the time of crossing, and other permanent waterbodies such as ponds and lakes:
 - a. "minor waterbody" includes all waterbodies less than or equal to 10 feet wide at the water's edge at the time of crossing;
 - b. "intermediate waterbody" includes all waterbodies greater than 10 feet wide but less than or equal to 100 feet wide at the water's edge at the time of crossing; and
 - c. "major waterbody" includes all waterbodies greater than 100 feet wide at the water's edge at the time of crossing.
2. "Wetland" includes any area that is not in actively cultivated or rotated cropland and that satisfies the requirements of the current federal methodology for identifying and delineating wetlands.

II. PRECONSTRUCTION FILING

- A. The following information must be filed with the Secretary of the FERC (Secretary) prior to the beginning of construction, for the review and written approval by the Director:
 1. site-specific justifications for extra work areas that would be closer than 50 feet from a waterbody or wetland; and
 2. site-specific justifications for the use of a construction right-of-way greater than 75-feet-wide in wetlands.
- B. The following information must be filed with the Secretary prior to the beginning of construction. These filing requirements do not apply to projects constructed under the automatic authorization provisions in the FERC's regulations:
 1. Spill Prevention and Response Procedures specified in section IV.A;
 2. a schedule identifying when trenching or blasting will occur within each waterbody greater than 10 feet wide, within any designated coldwater fishery, and within any waterbody identified as habitat for federally-listed threatened or endangered species. The project sponsor will revise the schedule as necessary to provide FERC staff at least 14 days advance notice. Changes within this last 14-day period must provide for at least 48 hours advance notice;

3. plans for horizontal directional drills (HDD) under wetlands or waterbodies, specified in section V.B.6.d;
4. site-specific plans for major waterbody crossings, described in section V.B.9;
5. a wetland delineation report as described in section VI.A.1, if applicable; and
6. the hydrostatic testing information specified in section VII.B.3.

III. ENVIRONMENTAL INSPECTORS

- A. At least one Environmental Inspector having knowledge of the wetland and waterbody conditions in the project area is required for each construction spread. The number and experience of Environmental Inspectors assigned to each construction spread shall be appropriate for the length of the construction spread and the number/significance of resources affected.
- B. The Environmental Inspector's responsibilities are outlined in the Upland Erosion Control, Revegetation, and Maintenance Plan (Plan).

IV. PRECONSTRUCTION PLANNING

- A. The project sponsor shall develop project-specific Spill Prevention and Response Procedures that meet applicable requirements of state and federal agencies. A copy must be filed with the Secretary prior to construction and made available in the field on each construction spread. This filing requirement does not apply to projects constructed under the automatic authorization provisions in the FERC's regulations.
 1. It shall be the responsibility of the project sponsor and its contractors to structure their operations in a manner that reduces the risk of spills or the accidental exposure of fuels or hazardous materials to waterbodies or wetlands. The project sponsor and its contractors must, at a minimum, ensure that:
 - a. all employees handling fuels and other hazardous materials are properly trained;
 - b. all equipment is in good operating order and inspected on a regular basis;
 - c. fuel trucks transporting fuel to on-site equipment travel only on approved access roads;
 - d. all equipment is parked overnight and/or fueled at least 100 feet from a waterbody or in an upland area at least 100 feet from a wetland boundary. These activities can occur closer only if the Environmental Inspector determines that there is no reasonable alternative, and the

project sponsor and its contractors have taken appropriate steps (including secondary containment structures) to prevent spills and provide for prompt cleanup in the event of a spill;

- e. hazardous materials, including chemicals, fuels, and lubricating oils, are not stored within 100 feet of a wetland, waterbody, or designated municipal watershed area, unless the location is designated for such use by an appropriate governmental authority. This applies to storage of these materials and does not apply to normal operation or use of equipment in these areas;
 - f. concrete coating activities are not performed within 100 feet of a wetland or waterbody boundary, unless the location is an existing industrial site designated for such use. These activities can occur closer only if the Environmental Inspector determines that there is no reasonable alternative, and the project sponsor and its contractors have taken appropriate steps (including secondary containment structures) to prevent spills and provide for prompt cleanup in the event of a spill;
 - g. pumps operating within 100 feet of a waterbody or wetland boundary utilize appropriate secondary containment systems to prevent spills; and
 - h. bulk storage of hazardous materials, including chemicals, fuels, and lubricating oils have appropriate secondary containment systems to prevent spills.
2. The project sponsor and its contractors must structure their operations in a manner that provides for the prompt and effective cleanup of spills of fuel and other hazardous materials. At a minimum, the project sponsor and its contractors must:
- a. ensure that each construction crew (including cleanup crews) has on hand sufficient supplies of absorbent and barrier materials to allow the rapid containment and recovery of spilled materials and knows the procedure for reporting spills and unanticipated discoveries of contamination;
 - b. ensure that each construction crew has on hand sufficient tools and material to stop leaks;
 - c. know the contact names and telephone numbers for all local, state, and federal agencies (including, if necessary, the U. S. Coast Guard and the National Response Center) that must be notified of a spill; and

- d. follow the requirements of those agencies in cleaning up the spill, in excavating and disposing of soils or other materials contaminated by a spill, and in collecting and disposing of waste generated during spill cleanup.

B. AGENCY COORDINATION

The project sponsor must coordinate with the appropriate local, state, and federal agencies as outlined in these Procedures and in the FERC's Orders.

V. WATERBODY CROSSINGS

A. NOTIFICATION PROCEDURES AND PERMITS

1. Apply to the U.S. Army Corps of Engineers (COE), or its delegated agency, for the appropriate wetland and waterbody crossing permits.
2. Provide written notification to authorities responsible for potable surface water supply intakes located within 3 miles downstream of the crossing at least 1 week before beginning work in the waterbody, or as otherwise specified by that authority.
3. Apply for state-issued waterbody crossing permits and obtain individual or generic section 401 water quality certification or waiver.
4. Notify appropriate federal and state authorities at least 48 hours before beginning trenching or blasting within the waterbody, or as specified in applicable permits.

B. INSTALLATION

1. Time Window for Construction

Unless expressly permitted or further restricted by the appropriate federal or state agency in writing on a site-specific basis, instream work, except that required to install or remove equipment bridges, must occur during the following time windows:

- a. coldwater fisheries - June 1 through September 30; and
- b. coolwater and warmwater fisheries - June 1 through November 30.

2. Extra Work Areas

- a. Locate all extra work areas (such as staging areas and additional spoil storage areas) at least 50 feet away from water's edge, except where

the adjacent upland consists of cultivated or rotated cropland or other disturbed land.

- b. The project sponsor shall file with the Secretary for review and written approval by the Director, site-specific justification for each extra work area with a less than 50-foot setback from the water's edge, except where the adjacent upland consists of cultivated or rotated cropland or other disturbed land. The justification must specify the conditions that will not permit a 50-foot setback and measures to ensure the waterbody is adequately protected.
- c. Limit the size of extra work areas to the minimum needed to construct the waterbody crossing.

3. General Crossing Procedures

- a. Comply with the COE, or its delegated agency, permit terms and conditions.
- b. Construct crossings as close to perpendicular to the axis of the waterbody channel as engineering and routing conditions permit.
- c. Where pipelines parallel a waterbody, maintain at least 15 feet of undisturbed vegetation between the waterbody (and any adjacent wetland) and the construction right-of-way, except where maintaining this offset will result in greater environmental impact.
- d. Where waterbodies meander or have multiple channels, route the pipeline to minimize the number of waterbody crossings.
- e. Maintain adequate waterbody flow rates to protect aquatic life, and prevent the interruption of existing downstream uses.
- f. Waterbody buffers (e.g., extra work area setbacks, refueling restrictions) must be clearly marked in the field with signs and/or highly visible flagging until construction-related ground disturbing activities are complete.
- g. Crossing of waterbodies when they are dry or frozen and not flowing may proceed using standard upland construction techniques in accordance with the Plan, provided that the Environmental Inspector verifies that water is unlikely to flow between initial disturbance and final stabilization of the feature. In the event of perceptible flow, the project sponsor must comply with all applicable Procedure requirements for "waterbodies" as defined in section I.B.1.

4. Spoil Pile Placement and Control

- a. All spoil from minor and intermediate waterbody crossings, and upland spoil from major waterbody crossings, must be placed in the construction right-of-way at least 10 feet from the water's edge or in additional extra work areas as described in section V.B.2.
- b. Use sediment barriers to prevent the flow of spoil or silt-laden water into any waterbody.

5. Equipment Bridges

- a. Only clearing equipment and equipment necessary for installation of equipment bridges may cross waterbodies prior to bridge installation. Limit the number of such crossings of each waterbody to one per piece of clearing equipment.
- b. Construct and maintain equipment bridges to allow unrestricted flow and to prevent soil from entering the waterbody. Examples of such bridges include:
 - (1) equipment pads and culvert(s);
 - (2) equipment pads or railroad car bridges without culverts;
 - (3) clean rock fill and culvert(s); and
 - (4) flexi-float or portable bridges.

Additional options for equipment bridges may be utilized that achieve the performance objectives noted above. Do not use soil to construct or stabilize equipment bridges.

- c. Design and maintain each equipment bridge to withstand and pass the highest flow expected to occur while the bridge is in place. Align culverts to prevent bank erosion or streambed scour. If necessary, install energy dissipating devices downstream of the culverts.
- d. Design and maintain equipment bridges to prevent soil from entering the waterbody.
- e. Remove temporary equipment bridges as soon as practicable after permanent seeding.
- f. If there will be more than 1 month between final cleanup and the beginning of permanent seeding and reasonable alternative access to the right-of-way is available, remove temporary equipment bridges as soon as practicable after final cleanup.

- g. Obtain any necessary approval from the COE, or the appropriate state agency for permanent bridges.

6. Dry-Ditch Crossing Methods

- a. Unless approved otherwise by the appropriate federal or state agency, install the pipeline using one of the dry-ditch methods outlined below for crossings of waterbodies up to 30 feet wide (at the water's edge at the time of construction) that are state-designated as either coldwater or significant coolwater or warmwater fisheries, or federally-designated as critical habitat.

- b. Dam and Pump

- (1) The dam-and-pump method may be used without prior approval for crossings of waterbodies where pumps can adequately transfer streamflow volumes around the work area, and there are no concerns about sensitive species passage.
- (2) Implementation of the dam-and-pump crossing method must meet the following performance criteria:
 - (i) use sufficient pumps, including on-site backup pumps, to maintain downstream flows;
 - (ii) construct dams with materials that prevent sediment and other pollutants from entering the waterbody (e.g., sandbags or clean gravel with plastic liner);
 - (iii) screen pump intakes to minimize entrainment of fish;
 - (iv) prevent streambed scour at pump discharge; and
 - (v) continuously monitor the dam and pumps to ensure proper operation throughout the waterbody crossing.

- c. Flume Crossing

The flume crossing method requires implementation of the following steps:

- (1) install flume pipe after blasting (if necessary), but before any trenching;
- (2) use sand bag or sand bag and plastic sheeting diversion structure or equivalent to develop an effective seal and to divert stream flow through the flume pipe (some modifications to the stream bottom may be required to achieve an effective seal);

- (3) properly align flume pipe(s) to prevent bank erosion and streambed scour;
- (4) do not remove flume pipe during trenching, pipelaying, or backfilling activities, or initial streambed restoration efforts; and
- (5) remove all flume pipes and dams that are not also part of the equipment bridge as soon as final cleanup of the stream bed and bank is complete.

d. Horizontal Directional Drill

For each waterbody or wetland that would be crossed using the HDD method, file with the Secretary for the review and written approval by the Director, a plan that includes:

- (1) site-specific construction diagrams that show the location of mud pits, pipe assembly areas, and all areas to be disturbed or cleared for construction;
- (2) justification that disturbed areas are limited to the minimum needed to construct the crossing;
- (3) identification of any aboveground disturbance or clearing between the HDD entry and exit workspaces during construction;
- (4) a description of how an inadvertent release of drilling mud would be contained and cleaned up; and
- (5) a contingency plan for crossing the waterbody or wetland in the event the HDD is unsuccessful and how the abandoned drill hole would be sealed, if necessary.

The requirement to file HDD plans does not apply to projects constructed under the automatic authorization provisions in the FERC's regulations.

7. Crossings of Minor Waterbodies

Where a dry-ditch crossing is not required, minor waterbodies may be crossed using the open-cut crossing method, with the following restrictions:

- a. except for blasting and other rock breaking measures, complete instream construction activities (including trenching, pipe installation, backfill, and restoration of the streambed contours) within 24 hours.

Streambanks and unconsolidated streambeds may require additional restoration after this period;

- b. limit use of equipment operating in the waterbody to that needed to construct the crossing; and
- c. equipment bridges are not required at minor waterbodies that do not have a state-designated fishery classification or protected status (e.g., agricultural or intermittent drainage ditches). However, if an equipment bridge is used it must be constructed as described in section V.B.5.

8. Crossings of Intermediate Waterbodies

Where a dry-ditch crossing is not required, intermediate waterbodies may be crossed using the open-cut crossing method, with the following restrictions:

- a. complete instream construction activities (not including blasting and other rock breaking measures) within 48 hours, unless site-specific conditions make completion within 48 hours infeasible;
- b. limit use of equipment operating in the waterbody to that needed to construct the crossing; and
- c. all other construction equipment must cross on an equipment bridge as specified in section V.B.5.

9. Crossings of Major Waterbodies

Before construction, the project sponsor shall file with the Secretary for the review and written approval by the Director a detailed, site-specific construction plan and scaled drawings identifying all areas to be disturbed by construction for each major waterbody crossing (the scaled drawings are not required for any offshore portions of pipeline projects). This plan must be developed in consultation with the appropriate state and federal agencies and shall include extra work areas, spoil storage areas, sediment control structures, etc., as well as mitigation for navigational issues. The requirement to file major waterbody crossing plans does not apply to projects constructed under the automatic authorization provisions of the FERC's regulations.

The Environmental Inspector may adjust the final placement of the erosion and sediment control structures in the field to maximize effectiveness.

10. Temporary Erosion and Sediment Control

Install sediment barriers (as defined in section IV.F.3.a of the Plan) immediately after initial disturbance of the waterbody or adjacent upland.

Sediment barriers must be properly maintained throughout construction and reinstalled as necessary (such as after backfilling of the trench) until replaced by permanent erosion controls or restoration of adjacent upland areas is complete. Temporary erosion and sediment control measures are addressed in more detail in the Plan; however, the following specific measures must be implemented at stream crossings:

- a. install sediment barriers across the entire construction right-of-way at all waterbody crossings, where necessary to prevent the flow of sediments into the waterbody. Removable sediment barriers (or driveable berms) must be installed across the travel lane. These removable sediment barriers can be removed during the construction day, but must be re-installed after construction has stopped for the day and/or when heavy precipitation is imminent;
- b. where waterbodies are adjacent to the construction right-of-way and the right-of-way slopes toward the waterbody, install sediment barriers along the edge of the construction right-of-way as necessary to contain spoil within the construction right-of-way and prevent sediment flow into the waterbody; and
- c. use temporary trench plugs at all waterbody crossings, as necessary, to prevent diversion of water into upland portions of the pipeline trench and to keep any accumulated trench water out of the waterbody.

11. Trench Dewatering

Dewater the trench (either on or off the construction right-of-way) in a manner that does not cause erosion and does not result in silt-laden water flowing into any waterbody. Remove the dewatering structures as soon as practicable after the completion of dewatering activities.

C. RESTORATION

1. Use clean gravel or native cobbles for the upper 1 foot of trench backfill in all waterbodies that contain coldwater fisheries.
2. For open-cut crossings, stabilize waterbody banks and install temporary sediment barriers within 24 hours of completing instream construction activities. For dry-ditch crossings, complete streambed and bank stabilization before returning flow to the waterbody channel.
3. Return all waterbody banks to preconstruction contours or to a stable angle of repose as approved by the Environmental Inspector.
4. Install erosion control fabric or a functional equivalent on waterbody banks at the time of final bank recontouring. Do not use synthetic monofilament

mesh/netted erosion control materials in areas designated as sensitive wildlife habitat unless the product is specifically designed to minimize harm to wildlife. Anchor erosion control fabric with staples or other appropriate devices.

5. Application of riprap for bank stabilization must comply with COE, or its delegated agency, permit terms and conditions.
6. Unless otherwise specified by state permit, limit the use of riprap to areas where flow conditions preclude effective vegetative stabilization techniques such as seeding and erosion control fabric.
7. Revegetate disturbed riparian areas with native species of conservation grasses, legumes, and woody species, similar in density to adjacent undisturbed lands.
8. Install a permanent slope breaker across the construction right-of-way at the base of slopes greater than 5 percent that are less than 50 feet from the waterbody, or as needed to prevent sediment transport into the waterbody. In addition, install sediment barriers as outlined in the Plan.

In some areas, with the approval of the Environmental Inspector, an earthen berm may be suitable as a sediment barrier adjacent to the waterbody.

9. Sections V.C.3 through V.C.7 above also apply to those perennial or intermittent streams not flowing at the time of construction.

D. POST-CONSTRUCTION MAINTENANCE

1. Limit routine vegetation mowing or clearing adjacent to waterbodies to allow a riparian strip at least 25 feet wide, as measured from the waterbody's mean high water mark, to permanently revegetate with native plant species across the entire construction right-of-way. However, to facilitate periodic corrosion/leak surveys, a corridor centered on the pipeline and up to 10 feet wide may be cleared at a frequency necessary to maintain the 10-foot corridor in an herbaceous state. In addition, trees that are located within 15 feet of the pipeline that have roots that could compromise the integrity of the pipeline coating may be cut and removed from the permanent right-of-way. Do not conduct any routine vegetation mowing or clearing in riparian areas that are between HDD entry and exit points.
2. Do not use herbicides or pesticides in or within 100 feet of a waterbody except as allowed by the appropriate land management or state agency.
3. Time of year restrictions specified in section VII.A.5 of the Plan (April 15 – August 1 of any year) apply to routine mowing and clearing of riparian areas.

VI. WETLAND CROSSINGS

A. GENERAL

1. The project sponsor shall conduct a wetland delineation using the current federal methodology and file a wetland delineation report with the Secretary before construction. The requirement to file a wetland delineation report does not apply to projects constructed under the automatic authorization provisions in the FERC's regulations.

This report shall identify:

- a. by milepost all wetlands that would be affected;
- b. the National Wetlands Inventory (NWI) classification for each wetland;
- c. the crossing length of each wetland in feet; and
- d. the area of permanent and temporary disturbance that would occur in each wetland by NWI classification type.

The requirements outlined in this section do not apply to wetlands in actively cultivated or rotated cropland. Standard upland protective measures, including workspace and topsoiling requirements, apply to these agricultural wetlands.

2. Route the pipeline to avoid wetland areas to the maximum extent possible. If a wetland cannot be avoided or crossed by following an existing right-of-way, route the new pipeline in a manner that minimizes disturbance to wetlands. Where looping an existing pipeline, overlap the existing pipeline right-of-way with the new construction right-of-way. In addition, locate the loop line no more than 25 feet away from the existing pipeline unless site-specific constraints would adversely affect the stability of the existing pipeline.
3. Limit the width of the construction right-of-way to 75 feet or less. Prior written approval of the Director is required where topographic conditions or soil limitations require that the construction right-of-way width within the boundaries of a federally delineated wetland be expanded beyond 75 feet. Early in the planning process the project sponsor is encouraged to identify site-specific areas where excessively wide trenches could occur and/or where spoil piles could be difficult to maintain because existing soils lack adequate unconfined compressive strength.
4. Wetland boundaries and buffers must be clearly marked in the field with signs and/or highly visible flagging until construction-related ground disturbing activities are complete.

5. Implement the measures of sections V and VI in the event a waterbody crossing is located within or adjacent to a wetland crossing. If all measures of sections V and VI cannot be met, the project sponsor must file with the Secretary a site-specific crossing plan for review and written approval by the Director before construction. This crossing plan shall address at a minimum:
 - a. spoil control;
 - b. equipment bridges;
 - c. restoration of waterbody banks and wetland hydrology;
 - d. timing of the waterbody crossing;
 - e. method of crossing; and
 - f. size and location of all extra work areas.
6. Do not locate aboveground facilities in any wetland, except where the location of such facilities outside of wetlands would prohibit compliance with U.S. Department of Transportation regulations.

B. INSTALLATION

1. Extra Work Areas and Access Roads
 - a. Locate all extra work areas (such as staging areas and additional spoil storage areas) at least 50 feet away from wetland boundaries, except where the adjacent upland consists of cultivated or rotated cropland or other disturbed land.
 - b. The project sponsor shall file with the Secretary for review and written approval by the Director, site-specific justification for each extra work area with a less than 50-foot setback from wetland boundaries, except where adjacent upland consists of cultivated or rotated cropland or other disturbed land. The justification must specify the site-specific conditions that will not permit a 50-foot setback and measures to ensure the wetland is adequately protected.
 - c. The construction right-of-way may be used for access when the wetland soil is firm enough to avoid rutting or the construction right-of-way has been appropriately stabilized to avoid rutting (e.g., with timber riprap, prefabricated equipment mats, or terra mats).

In wetlands that cannot be appropriately stabilized, all construction equipment other than that needed to install the wetland crossing shall

use access roads located in upland areas. Where access roads in upland areas do not provide reasonable access, limit all other construction equipment to one pass through the wetland using the construction right-of-way.

- d. The only access roads, other than the construction right-of-way, that can be used in wetlands are those existing roads that can be used with no modifications or improvements, other than routine repair, and no impact on the wetland.

2. Crossing Procedures

- a. Comply with COE, or its delegated agency, permit terms and conditions.
- b. Assemble the pipeline in an upland area unless the wetland is dry enough to adequately support skids and pipe.
- c. Use “push-pull” or “float” techniques to place the pipe in the trench where water and other site conditions allow.
- d. Minimize the length of time that topsoil is segregated and the trench is open. Do not trench the wetland until the pipeline is assembled and ready for lowering in.
- e. Limit construction equipment operating in wetland areas to that needed to clear the construction right-of-way, dig the trench, fabricate and install the pipeline, backfill the trench, and restore the construction right-of-way.
- f. Cut vegetation just above ground level, leaving existing root systems in place, and remove it from the wetland for disposal.

The project sponsor can burn woody debris in wetlands, if approved by the COE and in accordance with state and local regulations, ensuring that all remaining woody debris is removed for disposal.

- g. Limit pulling of tree stumps and grading activities to directly over the trenchline. Do not grade or remove stumps or root systems from the rest of the construction right-of-way in wetlands unless the Chief Inspector and Environmental Inspector determine that safety-related construction constraints require grading or the removal of tree stumps from under the working side of the construction right-of-way.
- h. Segregate the top 1 foot of topsoil from the area disturbed by trenching, except in areas where standing water is present or soils are

saturated. Immediately after backfilling is complete, restore the segregated topsoil to its original location.

- i. Do not use rock, soil imported from outside the wetland, tree stumps, or brush riprap to support equipment on the construction right-of-way.
- j. If standing water or saturated soils are present, or if construction equipment causes ruts or mixing of the topsoil and subsoil in wetlands, use low-ground-weight construction equipment, or operate normal equipment on timber riprap, prefabricated equipment mats, or terra mats.
- k. Remove all project-related material used to support equipment on the construction right-of-way upon completion of construction.

3. Temporary Sediment Control

Install sediment barriers (as defined in section IV.F.3.a of the Plan) immediately after initial disturbance of the wetland or adjacent upland. Sediment barriers must be properly maintained throughout construction and reinstalled as necessary (such as after backfilling of the trench). Except as noted below in section VI.B.3.c, maintain sediment barriers until replaced by permanent erosion controls or restoration of adjacent upland areas is complete. Temporary erosion and sediment control measures are addressed in more detail in the Plan.

- a. Install sediment barriers across the entire construction right-of-way immediately upslope of the wetland boundary at all wetland crossings where necessary to prevent sediment flow into the wetland.
- b. Where wetlands are adjacent to the construction right-of-way and the right-of-way slopes toward the wetland, install sediment barriers along the edge of the construction right-of-way as necessary to contain spoil within the construction right-of-way and prevent sediment flow into the wetland.
- c. Install sediment barriers along the edge of the construction right-of-way as necessary to contain spoil and sediment within the construction right-of-way through wetlands. Remove these sediment barriers during right-of-way cleanup.

4. Trench Dewatering

Dewater the trench (either on or off the construction right-of-way) in a manner that does not cause erosion and does not result in silt-laden water flowing into any wetland. Remove the dewatering structures as soon as practicable after the completion of dewatering activities.

C. RESTORATION

1. Where the pipeline trench may drain a wetland, construct trench breakers at the wetland boundaries and/or seal the trench bottom as necessary to maintain the original wetland hydrology.
2. Restore pre-construction wetland contours to maintain the original wetland hydrology.
3. For each wetland crossed, install a trench breaker at the base of slopes near the boundary between the wetland and adjacent upland areas. Install a permanent slope breaker across the construction right-of-way at the base of slopes greater than 5 percent where the base of the slope is less than 50 feet from the wetland, or as needed to prevent sediment transport into the wetland. In addition, install sediment barriers as outlined in the Plan. In some areas, with the approval of the Environmental Inspector, an earthen berm may be suitable as a sediment barrier adjacent to the wetland.
4. Do not use fertilizer, lime, or mulch unless required in writing by the appropriate federal or state agency.
5. Consult with the appropriate federal or state agencies to develop a project-specific wetland restoration plan. The restoration plan shall include measures for re-establishing herbaceous and/or woody species, controlling the invasion and spread of invasive species and noxious weeds (e.g., purple loosestrife and phragmites), and monitoring the success of the revegetation and weed control efforts. Provide this plan to the FERC staff upon request.
6. Until a project-specific wetland restoration plan is developed and/or implemented, temporarily revegetate the construction right-of-way with annual ryegrass at a rate of 40 pounds/acre (unless standing water is present).
7. Ensure that all disturbed areas successfully revegetate with wetland herbaceous and/or woody plant species.
8. Remove temporary sediment barriers located at the boundary between wetland and adjacent upland areas after revegetation and stabilization of adjacent upland areas are judged to be successful as specified in section VII.A.4 of the Plan.

D. POST-CONSTRUCTION MAINTENANCE AND REPORTING

1. Do not conduct routine vegetation mowing or clearing over the full width of the permanent right-of-way in wetlands. However, to facilitate periodic corrosion/leak surveys, a corridor centered on the pipeline and up to 10 feet wide may be cleared at a frequency necessary to maintain the 10-foot corridor in an herbaceous state. In addition, trees within 15 feet of the pipeline with roots that could compromise the integrity of pipeline coating may be selectively cut and removed from the permanent right-of-way. Do not conduct any routine vegetation mowing or clearing in wetlands that are between HDD entry and exit points.
2. Do not use herbicides or pesticides in or within 100 feet of a wetland, except as allowed by the appropriate federal or state agency.
3. Time of year restrictions specified in section VII.A.5 of the Plan (April 15 – August 1 of any year) apply to routine mowing and clearing of wetland areas.
4. Monitor and record the success of wetland revegetation annually until wetland revegetation is successful.
5. Wetland revegetation shall be considered successful if all of the following criteria are satisfied:
 - a. the affected wetland satisfies the current federal definition for a wetland (i.e., soils, hydrology, and vegetation);
 - b. vegetation is at least 80 percent of either the cover documented for the wetland prior to construction, or at least 80 percent of the cover in adjacent wetland areas that were not disturbed by construction;
 - c. if natural rather than active revegetation was used, the plant species composition is consistent with early successional wetland plant communities in the affected ecoregion; and
 - d. invasive species and noxious weeds are absent, unless they are abundant in adjacent areas that were not disturbed by construction.
6. Within 3 years after construction, file a report with the Secretary identifying the status of the wetland revegetation efforts and documenting success as defined in section VI.D.5, above. The requirement to file wetland restoration reports with the Secretary does not apply to projects constructed under the automatic authorization, prior notice, or advance notice provisions in the FERC's regulations.

For any wetland where revegetation is not successful at the end of 3 years after construction, develop and implement (in consultation with a

professional wetland ecologist) a remedial revegetation plan to actively revegetate wetlands. Continue revegetation efforts and file a report annually documenting progress in these wetlands until wetland revegetation is successful.

VII. HYDROSTATIC TESTING

A. NOTIFICATION PROCEDURES AND PERMITS

1. Apply for state-issued water withdrawal permits, as required.
2. Apply for National Pollutant Discharge Elimination System (NPDES) or state-issued discharge permits, as required.
3. Notify appropriate state agencies of intent to use specific sources at least 48 hours before testing activities unless they waive this requirement in writing.

B. GENERAL

1. Perform 100 percent radiographic inspection of all pipeline section welds or hydrotest the pipeline sections, before installation under waterbodies or wetlands.
2. If pumps used for hydrostatic testing are within 100 feet of any waterbody or wetland, address secondary containment and refueling of these pumps in the project's Spill Prevention and Response Procedures.
3. The project sponsor shall file with the Secretary before construction a list identifying the location of all waterbodies proposed for use as a hydrostatic test water source or discharge location. This filing requirement does not apply to projects constructed under the automatic authorization provisions of the FERC's regulations.

C. INTAKE SOURCE AND RATE

1. Screen the intake hose to minimize the potential for entrainment of fish.
2. Do not use state-designated exceptional value waters, waterbodies which provide habitat for federally listed threatened or endangered species, or waterbodies designated as public water supplies, unless appropriate federal, state, and/or local permitting agencies grant written permission.
3. Maintain adequate flow rates to protect aquatic life, provide for all waterbody uses, and provide for downstream withdrawals of water by existing users.
4. Locate hydrostatic test manifolds outside wetlands and riparian areas to the maximum extent practicable.

D. DISCHARGE LOCATION, METHOD, AND RATE

1. Regulate discharge rate, use energy dissipation device(s), and install sediment barriers, as necessary, to prevent erosion, streambed scour, suspension of sediments, or excessive streamflow.
2. Do not discharge into state-designated exceptional value waters, waterbodies which provide habitat for federally listed threatened or endangered species, or waterbodies designated as public water supplies, unless appropriate federal, state, and local permitting agencies grant written permission.

Appendix H

Noxious and Invasive Weed Control Plan

Plan Purpose

The purpose of this plan is to prescribe methods to prevent, mitigate, and control the spread of noxious and invasive weed (weed) species during and following construction of pipelines within the WPCI. Proponents will be responsible for implementing the methods described in this plan, in addition to any project specific requirements prescribed by applicable regulatory agencies. This plan is applicable to Proponents that construct pipeline in the WPCI both during construction and operations phases.

Goals and Objectives

Proponents' goals will be to prevent the spread of Weeds identified in the WPCI and avoid introduction of new weeds. Monitoring will be required to ensure the success of control measures.

Weed Inventory

Proponents will complete biological surveys of their project specific ROWs and work areas to identify Weed presence, prior to commencement of their projects. Inventories will include proposed access roads, ETWS, staging areas, contractor construction yards, aboveground facilities, and potential water sources. Data collected will include weed species and GPS locations, and will be collected using a combination of existing databases and field surveys.

Weed Management

Weeds will be treated prior to construction activities. However, it should be noted that widespread distributions of species such as cheatgrass (*Bromus tectorum*) cannot be effectively eradicated by currently available control measures. In these instances, unless new methods becomes available, exhaustive treatment activities will not be required by Proponents. Rather, Proponents' goal will be to preclude the spread of these species to areas where they do not currently exist.

Various regulatory agencies, with land management jurisdiction in the WPCI, may have different weed management requirements. Proponents will be required to follow weed management prescriptions of whichever land management agency has jurisdiction along their project. If there are overlapping jurisdictions, Proponents will be required to follow the most stringent management requirements.

Identification of Problem Areas

Prior to construction, Proponents will provide their contractors with information and training regarding weed management, weed identification, and potential impacts of weeds on agriculture, livestock, and wildlife. Contractors will be informed of the importance of preventing

the spread of weeds into uncontaminated areas and of controlling proliferation of existing weeds.

Before surface disturbance activities begin, areas of weed infestation will be identified and marked with signs. Areas of concern will include all locations where weeds need to be treated. Signs will also identify the locations of all equipment cleaning stations that will be setup along the ROW.

Preventative Measures

Prevention is the most effective approach to weed management. Proponents will assist applicable regulatory agencies with control efforts, within their approved work areas. They will comply with all agency preventative requirements and implement weed control measures in areas of concern. The following general preventive measures should be implemented to minimize the spread of both terrestrial and aquatic weeds. Additional measures, or new technologies, may be required of Proponents if they become available prior to approval of their pipelines.

General

- Proponents will conduct Employee Environmental Awareness Programs (EEAP) before surface disturbance activities begin, in order to educate personnel about environmental concerns and requirements, including weed identification, prevention, and control methods. No personnel should be allowed to work within the WPCI before completing an EEAP. Qualified EIs will conduct trainings.
- Qualified EIs or contract weed control personnel will conduct on-site biological monitoring in areas of concern before, during, and after construction.

Soil, Straw, and Mulch

Contractors will ensure that all straw or hay bales used for sediment barriers or mulch are certified weed-free and obtained from state cleared sources. If certified weed-free bales are unavailable, alternative weed-free sediment barriers will be utilized.

Cleaning Stations

To prevent transport of weed seeds, roots, or other propagules along the ROW, or other project areas, Proponents will implement an equipment cleaning program in accordance with the following guidelines.

- All contractor vehicles and equipment arriving from out of state will be cleaned prior to beginning work in the ROW or other project areas.
- All equipment and vehicles that come into contact with vegetation or disturbed soil in areas of concern for weeds will be cleaned before allowing them to proceed along the ROW or other project areas. Initial clearing and grading crews will segregate contaminated topsoil along the edge of the ROW, and mark it accordingly, so crews that

follow will not need to clean their vehicles and equipment when traveling through areas of concern, with the exception of timber removal and restoration crews.

- Proponents will develop certification programs to ensure that all vehicles and equipment have been cleaned of weeds.
- Proponents will place cleaning stations along their project in locations where they can most effectively and efficiently clean applicable vehicles and equipment.
- Cleaning of vehicles and equipment will only occur at cleaning stations. Cleaning will be carried out using high pressure equipment to remove seeds, roots, and rhizomes. Cleaning efforts will be concentrated on tracks, feet, tires, and undercarriage. If weather conditions are exceptionally dry and vehicles are mud free, compress air may be used for cleaning.
- Vehicle cabs will be cleaned and refuse capable of transporting weeds will be placed in appropriate refuse bins.

Treatment Methods

Proponents will implement weed control measures in accordance with existing regulations and jurisdictional land management agency or landowner agreements. Special attention will be given to designated noxious weeds, as eradication of all weeds will likely be beyond the controls of Proponents. Preventing the introduction or spread of other weed species will be the responsibility of Proponents.

General Methods

Within project areas, weed control during the pre-construction and construction phases will be carried out primarily using herbicide treatment methods. Herbicide treatment will consist of spot application, or broad area application, as appropriate. While herbicide application will be the primary treatment method, other methods will be implemented if they are deemed more appropriate.

Control measures may utilize one or more of the following treatment methods:

- Manual Methods –Weeds pulled by hand. If seeds are present, plants will be removed and destroyed.
- Mechanical Methods – Equipment will mow or disk weed populations. Any mowing or disking will occur prior to seed development. Subsequent seeding with prescribed restoration seed mixes will occur as soon as possible following soil disturbance to re-establish suitable vegetation cover and slow the re-invasion of weeds.
- Herbicide Application – Herbicide application will be used to remove, reduce, or contain noxious weed populations. Only herbicides approved by applicable regulatory agencies or landowners will be used. Applications will be controlled to minimize impacts on surrounding native vegetation. In areas of dense infestation, or where impacts on native species will be difficult to avoid, broader application methods may be used and a follow-up seeding program implemented.

Treatment methods will be species specific and based on area specific conditions. Proponents will coordinate with applicable resource agencies during and after construction to ensure adequate weed control.

There is potential for spreading weeds as a result of withdrawing water for project related activities, as seeds could be present in water sources. Proponents will treat weeds within 200 feet of project water sources to minimize the threat of this vector of weed transport. Only herbicides, or other methods, approved for use in close proximity to water sources will be permitted.

Treatment Schedule

Most perennial and biennial species are best controlled by applying herbicide twice per year: once during spring and once during the period from early August to early September. Late season treatments need to be timed so that living leaf and stem growth is still present, but after hot summer temperatures have passed.

Once Proponents have inventoried weed presence within their work areas, they will be required to establish an appropriate treatment schedule.

Treatment Approach during Restoration and Revegetation

Successful restoration and revegetation will be vital to the overall success of Proponents' weed control programs. Proponents will have to establish protocols that minimize weeds, while allowing for the success of project area restoration. Proponents will consult with applicable resource agencies to develop the most efficient process for success.

Monitoring

Proponents will develop weed monitoring programs to ensure their project areas are progressing toward appropriate vegetative cover and diversity, and that weed populations are appropriately managed. Ideally Proponents would eradicate weed populations in their work areas. However, more realistically, Proponents will be required to prevent the introduction of new weed populations and the spreading of existing weed populations.

Monitoring During Construction

The majority of weed monitoring will occur before and after construction activities. Initial monitoring will occur in conjunction with pre-construction weed treatments to assure populations are addressed. Additionally, EIs will monitor clearing, grading, and soil segregation activities to ensure proper weed treatment. EIs will monitor project areas throughout the construction phase of projects to document weed presence or spread, and notify weed control staff to address populations, as appropriate.

Monitoring After Construction

Proponents will begin their post-construction monitoring in the first growing season after construction activities have been completed. They will, at a minimum, monitor their sites in spring and late summer. In addition, equipment cleaning stations will be monitored to ensure they do not become infested. Result of monitoring will dictate additional treatment/control methods.

Below is an example of the minimum requirements for Proponents' monitoring schedules:

- Identify and evaluate weed conditions in the spring and late summer, paying particular attention to noxious weeds;
- Identify and evaluate locations, by milepost and GPS point, where additional treatment may be required and what will likely be the most appropriate treatment method;
- Disclose any treatment methods that are implemented;
- Assess reseeding efforts, their success, and competition with weed populations; and
- Identify areas where reseeding may be beneficial.

The above monitoring observations will be summarized in annual reports, which will be provided to applicable resource agencies. Reports will contain a minimum of the following:

- An assessment of the condition of known weed infestations;
- Identification of areas that require remedial action;
- Recommendations and schedules for additional treatment methods;
- Monitoring forms; and
- Photographs to further document any reported issues.

Herbicide Application and Handling

Herbicide application will be conducted according to EPA standards, and information gathered from various land management agencies and weed management districts located in project areas. Prior to applying herbicides, Proponents' weed management staff will be licensed and will obtain all applicable permits. No herbicide application will occur without coordination with, and concurrence of, applicable regulatory agencies or landowners.

All herbicide applications will follow EPA label instructions. All OSHA requirements will be followed when applying herbicides. Application will be suspended if any of the following conditions arise:

- Wind velocity exceeds 6 mph during application of liquids or 15 mph during application of granular herbicides;
- Snow or ice cover foliage; or
- Precipitation is occurring, or imminent.

Vehicle mounted sprayers will be used primarily in open areas that are readily accessible by vehicles. Hand application that targets individual plants will be used to treat small or scattered weed populations. Calibration checks of equipment will be conducted at the beginning of spraying, and periodically per manufacturer recommendations, to ensure proper application rates.

Herbicides will be transported to work areas daily while being applied, with the following provisions:

- Only the quantity needed for that day will be transported;
- Concentrate will only be transported in approved containers, in a manner that prevents tipping or spilling, and in a compartment isolated from food, clothing, and safety equipment;
- Mixing will be done at a distance greater than 500 feet from any waterbody, wetland, or other sensitive area. No herbicide will be applied in these areas without written approval by applicable regulatory agencies; and
- All herbicide equipment and containers will be inspected daily for leaks.

Herbicide Spills and Cleanup

All reasonable precautions will be taken to avoid spills. In the event of a spill, cleanup will occur immediately. Spill kits will be maintained in vehicles and in herbicide storage areas. All herbicide contractors will obtain and have readily available copies of Material Safety Data Sheets for herbicides they are using. All herbicide spills will be reported in accordance with applicable laws and requirements.

The following is a list of minimum requirements for spill kits:

- Protective clothing, eyewear, and gloves;
- Adsorptive clay, “kitty litter”, or other commercial adsorbent;
- Plastic bags and buckets;
- Shovel;
- Fiber brush and screw-in handle;
- Dust pan;
- Caution tape
- Highway flares; and
- Detergent

Response to spills will vary with their size and location, but general procedures will include the following:

- Controlling traffic;
- Dressing the clean-up team in protective clothing;
- Stopping leaks
- Containing spilled materials

- Cleaning up and removing spilled herbicide and contaminated adsorptive materials and soil; and
- Transporting spilled herbicide and contaminated material to an authorized disposal site.

Appendix I

Biological Resources Conservation Measure Plan

Construction and Operation Mitigation

This appendix outlines minimum conservation measures for construction and operation of pipeline projects to reduce impacts to vegetative communities, wildlife, and fisheries resources. Proponents may be required to implement additional measures for site specific impacts. Conservation and mitigation measures for federal threatened and endangered species will be addressed in a separate Biological Assessment (BA) developed through the project specific NEPA process. Mitigation approaches described in this appendix should be used for impacts associated with any pipeline construction and operation activities that will occur in the WPCI.

Through the NEPA process, lists of target species will be developed to focus field survey efforts. These lists will be developed based on known habitats and historic ranges of species that will be derived from literature, agency communication, and best professional judgment.

Numerous mitigation measures and BMPs have been developed and will be implemented by Proponents during pipeline construction to reduce impacts to sensitive plants, fisheries and wildlife. These BMPs may include:

- Throughout the permitting process, the various regulatory agencies, including the the Bureau of Land Management (BLM), and the U.S. Fish and Wildlife Service (USFWS) may require additional resource protection measures in addition to those presented in the following sections to ensure that federally listed and proposed species are not adversely affected.
- Standard construction techniques would be used unless conditions warranted special methods, including those required to minimize environmental damage and any other special methods determined through consultation with federal and state agencies.
- The Proponent would minimize impacts to paved roadways, wetlands and waterbodies, and railroads by using appropriate crossing methods.
- Prior to any construction activities, survey crews would stake the outside limits of the construction ROW, the centerline of the pipeline trench, and temporary workspace areas. Sensitive areas to be avoided would be flagged as appropriate, and wetland boundaries would be clearly delineated using easily identifiable temporary signage.
- Substantive cutting of steep terrain (as defined by the orientation and angle of the slope) would not be performed unless needed for the safe operation of the equipment and safety of personnel.
- During periods of precipitation when soil compaction and excessive rutting become significant, many construction activities may be required to cease.
- In other areas where compaction and rutting are unavoidable, measures would be taken to adequately prepare soils for successful reclamation, including replacement of topsoil with topsoil from a local source acceptable to the landowner or land management agency.
- In areas where segregation of soils is required, topsoil and subsoil would be separated using a two-pass excavation process. The native seed base is contained in the topsoil,

the depth of which varies along the project route. Therefore, topsoil would be removed in a manner that minimizes dilution of this seed base.

- The Proponent would adhere to its Noxious and Invasive Weed Control Plan (Appendix H of this POD) to minimize noxious weeds and invasive plants from establishing on the areas disturbed by construction activities.
- When trench dewatering is necessary, the Proponent would adhere to its Procedures to prevent heavily silt-laden water from flowing into wetlands or waterbodies. The rate of flow from dewatering pumps would be regulated to prevent erosion from runoff, and dewatering would be conducted in a manner designed to ensure that water is allowed to infiltrate into the ground rather than flow over the surface whenever possible.
- After backfilling is complete, disturbed areas would be final-graded, and erosion controls would be implemented, including site-specific contouring and reseeding with native species.
- The surface of the ROW would be graded to conform to preexisting contours, to the greatest extent possible.
- Erosion control measures would be implemented in accordance with Appendix E of this POD), other federal, state, and local agency requirements or landowner requirements, as applicable.
- The Proponent's Restoration and Revegetation Plans (Appendix E of this POD) would be implemented in accordance with applicable federal, state, local regulations, and landowner agreements.
- To the greatest extent possible, streambeds would be returned to their preconstruction contours, and stream and river banks would be restored to their preconstruction condition.
- Periodic aerial and ground inspections of the project route would be conducted, and further restoration measures would be implemented as needed.
- All test water used for pipeline hydrostatic testing would be discharged in accordance with the National Pollutant Discharge Elimination System permit.
- Wetlands would be crossed following the methods outlined by the U.S. Army Corps of Engineers.
- All disturbed stream channels would be restored with salvaged materials (plants and substrate where practical) from construction, or with similar local materials.

It is anticipated that some of these measures and BMPs will be modified during the NEPA process.

Sensitive Plants

Proponents will survey their proposed construction ROWs, ETWS, roads, and aboveground facility locations prior to construction for sensitive plant species identified during the NEPA process. Observed plants will be mitigated during construction activities either by relocating the plants or the pipeline facilities or developing equivalent off-site mitigation in consultation with land management agencies, landowners and, where appropriate, the U. S. Fish and Wildlife Service (FWS).

Fisheries Resources

In-Water Work Windows

Proponents will adhere to in-water work windows developed by the WGFD, described below:

- July 1 – August 31 for coldwater fisheries.
- July 1 – November 15 for coolwater and warmwater fisheries.

A list of streams crossing subject to these in-water work windows will be developed during the NEPA process. If extraordinary events arise that require construction through waterbodies outside of an in-water work window, Proponents will consult with WGFD and the land management agency to obtain approval. Boring and horizontal directional drilling will not be subject to these in-water windows.

Stream Crossings

- Proponents will implement their waterbody crossing plans consistent with FERC's Wetland and Waterbody Construction and Mitigation Plan (see Appendix G).
- Proponents will install pipelines at a vertical elevation in streambeds that will not be scoured, where practical.
- Proponents will locate ETWS at least 50 feet from waterbody boundaries.
- Proponents will maintain adequate flow rates throughout construction for aquatic life and to prevent interruption of existing downstream uses following FERC's Procedures.
- Proponents will restrict spoil placement within 10 feet of waterbodies.
- Proponents will be prohibited from storing hazardous materials within 500 feet of a wetland, waterbody, water supply well, spring, or designated municipal watershed.
- Proponents will be prohibited from refueling vehicles and equipment within 500 feet of a wetland, waterbody, water supply well, spring, or designated municipal watershed except as described in Appendix C.
- Proponents will return all waterbody banks to preconstruction contours.

Potential trapping of fish in isolated work areas, or inhibition of fish passage, could occur at stream crossings. The following mitigation measures will be employed to limit this impact:

- Experienced fish biologists, familiar with fish capture and handling techniques, will relocate fish that become trapped in isolated work areas to areas within the main channel or downstream of stream crossings;
- Proponents will attain necessary permits for fish capture and relocation activities;
- Uninhibited fish passage will be maintained around isolated work areas at all times; and
- Stress and mortality will be minimized through appropriate fish handling techniques.

Wildlife Resources

Mitigation measures for habitat fragmentation fall into two broad categories: avoidance and vegetation management. Proponents will employ both measures, and use the following mitigation measures (at a minimum) to minimize fragmentation impacts to species:

- Limit the width of maintained ROW to the greatest extent possible;
- Minimize vegetation removal associated with construction to the greatest extent possible;
- Implement reclamation/restoration methods to enhance wildlife habitat within ROWs;
- Minimize “hard” edges in forested habitats by using “zig-zag” clearing patterns;
- Remove shrubs and saplings in prairie-grassland habitats in a manner that minimizes “hard” edges; and
- Prohibit mowing sagebrush in ROWs where it has been re-established.

Nesting migratory birds will be affected by habitat removal. The obligation to protect migratory birds under the Migratory Bird Treaty Act (MBTA) will be addressed through the NEPA process and site-specific mitigation strategies will be developed.

Proponents will implement the following measures (at a minimum), as applicable, to avoid or minimize impacts to wildlife:

- Reroute sections of pipelines;
- Restrict pipeline ROW widths in environmentally sensitive locations;
- Limit length of time trenches are open;
- Restore affected habitats to the greatest extent possible;
- Minimize future disturbances in project areas; and
- Construct any pipeline communication towers in accordance with USFWS’ requirements.

Special Status Species

Proponents will survey their project areas prior to construction activities at times, and utilizing techniques, prescribed by applicable regulatory agencies. Results of these surveys will inform presence or absence within ROWs.

Greater sage grouse are not a listed species under the Endangered Species Act (ESA), however, they will be afforded special status consideration for pipelines that will be constructed within the WPCI. Unless the FWS determines that the species is warranted as either a Threatened or Endangered species, Greater sage grouse will be afforded the following construction and operational stipulations as directed by the Governor’s Executive Order 2015-4 (EO):

- All applicable stipulations and management prescriptions described in the most recent Wyoming Sage-Grouse Executive Order, or its accompanying guidance documents, will be implemented by project Proponents in order to minimize impacts to sage grouse.

- General Greater sage grouse stipulations include, but are not limited to, the following:
 - Sage-grouse leks: 1) Avoid surface disturbance activities or occupancy within ¼-mile (0.6 mile in Core Areas) of the perimeter of occupied sage-grouse leks. 2) Avoid human activity between 6 p.m. and 8 a.m. from March 15 – May 15 within ¼-mile of the perimeter of occupied sage-grouse leks (0.6 mile in Core Areas).
 - Sage-grouse nesting/early brood rearing habitat: Avoid surface disturbing activities, geophysical surveys, and organized recreational activities (events) that require a special use permit in suitable sage-grouse nesting and early brood rearing habitat within 2 miles of the perimeter of an occupied lek or within identified sage-grouse nesting and early brood rearing habitat March 15 – June 30 (within entire delineated Core Areas).
 - Sage-grouse winter concentration areas: Where it has been designated, avoid human activity in sage-grouse winter habitat from November 30 – March 15.

Big Game

To protect big game crucial winter ranges, Proponents will comply with seasonal stipulations for construction and operation activities which prohibit construction in crucial winter ranges from November 15 to April 30. BLM can grant exceptions to seasonal stipulations if they, in consultation with WGFD biologists, determine that granting an exception will not jeopardize the population that is being protected.

In addition, Proponents will implement the following mitigation measures to protect big game crucial winter habitats, where appropriate:

- Within big game crucial winter ranges impacted by pipeline projects, Proponents will seed disturbed areas with preferred big game forage species listed in Appendix F, Table 1-3.
- Weeds will be controlled to help maintain native forage species as indicated in Appendix H.
- To minimize impacts from open trenches within crucial winter ranges, Proponents will install or leave crossovers where necessary with exit ramps. Proponents will also implement crossovers in areas around water sources and active livestock/wildlife trails. Proponents will also inspect open ditch lines daily to ensure that livestock/wildlife are not trapped in open trenches.
- A 10-foot gap will be left in spoil and topsoil stockpiles at all hard or soft plug locations, and a corresponding gap in welded pipe strings will be left in these locations.
- After construction, Proponents will install OHV barriers to reduce unauthorized public access to pipeline ROWs.

Raptors and Migratory Birds

Proponents will comply with spatial and seasonal buffers in Appendix B, Table 3, where there are data that confirm presence of applicable species. If data are not available to justify seasonal stipulations, surveys will be completed only for those species evaluated and agreed upon during the project specific NEPA process (e.g. federal T&E species and federal agency special status species).

Appendix J

Unanticipated Discoveries Plan for Cultural Resources

General

Unanticipated discoveries consist of types of archaeological remains not typically encountered in the vicinity of a project ROW. These types of remains will also be outside the scope of projects' survey design. Examples of unanticipated discoveries include basin houses, large bison kill sites, or rock shelter containing perishable materials.

Once an unanticipated discovery is identified, measures will be taken to prevent further disturbances. Depending upon the nature and location, these measures may include halting construction in the vicinity, fencing off the discovery, or posting a guard. The BLM and SHPO will be contacted. Archaeological monitors will record the discovery as per standard operating procedures. Test excavations may be necessary to evaluate discoveries. Once the nature of the discovery and its vulnerability are understood, archaeologists will consult about site treatment.

Archaeological monitors will notify BLM Field Offices within one working day and provide written follow-up within three working days after discovery. Archaeologists will recommend site eligibility and identify treatment options.

Discovery of Human Remains

The discovery of known or suspected human remains, at anytime and anywhere in project areas, will result in immediate cessation of construction activity within a 300-foot buffer around the discovery location. If construction personnel make the discovery, they will immediately notify their supervisor, who will notify the EI of the discovery. EIs will notify archaeological monitors or other archaeological staff immediately. All project personnel have authority to halt construction if human remains are discovered.

After construction has been halted, construction personnel will promptly vacate a 300-foot buffer zone. Immediate measures will be implemented to protect discoveries from further disturbance until appropriate agencies have been notified, the discovery has been fully evaluated, treatment (if necessary) has been completed, and the location has been cleared by appropriate agency personnel. Care will be taken to prevent additional disturbance of remains.

If remains are human, measures to protect them and any associated artifacts will remain in effect until Proponents have received notice from the federal Authorized Officer, for discoveries on federal lands, or applicable law enforcement personnel on non-federal lands.

Human Remains on Federal Lands

Upon discovery of suspected or confirmed human remains on federal lands, agency archaeologists and administrators will be notified immediately by phone and with follow-up written notification. Project Proponents and EIs will also be notified. BLM personnel will

determine whether the remains are archaeological or whether they are a law enforcement issue. All agency and tribal consultation will be the responsibility of applicable federal agency staff. If remains are Native American, provisions of the Native American Graves Protection and Repatriation Act (NAGPRA) apply.

Native American Remains on Federal Lands

For Native American human remains, funerary objects, sacred objects, and objects of cultural patrimony discovered on federal land, agencies will meet the requirements of NAGPRA in accordance with 43 CFR 10. In accordance with 43 CFR 10, work may resume at the discovery location 30 days after certification by the Authorized Officer, if the resumption is otherwise lawful [43 CFR 10.4 (d and e)].

Human Remains on Non-Federal Lands

Upon discovery of confirmed or suspected human remains on non-federal lands, the county sheriff will be notified immediately. The sheriff may contact the coroner. The lead federal agency, SHPO, and EI will be notified as well. The sheriff and/or coroner will determine whether or not remains fall under law enforcement jurisdiction. Further work at the discovery will be at the discretion of law enforcement personnel, if there is an enforcement issue. If not, the BLM will consult with SHPO, and the landowner if on private land, to approve further work. If remains are Native American, SHPO will determine the appropriate course of action.

Coordination and Notification Procedures

Coordination among project archaeologists, construction personnel, EIs, and Proponents will be handled within projects' chain of command. Project EIs will likely be archaeologists' primary point of contact. Proponents will likely employ an archaeological contractor as a monitor and to be their lead archaeological point of contact.

Project EIs will be responsible for communicating between archaeological contractors and project construction personnel. Situations may arise where archaeological contractors need to communicate directly with construction personnel, but this will be minimal and EIs will always be notified.

Appendix K

Unanticipated Discoveries Plan for Paleontological Resources

Introduction

This Paleontological Resources Monitoring Plan provides monitoring procedures for Proponents to follow in their project areas where there are potentially significant fossil resources. Detailed guidelines are provided in BLM IM 2009-11. This plan also addresses the unanticipated discovery of significant fossil resources that may be encountered during construction.

Qualified Paleontologist

The Principal Investigator (PI), a qualified paleontologist, will be contracted by Proponents to oversee paleontological activities. Prior to construction PIs will obtain necessary Paleontological Use Permits for BLM lands. These permits will require a monitoring and recovery plan for fossils, as well as an agreement with a recognized institution for the curation and storage of scientifically significant fossils. PIs oversee the following:

- Training of construction personnel;
- Monitoring and spot checks of geologic formations classified as Potential Fossil Yield Classification (PFYC) 5 or 4, and some PFYC 3 ranked strata;
- Evaluate paleontological discoveries made by Proponents' construction contractors; and
- Determine appropriate actions regarding significant finds with BLM paleontologists and archaeologists.

Training Contractors

When qualified paleontologists are not present during construction, Proponents' EIs and contractors will be responsible for reporting fossil discoveries. Prior to constructions Proponents will train contractors to do the following:

- Understand what a fossil represents;
- Recognize a fossil;
- Know the procedures to be followed when fossils are discovered; and
- Refrain from collecting fossils, except as part of an emergency recovery procedure.
-

Training will be conducted by a qualified paleontologist.

Areas to Be Monitored or Spot Checked

In the planning and surveying stages of pipeline project development, each geologic formation along pipeline routes will be ranked according to BLM PFYC. Following literature reviews, formations ranked PFYC 3 or higher will be field surveyed, as required. Spot checks during construction activities will be conducted according to the results disclosed by Proponents.

Unanticipated Discoveries of Paleontological Resources

Fossils likely to be encountered during construction include plant compressions and petrifications, mollusk shells, and isolated or fragmentary vertebrate remains. If fossils are encountered, they will be evaluated and addressed appropriately by PIs. There is a small possibility that scientifically significant remains of vertebrate fossils may be encountered in excavations in areas that are classified as PFYC 2 or less, but are underlain by fossil bearing formations.

Procedures at Time of Discovery of Unanticipated Paleontological Resources

In accordance with BLM IM 2009-11, if significant fossils are discovered, construction activity will cease in the immediate area of discovery, and the discovery will be immediately reported to Proponents' EI. The EI will ensure that the discovery is protected from damage and looting and will immediately report the discovery to Proponents' PI and the appropriate BLM office. Paleontologists will examine and record the paleontological resource and evaluate its significance to determine if additional mitigation is required. Construction activities will not resume in the immediate area of discovery until paleontologists concur that it can. Agencies may inform Proponents' PI of any required mitigation measures by telephone, with follow-up documentation by mail or email.

Recording Procedures for Unanticipated Paleontological Resources

Paleontological materials of scientific significance will be recorded using methods consistent with standard operating procedures, as detailed in BLM IM 2009-11. Scientifically significant fossils will be collected and curated into an acceptable museum or academic repository. Collection methods will depend on the fossil and its condition.

Emergency Salvage of Paleontological Resources

Unstable trench conditions and other unforeseen natural or work events could endanger paleontological resources discovered during construction of pipelines. In the event of imminent danger or destruction, Proponents will take prudent action to preserve as much paleontological information as possible. Salvage activities will follow standard procedures to the greatest extent possible, but human safety concerns may dictate less exact methods of material excavation.

Reporting

After completion of paleontological surveys, Proponents will report the findings, significance, and recommendations to the appropriate BLM office for review. If mitigation, and an excavation of more than one square meter is required, a paleontological excavation permit application will be filed with the appropriate BLM office.

Appendix L

Fire Prevention and Suppression Plan

Introduction

The purpose of the Fire and Prevention and Suppression Plan is to prevent and suppress fires during pipeline project construction. The plan covers responsibilities for suppressing fire ignitions and reporting emergencies. It delineates minimum requirements that should be followed by Proponents.

This plan is intended to be compatible with laws, regulations, plans, and policies of local, state, and federal agencies. Prior to construction activities, Proponents should confirm that all employees associated with their projects have been trained in the requirements and provisions of this plan. A copy of the plan will be kept on site for the duration of pipeline construction.

Objectives

The first objective of this plan is to provide an implementation strategy to facilitate immediate actions to prevent and suppress fires that may occur during pipeline construction. The plan establishes protocols and lines of communication for reporting fires and other emergencies that may occur within the ROW. The plan requires commitment to fire prevention, fire protection equipment, fire monitoring efforts, and personnel during periods of fire danger or other emergencies.

The second objective is to ensure adequate and appropriate provision of safety equipment and fire extinguishing equipment to facilitate firefighting, protect employees, and minimize damage to public and private property. Proponents will evaluate work locations to determine appropriate protection and safety requirements.

Responsibilities

Responsibility for fire suppression, management, and investigation lies with the jurisdictional agency, and the operation requirements of Proponents. Contractors are required to follow all applicable laws and regulations regarding fire prevention and suppression. All contractors will follow the requirements disclosed in this plan, with the addition of any project specific requirements.

The primary persons responsible for fire prevention and suppression during pipeline construction are described below:

Chief Inspector

The Chief Inspector is responsible for oversight of all activities along pipeline projects. Chief Inspectors are responsible for general construction operations, for ensuring all contractors adhere to this plan, and that all provisions and restrictions are implemented. Chief Inspectors will coordinate with federal, state, and local fire management personnel during periods of high or

sever fire conditions to ensure that permit conditions are met and that preventive measures are in place.

In addition, Chief Inspectors will be responsible for:

- Conducting site surveys to identify fire hazards;
- Developing fire protection strategies;
- Selecting and locating the correct type and number of firefighting apparatus, and making them accessible;
- Ensuring that fire equipment is inspected and maintained in good condition; and
- Consulting with local fire and sheriff departments.

Additional responsibilities include the following:

- Immediately reporting all uncontrolled fires to the nearest fire dispatch office and county dispatch;
- Conducting weekly inspection of tools, equipment, personal protective equipment, and first aid kits;
- Developing and maintaining a register of emergency equipment;
- Conducting weekly inspections of flammable fuels and explosives storage areas;
- Posting signs and fire rules at appropriate locations;
- Providing initial fire response and supervising suppression activities until relieved;
- Providing and gaining approval of site specific burn management plans;
- Providing weekly written burning and blasting schedules to the appropriate federal, state, and local fire control jurisdictions;
- Monitoring construction areas that may present safety issues;
- Ensuring regulatory compliance with storage and handling of hazardous substances;
- Ordering and dispatching hazardous substances and maintaining a registry;
- Establishing facilities to manage chemicals held on site, and maintaining MSDS;
- Ensuring appropriate storage of explosives;
- Training workers on the use, handling, and storage of hazardous substances; and
- Ensuring that employees are knowledgeable of this plan and follow its directives.

Fire Protection Agencies

Fire Protection Agencies are responsible for protecting the public from loss of life, property, or resources from fire. These agencies also enforce fire laws.

Emergency Notification

In the event of a fire, construction personnel on scene will notify the Chief Inspector and the appropriate fire dispatch centers immediately, while ensuring they are safe.

Emergency Fire Protocols

A major fire emergency is one requiring a coordinated response of one or more government levels, outside of pipeline contractors. When response is required, the Chief Inspector or person in charge will communicate with applicable response agencies and Proponents the circumstances of the emergency.

Fire danger rating is used by land management agencies to determine required fire prevention, control, and monitoring efforts. Based on fire danger ratings, certain activities may be restricted at the direction of the jurisdictional agency. Proponents or their contractors will be responsible for coordinating with jurisdictional agencies to ensure that their activities are appropriate for the fire restriction level.

Fire Precautions During Construction

There are areas of public lands that may be restricted from heavy equipment use for fire suppression. Proponents and their contractors will be aware of these locations, and they will seek the necessary approval from jurisdictional agencies prior these activities.

Blasting

Blasting sub-contractors will secure the required permits from applicable regulatory agencies. Following the required waiting periods after each shot, the blast area will be inspected for any indication of fire or fire hazard. Typically, explosives vaporize at the instant of detonation so there is no material left to be a source of concern. However, inspections will be conducted to ensure this is the case.

If blasting is allowed when fire danger is high, a two-person fire watch team will patrol each blast area for a period of one hour after ignition. All applicable equipment will be on-site and precautions will be followed by contractors in accordance with jurisdictional agency requirements.

Welding

During fire season, vegetation must be cleared at a minimum diameter of 30 feet around work areas when welding, cutting, or drilling of metal, unless the vegetation is watered to eliminate fire danger. Each welding crew will be equipped with fire suppression equipment, and all applicable fire restriction measures will be met.

Equipment Provisions

Contractors will develop lists of construction equipment to be used and kept on site. All equipment assigned to construction areas may be inspected by Authorized Officers, or other third party compliance inspectors prior to use. Equipment must be maintained in good operating order.

Fire extinguishers will be used in accordance with OSHA Standard 29 CFR 1910.157. Use of fire extinguishers by employees, residents, and visitors is voluntary, due to the danger to their personal safety. All extinguishers will be professionally inspected and tagged annually, or as required by regulation.

Spark Arrestors

Spark arrestors, in good working order, will be required for portable equipment such as chain saws and generators. Light trucks and cars will be required to operate with factory installed mufflers, or equivalent. Vehicles equipped with catalytic converters will be parked on areas cleared of vegetation.

Equipment Parking and Storage Areas

Equipment parking areas and small stationary engine sites will be cleared of all extraneous flammable materials. Gas and oil storage areas shall be cleared of extraneous flammable material and signed appropriately. Glass jug or bottles will not be used for gasoline or other flammable materials.

All discarded oil, oil filters, oily rags, or similar waste will be disposed of in approved and marked containers. Containers will be stored in approved locations, hauled away by licensed contractors, and disposed of at approved facilities.

Warning Devices

Highway flares, or other devices with open flames will not be allowed in project areas, due to fire danger. Only electric or battery operated warning devices will be used.

Warming and Cooking Fires

These activities will not be allowed

Smoking

Smoking is allowed only in areas designated by Chief Inspector. Smoking signs that are visible to all employees will be posted at designated areas, and they will be obeyed.

Refueling and Refueling Areas

All fuel trucks will be equipped with at least 35-pound ABC fire extinguishers. Fuel storage areas will be cleared of all extraneous flammable materials. Only approved and properly maintained containers will be used to store and transport flammable liquids.

Burning

Burning slash or other combustible debris will require an approved burn and smoke management plan, and a permit from the applicable regulatory agencies. If a burn is approved, the appropriate agencies will be notified 24 hours prior to its ignition.

Fire and EMS Equipment

Proponents and their contractors will coordinate with applicable regulatory agencies and fire authorities to ensure that they have the appropriate type and quantity of fire control equipment on-site. Based on this coordination, Proponents will design lists of equipment necessary for their project specific needs. The Chief Inspector will maintain required equipment and ensure that it is available in good working order, at all times.

Mandatory Training

Field Crew Training Requirements

All field crews must complete site specific fire prevention and suppression training, which will include the following:

- Chain of command and fire reporting process;
- Emergency contacts and numbers;
- Basic fire prevention behavior controls;
- Basic training and uses of hand tools, water backpacks, etc.;
- Specific actions and expectations when a fire occurs; and
- Evacuation procedures.

Record of the subject, date, and attendees at all trainings will be maintained.

Appendix M **Blasting Plan**

Scope of Blasting Project

Blasting may be required along the WPCI corridors. Proponents will only blast in areas where rock cannot be economically excavated by conventional means. Blasting could occur at any point along the ROW where impacts to other resources do not preclude the technique.

Types of Blasting

Blasting will be used primarily for trench excavation. However, blasting may also be required during ROW grading operations. The type of explosives used will be determined by geotechnical strength of underlying rock.

Location of Shots and Proximity to Existing Facilities

No blasting will occur within 10 feet, or an agency approved distance, of existing pipelines or other structures. All blasting adjacent to powerline ROWs will be conducted in a manner that will not cause damage to the adjacent property and facilities. Blast areas will be backfilled or covered by blasting mats and/or other material to protect nearby facilities, structures, highways, railroads, or significant natural resources.

Flyrock Control Plan

All shots will be carefully designed by licensed blasters to control flyrock. All hole loading activities will be supervised by licensed blasters. Licensed blasters will also communicate with their drillers to obtain geological information for each shot. Matting and/or padding will be used at the discretion of licensed blasters.

Monitoring, Reporting, and Controlling Ground Cracking and Displacement

It is not anticipated that blasting activities will cause any kind of ground displacement. Following blasts, the area will be examined for signs of ground cracking. Any indication of overbreak will be brought to the attention of the blaster and noted on the blast report. Shot patterns and/or loading will be adjusted to minimize or eliminate overbreak.

Explosives Storage and Transportation Procedures

Explosives storage and transportation will be outlined in Proponents' safety programs, and will follow the requirements of applicable state and federal regulations.

Environmental Concerns

All residents within 750 feet of blasts will be notified 24 hours prior to blasting. All necessary measures will be taken to exclude livestock and wildlife from blasting areas. Areas will be checked prior to blasting, and detonation will not be initiated until areas are clear.

Appendix N

Fugitive Dust Control Plan

Introduction

This fugitive dust control plan is designed to identify potential dust emission sources and provide guidance to construction and field personnel on measures to control the generation of fugitive dust during pipeline construction. EIs will be responsible for identifying all activities generating fugitive dust, implementing feasible control measures, and ensuring compliance with fugitive dust regulations.

Fugitive Dust Sources

Fugitive dust could be generated directly from pipeline installation and aboveground facility construction. The following construction activities have the potential to generate fugitive dust:

- Vehicle and motorized equipment movement on access roads;
- Vegetation removal;
- Topsoil removal;
- Cutting and filling;
- Trenching;
- Backfilling;
- Blasting;
- Track-out onto roads;
- Bulk material loading, hauling, and unloading;
- Use of material storage piles; and
- Use of parking, staging, and storage areas.

All areas of pipeline construction will be monitored for fugitive dust generation. Control measures will be used to suppress dust in areas of concern. A listing of potential fugitive dust control measures is discussed later in this appendix.

Proponents will identify potential water sources that may be used for the purposes of dust control during construction of their pipelines. Proponents will obtain all necessary water rights to withdraw from these sources.

Applicable Regulatory Requirements

The Wyoming air quality fugitive dust regulations are found in Chapter 3, Section 2, Subsection (f) of the WDEQ regulations.

Fugitive Dust Control Measures

Generation of fugitive dust during construction will be reduced through the application of appropriate control measures. The following abatement measures will be used where applicable:

- Apply water one or more times per day to affected unpaved roads, unpaved haul/access roads, and staging areas.
- Where appropriate, apply water/magnesium chloride mixture as a dust suppressant. The use of magnesium chloride will be restricted in sensitive vegetation areas, where alternative measures may be used.
- Reduce vehicle speeds on all unpaved roads, and unpaved haul/access roads. Proponents will set speed limits where necessary.
- Clean carry-out areas at paved road access points, a minimum of once every 48 hours.
- Cover all haul truck loads, or maintain at least six inches of freeboard space in each cargo compartment. Ensure that haul truck cargo compartments are constructed and maintained to minimize spillage and loss of materials. Haultruck loads of sand, gravel, solid trash, or other loose material will be covered.
- Apply water to active construction areas as needed. Areas will be pre-watered and soils maintained in a stabilized condition where equipment and vehicles will operate. Water disturbed soils to form a crust.
- For temporary work surfaces, during periods of inactivity, restrict vehicular access and comply with stabilized surface requirements.

Water trucks will be the primary means of dust abatement during construction. Water spray will be controlled so that over spraying and pooling will be minimized.

Inspection, Monitoring, and Recordkeeping

EIs will be primarily responsible for monitoring and enforcing implementation of needed dust control measures. EIs will also be responsible for making sure that dust control is effective and proper documentation is maintained. Construction personnel will be educated on the measures necessary for fugitive dust control.

Field inspections for dust control will occur daily. EIs will be responsible for recording the following information on a daily basis:

- Weather conditions (temperature, wind speed, direction, and precipitation);
- Number of water trucks in use;
- Cases where visible dust was at a concentration that required abatement measures be implemented;
- Condition of project soils (crusted, damp, or unstable);
- Condition of project access roads (crusted, damp, or unstable);
- Presence of track-out and when it was cleaned; and
- Overall status of dust control compliance.

The above information will be incorporated into EIs daily reports.

Appendix O

Traffic and Transportation Plan

Introduction

The Traffic and Transportation Plan is designed to:

- Describe how Proponents will use, improve, and maintain roads for construction of their pipeline projects; and
- Evaluate potential impacts of construction traffic at contractor yards, storage/staging yards, and compressor stations.

This plan also describes how Proponents will implement equipment access to and from their ROWs, drainage improvement procedures, dust control and maintenance measures, and abandonment and reclamation of roads.

After Proponents complete pipeline construction, roads will be restored to their original status, unless directed otherwise by applicable regulatory agencies and/or landowners.

Pipeline Road Crossings

Pipeline construction will require crossing paved and unpaved roads with varying levels of traffic. Crossing techniques will be determined by the appropriate regulatory authority. Typically, smaller unpaved roads are crossed by open trenching and restored back to original status. Detours, or other measures, will be implemented to permit traffic flow during construction. Proponents must coordinate road closures and detours with federal, state, and local transportation departments and emergency responders. Major paved highways, interstate highways, railroads, paved roads, and unpaved roads where traffic cannot be interrupted will be crossed by boring under the roadbed. Pipelines will be buried to depths required by applicable road crossing permits and approvals, and will be designed to withstand anticipated loads.

Construction Traffic

Vehicle movements will generally occur during daylight hours. Primary movements will occur between 5:00 and 6:00 in the morning and evening. Typically, work weeks are five days, but may be extended to six or seven depending on construction scheduling. During boring, directional drilling, and hydrostatic testing, work will be conducted 24-hours a day until the process is complete.

In some instances, access roads will need to be graded, bladed, or widened to allow for use by large trucks. Landowner or land management agency permission will be obtained prior to making any modifications to roads. Individual permission will be required from landowners in project areas.

Watering for dust control may be necessary during grading and hauling operations. On federal lands all road improvements will be in accordance with agency handbooks and manuals. At a

minimum, roads will be constructed using the crown-and-ditch method. After construction, all roads will be repaired and returned to their original status, unless directed otherwise by applicable land management agencies or landowners. It is not anticipated that construction of new roads will be required to access the WPCI Corridors.

Wear and tear may occur to unpaved roads during pipeline construction. Roads that are being used by construction crews will be inspected daily. Vehicular use of unpaved roads may be temporarily halted in the case of excessively wet soil conditions. Proponents will make appropriate repairs to roads during construction.

Wear and tear impacts to paved surfaces will be minimal. Proponents will ensure that roads are inspected and maintained in safe condition throughout construction. To limit wear and tear, Proponents will adhere to all state and county vehicle weight limit regulations. Additionally, all vehicle length, width, and height regulation will be adhered to, or special use permits will be obtained.

All vehicles associated with pipeline construction will be parked within their construction ROW boundary, ETWS, or within the boundaries of staging yards, storage yards, or other approved project areas. Personnel will not park vehicles outside of designated areas. Also, personnel will not park within 500 feet of a wetland or waterbody, unless EIS determines there is no reasonable alternative. In that instance, spill prevention measures will be on-site.

Proponents will place signs at appropriate locations to direct traffic. All signs on federal lands will require approval by the applicable agency.

Dust Control

Fugitive dust can be generated from vehicle and equipment movement on access roads. To minimize the generation of fugitive dust, Proponents will implement the measures described in Appendix N of this POD.