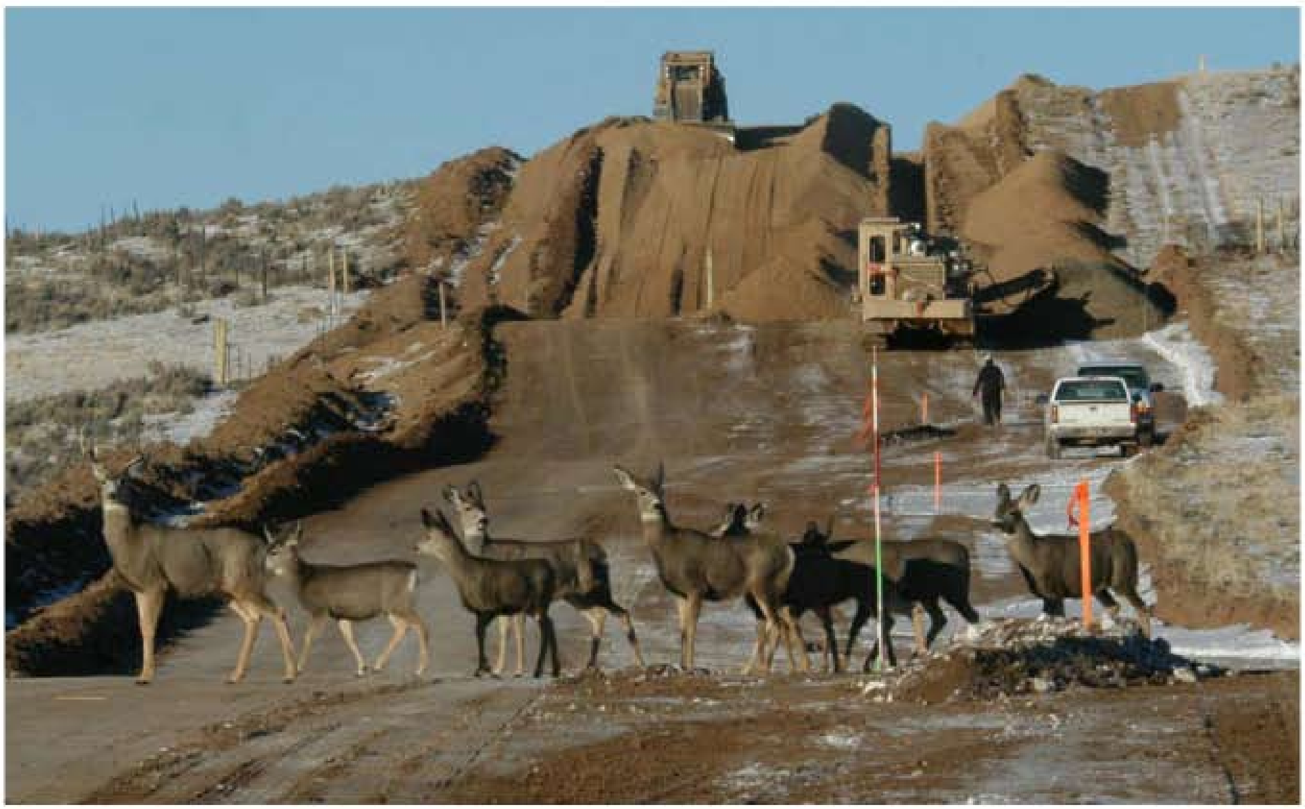
United States Department of the Interior
Bureau of Land Management
Cooperating Agency: U.S.D.A. Forest Service

Overland Pass Natural Gas Liquids Pipeline Draft Environmental Impact Statement

Wyoming State Office - Rawlins Field Office

March 2007



MISSION STATEMENT

It is the mission of the Bureau of Land Management to sustain the health, diversity, and productivity of the public lands for the use and enjoyment of the present and future generations

BLM/WY/PL-07/012+5101

AS-06-01095

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FOR INTERNAL REVIEW ONLY

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Wyoming State Office
P.O. Box 1828
Cheyenne, Wyoming 82003-1828

TAKE PRIDE IN AMERICA

In Reply Refer To:

1790 (030)
WYW-166510

FEB 15 2007

Dear Reader:

This Draft Environmental Impact Statement (DEIS) for the Overland Pass Natural Gas Liquids Pipeline Project (OPP) is submitted for your review and comment. The DEIS has been prepared to analyze the potential impacts of granting a Right-of-Way (ROW) for the purpose of constructing and operating a 760 mile natural gas liquids (NGL) pipeline as applied for by the Overland Pass Pipeline Company, LLC (Overland Pass). The proposed pipeline would originate in Opal, Wyoming and terminate in Hayes, Kansas. Approximately 16 percent of the total pipeline would be located on Federal lands administered by the Bureau of Land Management (BLM) and the U.S.D.A Forest Service (USDA-FS) in Wyoming and Colorado. No Federal lands in Kansas would be affected.

Printed copies of the DEIS are available for review at the BLM and USDA-FS offices listed below. The DEIS is also available for review and downloading from the BLM website at: www.blm.gov/wy/st/en/info/NEPA/rfodocs/overland_pipeline.html

BLM
Wyoming State Office
5353 Yellowstone Road
Cheyenne, WY 82009

BLM
Rawlins Field Office
1300 North Third
Rawlins, WY 82301

BLM
Rock Springs Field Office
280 Highway 191 North
Rock Springs, WY 82901

BLM
Kemmerer Field Office
312 Highway 189 North
Kemmerer, WY 83101

USDA- FS
Pawnee National Grasslands
2150 Center Ave., Bldg E
Fort Collins, CO 80526
or
660 O Street
Greeley, CO 80631

USDA-FS
Ashley National Forest
Flaming Gorge
Ranger District
25 West Highway 43
Manila, UT 84046

All public meetings or other involvement activities for the OPP project will be announced to the public by BLM at least 15 days in advance through public notices, media news releases, web site announcements, or mailings. BLM will not hold any formal public hearings on this project.

This DEIS analyzes three alternatives in detail: the Proposed Action, the No Action alternative and the Southern Energy Corridor alternative. Under the Proposed Action, the BLM would accept the proponent's the activities and infrastructure as described in their ROW application and grant ROW across the Federal lands. This alternative proposes that Overland Pass would construct and operate a 760-mile pipeline to transport NGL from Opal, Wyoming, to Conway, Kansas. Much of the route would follow existing energy pipeline corridors.

The No Action Alternative for this project would mean that the ROW application would be rejected by the BLM and the ROW across Federal lands in Wyoming and Colorado would not be granted to Overland Pass. The third alternative, the Southern Energy Corridor – Copper Ridge Bypass deviates from the applicant's proposed route described in their application and follows a different existing pipeline near Rock Springs, Wyoming. The BLM's preferred alternative is the Proposed Action.

If you wish to submit comments on the DEIS, we request that you make them as specific as possible. Comments are more helpful if they include suggested changes, sources, or methodologies. Comments that contain only opinions or preferences will be considered and included as part of the BLM decisionmaking process, although they will not receive a formal response.

Comments will be accepted for forty-five (45) days following the Environmental Protection Agency's (EPA) publication of its Notice of Availability in the Federal Register. The BLM can best use your comments and resource information if received within the review period. Please send written comments to:

Bureau of Land Management
Attention: Tom Hurshman, Project Manager
2465 South Townsend Avenue
Montrose, CO 81401

You may also submit comments electronically at the address shown below. Please put "Overland Pass Pipeline" in the subject line.

Overland_Pipeline_WY@blm.gov

This DEIS was prepared pursuant to the National Environmental Policy Act (NEPA) and other regulations and statutes to address the environmental and socioeconomic impacts which could result if this project is implemented. The DEIS is not a decision document. Its purpose is to inform the public and interested parties of impacts associated with implementing the proponent's pipeline proposal associated with obtaining a ROW grant to construct and operate a pipeline across Federal lands. This DEIS also provides information to other regulatory agencies for use in their decisionmaking process for other permits required for implementation of the project.

Comments including names and street addresses of respondents will be available for public review in their entirety at the BLM Rawlins Field Office at the address shown above during regular business hours (7:45 a.m. to 4:30 p.m.), Monday through Friday, except holidays. Individual respondents may request confidentiality. If you wish to withhold your address from public review or from disclosure under the Freedom of Information Act, you must state this prominently at the beginning of your written comment. Such request will be honored to the extent allowed by law. All submissions from organizations or businesses and from individuals identifying themselves as representatives or officials of organizations or businesses will be made available for public inspection in their entirety.

A copy of this DEIS has been sent to affected Federal, State and local government agencies, and to those persons who have indicated that they wish to receive a copy of the DEIS. Copies of the DEIS are available for public inspection at the BLM and USFS offices listed above.

If you have any questions regarding the NEPA process used to prepare the DEIS or need additional information regarding the project, please contact Tom Hurshman at (970) 240-5345.

Sincerely,

Donald A. Simpson

for Robert A. Bennett
State Director

ABSTRACT

ENVIRONMENTAL IMPACT STATEMENT
OVERLAND PASS PIPELINE PROJECT

(X) Draft ( ) Final

Lead Agency:	The United States Department of the Interior Bureau of Land Management Rawlins Field Office
Project Location:	Lincoln, Sweetwater, Carbon, Albany, and Laramie counties, Wyoming; Larimer, Weld, Morgan, Logan, Washington, and Yuma counties, Colorado; and Cheyenne, Rawlins, Thomas, Sheridan, Gove, Trego, Ellis, Russell, Barton, Ellsworth, Rice, and McPherson counties, Kansas
Address Comments on this EIS to:	Bureau of Land Management Attention: Chuck Valentine, Realty Specialist 1300 North Third Street Rawlins, WY 82301
or Email:	Overland_Pipeline_WY@blm.gov

The Bureau of Land Management (BLM) has received a proposal from the Overland Pass Pipeline Company LLC (Overland Pass), a subsidiary of ONEOK and William's Field Service Company, LLC (Williams), to construct and operate an approximately 760-mile-long pipeline that would begin at existing facilities in Opal, Wyoming, and end at existing facilities in Conway, Kansas. The project would transport up to 150,000 barrels per day of natural gas liquids.

The project would cross federal lands managed by the BLM and U.S. Department of Agriculture Forest Service (USFS). The project would affect land in three BLM field offices in Wyoming: the Kemmerer, Rock Springs, and Rawlins field offices. The project also would cross National Forest System lands within the Flaming Gorge National Recreational Area in Wyoming and the Pawnee National Grassland in Colorado.

The pipeline would be approximately 14-inch-diameter between Opal and Echo Springs, Wyoming, and 16-inch-diameter from Echo Springs, Wyoming, to Conway, Kansas. Overland Pass would construct the new pipeline within a temporary 75-foot-wide construction right-of-way (ROW). After construction and reclamation, the permanent ROW would be 50 feet wide, centered on the pipeline.

In addition to the pipeline, the project would require additional aboveground facilities including 2 pump stations (and 1 future pump station), 7 meter stations, 11 pigging facilities, and 144 mainline valves at 92 sites. The pipeline and aboveground facilities would be constructed in accordance to federal pipeline safety regulations.

New electrical service would be required for the pump and meter stations, though the powerlines would be permitted under a separate permitting process.

Three alternatives were considered in detail. The No Action Alternative is required by the National Environmental Policy Act as a baseline against which other action alternatives can be analyzed.

Under this alternative, the BLM ROW grant to construct the pipeline and its ancillary facilities as requested by Overland Pass would not be authorized. Consequently, the No Action Alternative represents the continuation of the existing conditions.

The Proposed Action would cause the surface disturbance of approximately 8,317 acres during construction. Of this total, approximately 4,619 acres would be maintained for permanent ROW and associated aboveground facilities. To minimize environmental impacts, the Proposed Action would be co-located with other existing utilities for approximately 623.7 miles (82 percent) of its length. The Proposed Action would cross federal lands managed by the BLM and USFS.

Under the Southern Energy Corridor – Copper Ridge Bypass Alternative, the project would be the same as the Proposed Action except that approximately 25 miles of the proposed pipeline route in the Green River, Wyoming area would be shifted further south. The alternative route would primarily be located within an existing, BLM-designated utility window, thereby increasing the amount of co-located pipeline. While most aspects of this alternative (e.g., aboveground facility requirements) would be the same as the Proposed Action, this alternative would be 4.8 miles longer then the Proposed Action and would be located in steeper terrain, causing potential difficulties for construction and restoration.

The BLM Preferred Alternative is the Proposed Action.

Executive Summary

Introduction

Overland Pass Pipeline Company LLC (Overland Pass), a subsidiary of ONEOK and Willliam's Field Service Company, LLC, is proposing to construct an approximately 760-mile-long, natural gas liquids (NGL) pipeline that will begin at existing facilities in Opal, Wyoming, and end at existing facilities in Conway, Kansas. The project would transport up to 150,000 barrels per day (bpd) of NGL.

The project would cross federal lands managed by the Bureau of Land Management (BLM) and U.S. Department of Agriculture Forest Service (USFS). The project would affect land in three BLM field offices in Wyoming: the Kemmerer, Rock Springs, and Rawlins field offices. The project also would cross National Forest System (NFS) lands within the Flaming Gorge National Recreational Area (FGNRA) in Wyoming and the Pawnee National Grassland (PNG) in Colorado.

Based on the nature and scope of the Overland Pass project, preparation of an environmental impact statement (EIS) is required under the National Environmental Policy Act (NEPA). The BLM is the primary agency responsible for granting rights-of-way (ROWs) across federal lands and is the designated lead federal agency responsible for the preparation of this EIS. The USFS is a cooperating federal agency.

The project would consist of the pipeline plus ancillary aboveground facilities needed to support the pipeline. The pipeline would be approximately 14-inch-diameter between Opal and Echo Springs, Wyoming, and 16-inch-diameter from Echo Springs, Wyoming, to Conway, Kansas. Overland Pass would construct the new pipeline within a temporary 75 foot-wide construction ROW. After construction and reclamation, the permanent ROW would be 50 feet wide, centered on the pipeline.

Aboveground facilities would include 2 pump stations (and 1 future pump station), 7 meter stations, 11 pigging facilities, and 144 mainline valves at 92 sites. The pipeline and aboveground facilities would be constructed in accordance with federal pipeline safety regulations. New electrical service would be required for the pump and meter stations, though the powerlines would be permitted under a separate permitting process.

Overland Pass' Proposed Action includes applicant-proposed protection measures for environmental resources, including soil resources, water resources, hazardous materials, fisheries, and wildlife resources. In addition, the BLM and USFS have developed specific mitigation measures to further reduce the environmental impact that would otherwise result from construction of the project. The BLM Authorized Officer will determine which mitigation measures would be attached as conditions to any Record of Decision.

Three alternatives were considered in detail: the Proposed Action, the No Action Alternative, and the Southern Energy Corridor – Copper Ridge Bypass Alternative. The No Action Alternative is required by the NEPA as a baseline against which other action alternatives can be analyzed. For this project, the No Action Alternative would not authorize the ROW grant and, consequently, the project would not be constructed.

Under the Southern Energy Corridor – Copper Ridge Bypass Alternative, the project would be the same as the Proposed Action except that approximately 25 miles of the proposed pipeline route in the Green River, Wyoming, area would be shifted further south. The alternate route primarily would be located within an existing, BLM-designated utility window, thereby increasing the amount of co-located pipeline. While most aspects of this alternative (e.g., aboveground facility requirements) would be the same as the Proposed Action, this alternative would be 4.8 miles longer then the Proposed Action and would be located in steeper terrain, causing potential difficulties for construction and restoration.

The BLM preferred alternative is the Proposed Action.

Alternative Impact Summary

The following sections summarize the major findings of the EIS by alternative.

Proposed Action

The Proposed Action would include the construction and operation of the Overland Pass NGL pipeline and its associated aboveground facilities with the implementation of applicant-proposed protection measures. The following discussion outlines the environmental effects of construction and operation of a 760-mile NGL pipeline permitted under this alternative.

Air Quality

While the construction of the proposed pipeline and ancillary facilities would result in intermittent and short-term fugitive emissions, these emissions are not expected to cause or substantially contribute to a violation of an applicable ambient air quality standard.

No operational impacts to air quality are expected. Air emissions during pipeline operations would be minimal since the pumps are electric and thereby do not produce emissions.

Geology and Geological Hazards

Project construction and operation would not alter existing topography because the construction ROW would be re-contoured to match the adjacent terrain. The project would not interfere with oil and gas drilling or any current active or planned mining operations. Because the pipeline primarily would be located adjacent to existing pipelines, construction of the Proposed Action would not further reduce access to underlying mineral resources (e.g., coal, trona). Due to the routing of the pipeline and engineering specifications, it is unlikely that the pipeline would sustain substantial damage from geological hazards. Further, the construction and operation of the project would not worsen unfavorable geological conditions in the area. The project would cross approximately 462 miles of geological formations that contain vertebrate fossils, and noteworthy occurrences of invertebrate and plant fossils. Overland Pass has conducted pre-construction surveys and would monitor pipeline construction to protect or recover important fossils.

Soils

Much of the Proposed Action would cross soils that have shallow topsoil, are susceptible to erosion, have poor reclamation potential, or are prone to compaction and rutting. Approximately 2,903 acres of prime farmland or potentially prime farmland on highly productive agricultural soils would be affected by the proposed project. Measures to minimize soil impacts include erosion control measures, topsoil separation and handling procedures, remediation of compacted soils, and application of revegetation seed mixtures appropriate for the climate and land uses. Soil impacts from a pipeline spill would be short-term and low in magnitude due to the volatile nature of NGL.

Water Resources

The Proposed Action would require 97 perennial waterbody crossings. With the exception of the South Platte River, which would be crossed by the horizontal directional drill (HDD) crossing method, all other perennial waterbodies would be open-cut in accordance with the general procedures identified in the project-specific Plan of Development (POD) and site-specific waterbody crossing plans. While impacts to most waterbody crossings would be mitigated by the implementation of the project-specific POD, open cut crossings at the Hams Fork, Blacks Fork, Green, and North Platte rivers would have the potential to cause increased turbidity and sedimentation; channel and bank modifications, and associated impacts to fisheries and other habitats. For hydrostatic testing and dust control purposes, Overland Pass would use approximately 18.3 and 46.6 acre-feet of water from the Colorado and Platte river basins, respectively. An additional 34.0 acre-feet of water would be withdrawn from private wells and 32.7 acre-feet from the storage ponds at the ONEOK

Bushton Plant for these uses. Impacts to both surface water and groundwater quality resulting from a pipeline spill would be short-term and low in magnitude due to the volatile nature of NGLs.

The project temporarily would affect 81 acres of wetlands during construction. In general, wetland and riparian habitat would be allowed to regenerate to the original cover type, with the exception of 0.5 acre of scrub-shrub and forested wetlands that would be maintained in an herbaceous state for pipeline inspection and maintenance purposes. While the recovery of most herbaceous wetlands are expected within 2 to 3 years, recovery of scrub-shrub and palustrine forested wetlands could take a decade or more.

Vegetation

During construction, the project would disturb approximately 4,759 acres of grasslands, 769 acres of shrublands, 2,472 acres of agricultural land, 61 acres of forest, and 81 acres of wetlands. Overland Pass would implement the project-specific POD to stabilize and re-seed disturbed areas to restore wildlife and livestock uses. While the recovery of grassland, shrubland, and forest vegetation would begin to re-establish within 2 years, full recovery of these native vegetation communities would be long-term (greater than 5 years) because of limited rainfall and high evaporation rates. Agricultural and wetland communities would recover more quickly. On federal lands, revegetation success would be monitored for several years by BLM and USFS staff. Proposed mitigation to address the control and spread of weeds along the ROW includes the washing of construction equipment and continued weed control along the ROW for the life of the project.

Wildlife, Aquatic Resources, Special Status Species

The Proposed Action would disturb wildlife habitat, displace individual animals, and contribute to habitat fragmentation by creating 130 miles of new ROW and expanding 630 miles of existing pipeline corridors. The proposed pipeline route would cross crucial big game habitat in Wyoming and Colorado. Measures to minimize wildlife impacts include the co-location of the Proposed Action with existing ROWs where possible, avoidance of construction within designated big game wintering areas during seasonal closure periods, installation of ditch plugs with ramps that would allow animals to cross over open ditch sections and escape from the trench, limitations on the amount of open trench allowed at any given time, spatial and timing restrictions near active raptor nests, and reclamation of disturbed areas.

Overland Pass' proposed construction schedule would overlap with the breeding season for many migratory birds. Overland Pass would conduct pre-construction nesting surveys and would abide by appropriate buffer zones and seasonal construction restrictions to prevent or minimize impacts on nesting raptors. For other migratory birds species, particularly ground nesting species, nests (eggs and young) could be lost because of surface disturbance, but would not result in long-term or population-level impacts.

Overland Pass would construct across 34 different waterbodies in Wyoming, Colorado, and Kansas that support game fish species, including 12 that support warmwater species and 22 that support coldwater species. While impacts to most waterbody crossings would be mitigated by the implementation of the project-specific POD, open-cut crossings at the Hams Fork, Blacks Fork, Green, and North Platte rivers would have the potential to cause increased sedimentation; channel and bank modification, with subsequent changes to channel morphology; and impacts to fisheries. At the Green River, impacts to kokanee salmon and brown trout would occur due to sedimentation affecting eggs and larvae. Water depletions in the Colorado and Platte river basins associated with hydrostatic testing and dust control are an issue for federally listed species that occur downstream. Pipeline construction also could affect amphibian species and their habitat in wetlands, streams, ponds, and seasonally flooded areas crossed by the route. Because NGLs dissipate quickly and have low environmental persistence, impacts to fisheries and amphibians resulting from a pipeline spill would be short-term and low in magnitude.

Fifteen federally threatened and endangered species and two candidate species were identified as potentially occurring within the project area. As required under Section 7 of the Endangered Species Act, a draft Biological Assessment was prepared for the project to determine whether the Proposed Action is likely to affect any federally listed species. The project also could affect 45 BLM-sensitive species, nine USFS sensitive species, and 22 state listed species. These species were evaluated in the Biological Report/Biological Evaluation, currently being finalized by the BLM and USFS.

Impacts to terrestrial special status species would include direct mortality, displacement, nest abandonment, the long-term loss or alteration of potential breeding and foraging habitats, and increased incremental habitat fragmentation until native vegetation became reestablished. Construction through Preble's meadow jumping mouse habitat is an issue for this federally listed species, but the U.S. Fish and Wildlife Service (USFWS) would require mitigation measures to protect this species. For aquatic species, impacts could result from sedimentation, alteration of stream and bank habitat, and water depletions. Water depletions in the Colorado and Platte river basins associated with hydrostatic test and dust control water withdrawals are an issue for federally listed species that occur downstream, however the USFWS would require mitigation for water depletions in the Colorado and Platte river basins. Trenching of Hams Fork and Blacks Fork rivers would result in long-term adverse impacts to habitat for BLM-sensitive fish species (flannelmouth sucker, bluehead sucker, and roundtail chub) and may result in population level decline for one or more of these species.

With the exception of the BLM-sensitive fish species in Hams Fork and Blacks Fork rivers where adverse impacts are anticipated, the combination of Overland Pass' proposed protection measures (as defined in the POD and its project-specific *Conservation Measures Plan*) and additional BLM- and USFWS-identified mitigation would prevent or minimize potential impacts to special status species.

Land Use and Aesthetics

The primary land uses crossed by the Proposed Action would be rangeland and agricultural lands. A total of 4,619 acres would be dedicated to pipeline utility uses for the project life. Of this area, 9.6 acres would underlie aboveground facilities (pump stations, meter stations, pigging facilities, valves, and permanent access roads). The remainder of the land commitment would be for the operational pipeline ROW. During operations, the majority of previous land uses would continue unencumbered along the pipeline ROW, although forest land would be removed and the placement of aboveground facilities would not be allowed on the permanent ROW for safety reasons. The Proposed Action would conform to existing BLM and USFS land use plans.

The project generally would be located in remote rural areas of Wyoming, Colorado, and Kansas, and would be located adjacent to exiting pipeline utility corridors over nearly its entire route, thereby minimizing land use impacts. The proposed pipeline centerline would be located within 50 feet of 40 buildings. Overland Pass would determine if these buildings were occupied structures prior to construction. Traffic, noise, and dust impacts would occur to area residences and businesses during construction.

Overland Pass would limit delays and damage to state and federal highways and heavily used county roads by boring beneath them. Smaller roads would be trenched, which would cause short-term delays. Construction of the Proposed Action would utilize a variety of secondary roads. Implementation of Overland Pass' *Transportation and Traffic Management Plan* and identified mitigation would minimize transportation impacts.

The project would be consistent with BLM Visual Resource Management (VRM) criteria and Scenery Management System (SMS) for the USFS. Aboveground facilities would be painted with a color(s) that conform to visual resource criteria. While temporary noise impacts may occur during construction, noise impacts during operations would be minimal due to the use of electric pumps and would be limited to the vicinity of the pump and meter stations.

Cultural Resources

Cultural resource surveys have been conducted along the construction work areas associated with the Proposed Action. To date, these surveys identified 308 cultural resource sites in Wyoming, 66 in Colorado, and 47 in Kansas within the survey area. To date, 123 sites in Wyoming, 30 sites in Colorado, and 6 sites in Kansas have been recommended, or are officially eligible for listing on the National Register of Historic Places (NRHP). Potential adverse effects to identified NRHP-eligible sites would be mitigated prior to pipeline construction. Unanticipated discoveries of cultural resources would be protected as described in the project-specific unanticipated discoveries plan. Therefore, all impacts to NRHP-eligible cultural resources from project construction would be mitigated.

Native American Concerns

The BLM invited tribal officials from 22 identified Native American tribes to participate in two informational meetings and three site visits. The purpose of these meetings was to discuss the Proposed Action, visit selected archaeological sites that were thought to have traditional, cultural, or religious importance to the tribes, solicit any concerns the tribes may have regarding tribal resources in the proposed project area, and discuss the Native American consultation process. Native American consultation regarding potential impacts to NRHP-eligible cultural resources, traditional cultural places (TCPs), or places of cultural, traditional, or religious importance currently is taking place between the BLM and tribal representatives. The BLM intends to continue consultation throughout the environmental review and construction phase of the Proposed Action.

Social and Economic Conditions

Overland Pass proposes to employee between 325 and 650 workers to construct the pipeline and aboveground facilities. Overland Pass estimates that 80 percent of the workforce would consist of non-local personnel. The project would be completed using five separate workforces (spreads), with two spreads in Wyoming, one in Colorado, and two in Kansas. The dispersed construction would reduce the number of workers requiring temporary housing in the vicinity of pipeline work areas. In Wyoming and Colorado, demands for temporary housing would remain relatively constant due to the constant turnover of similar energy projects in the region. However, temporary housing could be more limited in rural areas of Kansas, since this region has not seen recent investment in temporary housing attributable to energy development.

Short-term demands for public services, particularly emergency medical response, would increase. Long-term demands for public services would not occur because of the small operational workforce. Local communities would receive short-term benefits from worker goods and services expenditures, and long-term benefits from property taxes. For the first year of operation, Overland Pass estimates that $10 million ($1.5 million, $990,000 in Colorado, and $7.5 million in Kansas) would be generated in property and ad valorem local taxes. These tax revenues typically would be used by local and state governments for infrastructure improvements such as roads, schools, and health facilities, and to meet other needs of the community.

Overland Pass would acquire land for its pipeline through easement agreements with private landowners. Potential impacts on land values from construction of a new pipeline are highly site-specific. Permanent structures could not be built over the pipeline, but existing land uses, such as livestock grazing, could continue as before. There would be no disproportionate economic or public safety effects on minority or low-income communities because of the construction and operation of the Proposed Action.

Public Safety

The Proposed Action would be constructed in compliance with U.S. Department of Transportation (USDOT) pipeline materials and construction standards for hazardous liquid pipelines. Where the Proposed Action was in a utility corridor with other pipelines, the proposed pipeline typically would be offset a minimum distance of 50 feet from adjacent pipelines, which greatly reduces the risk of pipeline damage from any repair activities on adjacent pipelines. After construction, Overland Pass must initiate a pipeline integrity management plan, which includes the identification of pipeline segments that could affect High Consequence Areas (HCAs). The portions of the pipeline that could affect HCAs must undergo periodic integrity assessments at a minimum of every 5 years.

NGLs are highly volatile and flammable liquids. Historical incident rates indicate that the probability of a pipeline accident is low. However, an accident could result in fire or explosion. As part of its safety program, Overland Pass would consult with local emergency responders regarding the potential hazards associate with NGLs.

No Action Alternative

The No Action Alternative represents the continuation of the existing conditions. Under this Alternative, the BLM ROW grant to construct the pipeline and its ancillary facilities as requested by Overland Pass would not be authorized. While the No Action Alternative would eliminate the environmental impacts identified in this EIS, it also would deny market access to the 150,000 bpd of NGLs the proposed pipeline would transport. The following discussion outlines the environmental effects of the No Action Alternative.

Air Quality

The project area would not experience intermittent and short-term fugitive emissions associated with Overland Pass pipeline construction. Existing air quality conditions would be unaffected.

Geology and Geological Hazards

No project-related disturbance would occur to geological resources. Impacts would continue at present levels as a result of natural conditions and existing development in the project area. Authorized regional oil and gas drilling or any current active or planned mining operations would continue. NGLs associated with expanding regional oil and gas development would require an alternative method of transportation from the area. Important paleontological resources along the proposed pipeline route would not be recovered for scientific study nor would these same resources be potentially damaged by pipeline construction activities.

Soils

No project-related disturbance would occur to soils. Impacts would continue at present levels as a result of natural conditions and existing development in the project area.

Water Resources

No project-related disturbance would occur to water resources. Impacts would continue at present levels as a result of natural conditions and existing development in the project area.

Vegetation

No project-related disturbance would occur to vegetation. Impacts would continue at present levels as a result of natural conditions and existing development in the project area.

Wildlife, Aquatic Resources, Special Status Species

No project-related disturbance would occur to wildlife, fisheries, or special status species. Impacts would continue at present levels as a result of natural conditions and existing development in the project area.

Land Use and Aesthetics

No project-related disturbance would occur to land uses and aesthetics. Impacts would continue at present levels as a result of natural conditions and existing development in the project area.

Cultural Resources

No project-related disturbance would occur to cultural resources. Impacts would continue at present levels as a result of natural conditions and existing development in the project area. Additional knowledge of local or regional prehistory of the project area that would have been obtained through data recovery would not be collected.

Native American Concerns

Under the No Action Alternative, the project would not be constructed. As a result, none of the potential impacts to NRHP-eligible cultural resources, TCPs, or places of traditional, cultural, or religious importance to the tribes as identified for the Proposed Action would occur.

Social and Economic Conditions

Under the No Action, the project would not be constructed. As a result, short-term impacts to temporary housing and emergency services would not occur. Local and county governments would not receive payroll taxes, taxes on goods and services, and ad valorem property taxes, estimated to be valued at over $10 million in the first year of operation. Private landowners would not receive compensation for easement agreements with Overland Pass.

Public Safety

No project-related disturbance would occur to public safety. Impacts would continue at present levels as a result of natural conditions and existing development in the project area.

Southern Energy Corridor – Copper Ridge Bypass Alternative

Pipeline construction and operation would be the same as the Proposed Action except that approximately 25 miles of the proposed pipeline route in the Green River, Wyoming, area would be shifted further south. The alternative route primarily would be located within an existing, BLM-designated utility window. The following discussion outlines the environmental effects that would result from the construction and operation of a NGLs pipeline permitted under this alternative.

Air Quality

While the construction of the proposed pipeline and ancillary facilities would result in intermittent and short-term fugitive emissions, these emissions are not expected to cause or substantially contribute to a violation of an applicable ambient air quality standard.

No operational impacts to air quality are expected. Air emissions during pipeline operations would be minimal since the pumps are electric and thereby do not produce emissions.

Geology and Geological Hazards

Project construction and operation would not alter existing topography because the construction ROW would be re-contoured to match the adjacent terrain. The project would not interfere with oil and gas drilling or any current active or planned mining operations. Because the pipeline primarily would be located adjacent to existing pipelines, construction of the Proposed Action would not further reduce access to underlying mineral resources (e.g., coal, trona). Due to the routing of the pipeline and engineering specifications, it is unlikely that the pipeline would sustain substantial damage from geological hazards. Further, the construction and operation of the project would not worsen unfavorable geological conditions in the area. Geological formations along the Southern Energy Corridor – Copper Ridge Bypass Alternative were classified as either Condition 1 or Condition 2 and are comparable to the Proposed Action through this same segment. Compared to the Proposed Action, the project would cross an additional 4.8 miles of geological formations that potentially contain vertebrate fossils, and noteworthy occurrences of invertebrate and plant fossils. Overland Pass has conducted pre-construction surveys and would monitor pipeline construction to protect or recover important fossils.

Soils

The alternative would cross soils that have shallow topsoil, are susceptible to erosion, have poor reclamation potential, and are prone to compaction and rutting. Compared to the Proposed Action, there would be 2.1 fewer acres of prime farmland or potentially prime farmland on highly productive agricultural soils affected.

Measures to minimize soil impacts include erosion control measures, topsoil separation and handling procedures, remediation of compacted soils, and application of revegetation seed mixtures in appropriate for the climate and land uses. Soil impacts from a pipeline spill would be short-term and low in magnitude due to the low probability of a spill and the volatile nature of NGL.

Water Resources

The Southern Energy Corridor – Copper Ridge Bypass Alternative would require the crossing of two additional waterbodies compared to the Proposed Action. Perennial waterbody crossings would be open-cut in accordance with the general procedures identified in the project-specific POD and site-specific waterbody crossing plans. While impacts to most waterbody crossings would be mitigated by the implementation of the project-specific POD, open cut crossings at the Hams Fork, Blacks Fork, Green, and North Platte Rivers would have the potential to cause increased sedimentation; channel and bank modification, with subsequent changes to channel morphology; and impacts to fisheries. When compared to the same section of the Proposed Action, this alternative would require an estimated additional 0.9 acre-feet of Colorado River Basin water for hydrostatic testing and dust control purposes due to the increased length of the pipeline route. Water depletions in the Colorado and Platte river basins are an issue for federally listed species that occur downstream. Impacts to both surface water and groundwater quality resulting from a pipeline spill would be short-term and low in magnitude due to the low probability of a spill and the volatile nature of NGLs.

Compared to the Proposed Action, the alternative would not substantially change the amount of wetlands affected during construction. Wetland and riparian habitat would be allowed to regenerate to the original cover type, with the exception of scrub-shrub and forested wetlands that would be maintained in an herbaceous state. While the recovery of most herbaceous wetlands are expected within 2 to 3 years, recovery of scrub-shrub and palustrine forested wetlands could take a decade or more.

Vegetation

Compared to the Proposed Action, this alternative would disturb 4.8 miles of additional vegetation. Overland Pass would implement the project-specific POD to stabilize and re seed disturbed areas to restore wildlife and livestock uses. While the recovery of grassland, shrubland, and forest vegetation would begin to re-establish within 2 years, full recovery of these native vegetation communities would be long-term (greater than 5 years) because of limited rainfall and high evaporation rates. Agricultural and wetland communities would recover more quickly. On federal lands, revegetation success would be monitored for several years by BLM and USFS staff. Proposed mitigation to address the control and spread of weeds along the ROW includes the washing of construction equipment and continued weed control along the ROW for the life of the project.

Wildlife, Aquatic Resources, Special Status Species

The Southern Energy Corridor – Copper Ridge Bypass Alternative would disturb wildlife habitat, displace individual animals, and contribute to habitat fragmentation by creating 29.8 miles of new ROW and expanding 1.0 mile of existing pipeline corridors. Like the Proposed Action in this area, this alternative does not cross crucial big game habitat in Wyoming. Measures to minimize wildlife impacts include the co-location of this alternative with existing ROWs where possible, avoidance of construction within designated big game wintering areas during seasonal closure periods, installation of ditch plugs with ramps that would allow animals to cross over open ditch sections and escape from the trench, limitations on the amount of open trench allowed at any given time, spatial and timing restrictions near active raptor nests, and reclamation of disturbed areas.

Overland Pass' proposed construction schedule would overlap with the breeding season for many migratory birds. Overland Pass would conduct pre-construction nesting surveys and would abide by appropriate buffer zones and seasonal construction restrictions to prevent or minimize impacts on nesting raptors. For other migratory birds species, particularly ground nesting species, nests (eggs and young) could be lost because of surface disturbance, but would not result in long-term or population-level impacts.

This alternative would cross the same waterbodies as the Proposed Action in Wyoming that support game fish species. Water depletions in the Colorado and Platte river basins associated with hydrostatic testing and dust control are an issue for federally listed species that occur downstream. Impacts to fisheries resulting from a pipeline spill would be short-term and low in magnitude due to the low probability of a spill and the volatile nature of NGL.

The impacts of this alternative would be similar to those discussed for the Proposed Action. Increased impacts to special status cliff obligate species potentially would result from the implementation of this alternative. No additional perennial streams with special status aquatic species would be crossed by the Southern Energy Corridor – Copper Ridge Bypass Alternative.

Land Use and Aesthetics

The primary land uses crossed by the Southern Energy Corridor – Copper Ridge Bypass Alternative would be rangeland. Compared to the Proposed Action, a total of 2.3 additional acres would be dedicated to operational pipeline ROW for the project life, with no additional land required for aboveground facilities (pump stations, meter stations, pigging facilities, valves, and permanent access roads). During operations, the majority of previous land uses would continue unencumbered along the pipeline ROW, although any forested land would be removed and the placement of aboveground facilities would not be allowed on the permanent ROW for safety reasons. The Proposed Action would conform to existing BLM and USFS land use plans.

The project generally would be located in remote rural areas of Wyoming, Colorado, and Kansas, and would be located adjacent to exiting pipeline utility corridors over nearly its entire route, thereby minimizing land use impacts. The alternative's pipeline centerline would be located within 500 feet of 11 more occupied structures than the comparable segment of the Proposed Action. Overland Pass would confirm that these buildings were occupied structures prior to construction. Traffic, noise, and dust impacts would occur to area residences and businesses during construction.

Overland Pass would limit delays and damage to state and federal highways by boring beneath them. Smaller roads would be trenched, which would cause short-term delays. Construction of the Southern Energy Corridor – Copper Ridge Bypass Alternative would utilize a variety of secondary roads. Implementation of Overland Pass' *Transportation and Traffic Management Plan* and identified mitigation would minimize transportation impacts.

The project would be consistent with BLM VRM criteria and SMS criteria for the USFS. Aboveground facilities would be painted with a color(s) that conform to visual resource criteria. While temporary noise impacts may occur during construction, noise impacts during operations would be minimal due to the use of electric pumps and would be limited to the vicinity of the pump and meter stations.

Cultural Resources

At this time, Class III cultural resource surveys have not been completed along the Southern Energy Corridor – Copper Ridge Bypass Alternative route. However, a Class I survey of previously recorded sites identified nine sites within 100 feet of this alternative route. Of these nine sites, two are recommended as not eligible for the NRHP, five are unevaluated, one is eligible for the NRHP and one is an NRHP-eligible linear feature (though the affected segment is unevaluated). If the Southern Energy Corridor – Copper Ridge Bypass Alternative was selected, 5 sites within 100 feet of the segment of the Proposed Action that are classified as not eligible for the NRHP located would be eliminated. Potential adverse effects to identified NRHP-eligible sites would be mitigated prior to pipeline construction. Unanticipated discoveries of cultural resources would be protected as described in the project-specific cultural resources unanticipated discoveries plan. Therefore, all impacts to NRHP-eligible cultural resources from project construction would be mitigated.

Native American Concerns

If the Southern Energy Corridor – Copper Ridge Bypass Alternative were chosen, Native American consultation would follow the same protocol as the Proposed Action. Potential impacts to NRHP-eligible sites, TCPs, or places of traditional, cultural, or religious importance to the tribes, and measures to avoid or mitigate potential impacts, would be addressed as described above for the Proposed Action.

Social and Economic Conditions

Construction of the Southern Energy Corridor – Copper Ridge Bypass Alternative would not alter the number of employees or number of spreads required to construct the pipeline and aboveground facilities compared to the Proposed Action. Overland Pass estimates that 80 percent of the workforce would consist of non-local personnel. The entire project would be completed using five separate workforces (spreads), with two spreads in Wyoming, one in Colorado, and two in Kansas. The dispersed construction would reduce the number of workers requiring temporary housing in the vicinity of pipeline work areas. In Wyoming and Colorado, demands for temporary housing would remain relatively constant due to the constant turnover of similar energy projects in the region. However, temporary housing could be more limited in rural areas of Kansas, since this region has not seen recent investment in temporary housing attributable to energy development.

Short-term demands for public services, particularly emergency medical response, would increase. Long-term demands for public services would not occur because of the small operational workforce. Local communities would receive short-term benefits from worker goods and services expenditures, and long-term benefits from property taxes. Compared to the Proposed Action, estimated taxes would increase slightly in Sweetwater County due to the 4.8 mile increase in pipeline length. Taxes for other counties would remain unchanged from the Proposed Action. Tax revenues typically would be used by local and state governments for infrastructure improvements such as roads, schools, and health facilities, and to meet other needs of the community.

Overland Pass would acquire land for its pipeline through easement agreements with private landowners. Potential impacts on land values from construction of a new pipeline are highly site-specific. Permanent structures could not be built over the pipeline, but existing land uses, such as livestock grazing, could continue as before. There would be no disproportionate economic or public safety effects on minority or low-income communities because of the construction and operation of the Proposed Action.

Public Safety

The Southern Energy Corridor – Copper Ridge Bypass Alternative would be constructed in compliance with USDOT pipeline materials and construction standards for hazardous liquid pipelines. Where the alternative was in a utility corridor with other pipelines, the proposed pipeline typically would be offset a minimum distance of 50 feet from adjacent pipelines, which greatly reduces the risk of pipeline damage from any repair activities on adjacent pipelines. After construction, Overland Pass must initiate a pipeline integrity management plan, which includes the identification of pipeline segments that could affect HCAs. The portions of the pipeline that could affect HCAs must undergo periodic integrity assessments at a minimum of every 5 years.

NGLs are highly volatile and flammable liquids. Historical incident rates indicate that the probability of a pipeline accident is low. However, an accident could result in fire or explosion. As part of its safety program, Overland Pass would consult with local emergency responders regarding the potential hazards associate with NGLs.

Cumulative Impacts

The primary cumulative impact study area consists of an existing utility corridor that the Overland Pass pipeline would traverse throughout its length. Up to eight existing natural gas, refined products, and NGL pipelines occupy this corridor, as well as Interstate 80, railroads, fiber optic cables, and low voltage transmission lines. Also included in this cumulative study area are pipeline projects under review or under construction. Cumulative impacts were based on existing (through 2006) and foreseeable project surface disturbances that occur within 1 mile of the proposed Overland Pass pipeline route.

The cumulative area of previous surface disturbance within the study area from existing utility projects from Opal, Wyoming, to Conway, Kansas, is approximately 222 square miles. The Overland Pass pipeline would contribute about 5 percent of this total, and other new pipeline projects from 1 to 2 percent.

Air Quality

Overland Pass and Overthrust Wamsutter projects could overlap very briefly in the same work area. Cumulative fugitive dust (particulate) increases may occur where these two projects are using the same access road system to construct their projects. Both projects would follow state and local requirements for dust control on roads and excavated surfaces.

Overland Pass proposes to use electrical pumps at pump station locations in Wyoming, with a future pump station in Kansas. By using electrical pumps, Overland Pass would not directly contribute to hydrocarbon emissions from its facilities. Indirectly, the electricity used by Overland Pass would be produced by coal-fired and natural gas-fired power plants within the region. It is anticipated that demands for project electrical power would be met by existing and new generating capacity. The specific locations of new generating capacity presently are not known.

Geology and Geological Hazards

Cumulative impacts related to geological hazards are not anticipated.

The proposed pipeline route, and many of those pipelines that parallel the proposed pipeline route, cross various mineral resources, including oil and gas producing reservoirs, trona mineral, and coal depsotits. Although the presence of existing and proposed pipelines would preclude extraction of gravel and other minerals, the proposed pipeline route is primarily adjacent to other pipelines and therefore represents a very small increase in the cumulative effects. Oil and gas production would not be affected since it could be accomplished through well pad offsets and directional drilling.

Construction of the Overland Pass, Enterprise Western Pipeline, and the Overthrust Wamsutter Pipeline would contribute approximately 1.7, 0.3, and 0.4 square miles, respectively, of surface and trench disturbance in Condition 1 units. In areas with high potential for important fossils, pre-construction paleontological surveys, trench monitoring, and fossil recovery have been, or would be completed for approved projects. Construction of the Overland Pass pipeline would contribute to the cumulative exposure and potential loss of scientifically valuable fossils, but construction monitoring would ensure that new scientific information would be collected and added to the existing body of knowledge.

Soils

The existing utility projects in the cumulative study area that have been installed for 10 years or more have been partially or completely restored to pre-existing conditions. Cumulative impacts where this line parallels older utilities would be minimal with the effective implementation of best management practices and mitigations. More recent utility projects may be in the process of rehabilitation. Potential cumulative impacts could occur where these disturbances overlap. These impacts would be highly localized and primarily limited to the time of construction and 3 to 5 years following construction with successful reclamation. Cumulative impacts would be minimized, however, with the effective implementation of erosion control and restoration measures. Some soils on previously re-vegetated ROWs may be re-disturbed by construction on adjacent new pipeline ROWs in the future. Pipeline projects scheduled for 2006 and 2007 construction (Overthrust Wamsutter Pipeline, Enterprise Western Expansion) would disturb 3.8 and 0.3 square miles where these projects parallel the proposed Overland Pass pipeline. The Proposed Action would disturb approximately 10.6 square miles in this utility corridor.

Potential cumulative erosion impacts could occur where pipeline construction disturbance areas overlap or are located near each other between reference point (RP) 0 and RP 329. Best management practices for soil management and protection would be applied across all ownerships for these pipeline projects. Revegetation mixtures would be applied that are appropriate to soil conditions and expected future uses (grazing, wildlife habitat). As a consequence, the potential for cumulative erosion increases caused by one or more of these projects is low.

The primary sensitive soils cumulative impacts issue is the maintenance of agricultural soil productivity where these soils have been disturbed by multiple pipelines. To minimize cumulative impacts to agricultural soils, surface drainage should be restored across pipeline construction ROWs and soil compaction relieved in haylands and pasture. The Overland Pass, Overthrust Wamsutter Pipeline, and Enterprise Western Expansion projects have prepared, or would be required to prepare plans to restore and monitor irrigated soils. Application of these plans would ensure that agricultural productivity would be maintained indefinitely.

Cumulative soil mixing and compaction could occur on other sensitive soils (shallow, wet, rocky, saline) during construction. Where these pipeline corridors overlap and compaction is not mitigated, a reduction in infiltration and runoff could result. These effects would be addressed on a site-specific basis by the various projects and would be minimized by proper implementation of soil protection measures and mitigations for decompaction.

Water Resources

While Overland Pass would use groundwater to hydrostatically test their pipeline, other existing and proposed pipeline and other utility projects do not consume groundwater. No cumulative impacts on groundwater volume or quality from these projects are expected.

Overland Pass proposes to directionally drill the South Platte River and, consequently, there would be no cumulative sediment increases at this crossing. The proposed pipeline projects would follow the Federal Energy Regulatory Commission (FERC) procedures and/or BLM stipulations for open-cut crossing smaller perennial streams and intermittently flowing waterbodies. In most cases, the site-specific erosion control and bank stabilization measures would prevent cumulative sedimentation increases where the projects cross the same stream channel at the same location.

There are existing channel and bank stability problems associated with other pipelines that share the pipeline corridor proposed for use by Overland Pass on the Hams Fork, Blacks Fork, Green, and Medicine Bow rivers. While the BLM would require additional mitigation to minimize these issues on the Green River, the remaining crossings are on private lands where the BLM does not have the authority to require an alternative crossing method or additional mitigation.

Based on currently available schedules, the various projects would not be conducting concurrent hydrostatic tests at the same locations and, consequently, these projects would not cause cumulative water withdrawal volume reductions on the Green, North Platte, and Laramie rivers.

Cumulative impacts to wetlands would occur where the Overthrust Wamsutter Pipeline, Enterprise Western Expansion, and Overland Pass projects would be co-located between Overland Pass' RP 0 and RP 329 at the Cheyenne Hub. The natural gas pipeline projects would apply FERC wetland crossing procedures and/or BLM stipulations, and would be subject to conditions contained in U.S. Army Corps of Engineers 404 permits and state water quality permits. None of the wetlands crossed would be permanently filled or drained. Therefore, cumulative effects to wetlands would be minor and short-term because of rapid recovery by grasses, sedges, and other herbaceous species.

Vegetation

The total amount of vegetation that may be affected by all of the proposed projects is substantial but still relatively small compared to the abundance of similar habitat in the project area. While these projects potentially could fragment vegetation habitat, this effect would be minimal because no densely forested areas would be crossed by the proposed pipelines. This effect would be further reduced by the co-location of many of these projects with existing ROWs. All of the projects would include mitigation measures designed to minimize the potential for long-term erosion, increase the stabilization of site conditions, and in many cases control the spread of noxious weeds, thereby minimizing the degree and duration of the cumulative impact of these projects.

Wildlife, Aquatic Resources, Special Status Species

The removal of forest land and shrubland habitats would result in a long-term habitat reduction because the regeneration of woody species is slow in the project region. Construction and operation of the proposed Overland Pass pipeline would incrementally add to the width of habitat discontinuities within existing utility corridors, which may affect the movement of species dependent on these habitats and cumulatively would reduce carrying capacity for woodland- and shrubland-dependent species.

The Overland Pass pipeline would cross elk, mule deer, and pronghorn critical or crucial winter habitats in both Colorado and Wyoming, respectively. The incremental surface disturbance contributed by the Overland Pass pipeline to the cumulative projects would represent a small fraction (less than 1 percent) of the individual big game ranges crossed.

Overthrust Wamsutter, Enterprise Western Expansion, and Overland Pass pipeline projects would cross five streams (Blacks Fork, Bitter Creek, Green River, North Platte River, and Medicine Bow River) in Wyoming that contains game fisheries. Cumulative waterbody construction impacts would not occur in the same season. Channel armoring measures, and sediment control measures proposed by Overland Pass for these crossings would reduce downstream sedimentation on fish habitats. Pre-existing bank and channel instability associated with previous pipeline projects are contributing to increased sedimentation downstream of the utility corridor at some crossing. Measures recommended to reduce erosion and channel scouring would benefit fisheries.

Habitat for special status species, including bald eagle, sage grouse, black-footed ferret, prairie dog, mountain plover, and burrowing owl, occurs within the cumulative affects area. Pipeline projects would be subject to construction timing restrictions and other mitigation measures to avoid impacts to these species and their habitats.

Within the cumulative affects area, bald eagles use winter roosts and occasionally nest along the Green, North Platte, and Medicine Bow rivers, Rock Creek, and Laramie River. Pipeline crossings for the Overthrust Wamsutter Pipeline and Overland Pass pipelines would be subject to construction timing restrictions and other mitigation measures to avoid the loss of roost or nest trees. Therefore, these projects would not contribute to cumulative impacts to bald eagle winter or nesting habitat, nor would construction activities coincide with bald eagle critical use periods along these rivers.

Land Use and Aesthetics

The Overland Pass, Enterprise Western Expansion, and Overthrust Wamsutter pipeline projects incrementally would add to the acreage of aboveground oil and gas pipelines in Wyoming. While installation of new pipelines in an existing corridor incrementally would reduce the area available for future development, use of established utility corridors concentrates cumulative land use impacts. With the exception of a rural residential area between Cheyenne and Laramie, Wyoming (Rockies Express West and Overland Pass), the Overland Pass, Overthrust Wamsutter, and Enterprise Western Expansion projects would not cumulatively affect residential land uses. The existing pipeline corridor between Laramie and Cheyenne pre-dates the subdivision of existing rangeland in this area, and owners and new buyers were informed of the pipeline easements in their deeds.

The Overland Pass and the Overthrust Wamsutter pipelines both cross the Continental Divide Trail at RP 178.5, but construction periods would not overlap at this location. Both projects would maintain recreational user access along this trail by providing short detours, and restoring existing roads and trails.

The majority of the proposed pipeline route across federal lands where visual management standards have been established are already highly modified by existing utility projects. Two Class II VRM areas are located between RP 0 to RP 1.6 and between RP 59.2 to RP 60.4. Since no other proposed projects would be co-located with the proposed pipeline route at these locations, cumulative visual resource impacts caused by additional pipeline construction would not occur.

The Echo Springs and Laramie pump stations would be located in rural locations, and 1 mile or more from any residential locations. Each pump station would be sited at a new location, and therefore would not interact cumulatively with other nearby industrial sources.

Cultural Resources/Native American Consultation

Records searches and pedestrian surveys have been completed in Wyoming, Colorado, and Kansas. There is a potential for sites eligible to the NRHP to be affected by pipeline projects constructed adjacent to each other in the same utility corridor. Effects on eligible sites by the individual projects would be determined independently through reviews by the BLM and the State Historic Preservation Officers of the individual states. In some instances, the cumulative surface disturbance of multiple projects in the same corridor may require rerouting of one or more projects to minimize surface disturbance effects on cultural resources.

Social and Economic Conditions

Overland Pass, Overthrust Wamsutter, Rendezvous, and Kanda Lateral pipeline projects may be constructed in a similar timeframe. Workforces for these projects may place demands on local infrastructure (temporary housing, other services). The potential for the maximum cumulative workforce likely would occur in the vicinity of Green River and Rock Springs, Wyoming. Based on current high levels of oil and gas activity in this region, it is expected that there may be a shortage of temporary housing for non-local workers and increased demands on local emergency services.

Pipeline projects would follow transportation plans to manage traffic. The BLM and USFS have defined minimum standards for maintenance of existing roads, and construction and operation of any new permanent roads on BLM- or USFS-administered land.

The construction workforces for projects occurring in the same timeframe would contribute to short-term increases in local sales tax revenues and long-term increases in the property tax base. Few long-term employees would be needed to operate these new pipelines, and therefore no long term impacts to employment and demands on local services are expected.

Public Safety

No cumulative operational safety impacts are expected among pipelines and other facilities located in the same general utility corridor because of the spacing between pipelines, the depth of soil cover, and requirements to meet USDOT Minimum Federal Safety Standards in Title 49 Code of Federal Regulations Part 192 and Part 95.

Overland Pass Master Acronyms List

°F	degrees Fahrenheit
μg/m^3	micrograms per cubic meter
ACEC	Area of Critical Environmental Concern
ACHP	Advisory Council on Historic Preservation
AIRFA	American Indian Religious Freedom Act of 1978
amsl	above mean sea level
ANF	Ashley National Forest
AOPL	Associations of Pipe Lines
APE	area of potential effect
AQCC	Air Quality Control Commission
ARPA	Archaeological Resources Protection Act of 1979
ARS	Agricultural Research Service
BA	biological assessment
BE	Biological Evaluation
BLM	Bureau of Land Management
BMP	Best Management Practices
BO	Biological Opinion
bpd	barrels per day
BR	Biological Report
CAA	Clean Air Act
CAAA	Clean Air Act Amendments
CBM	coal bed methane
CBNG	coal bed natural gas
CDOW	Colorado Division of Wildlife
CDP	Census-designated Place
CDPHE	Colorado Department of Public Health and Environment
CDT	Continental Divide National Scenic Trail
CDTA	Continental Divide Trail Alliance
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERCLIS	CERCLA Information System
CFR	Code of Federal Regulations
cfs	cubic feet per second
CGS	Colorado Geological Survey
CO	carbon monoxide
CR	County Road
CRP	Conservation Reserve Program
CWA	Clean Water Act of 1972
dBA	decibels on the A-weighted scale
EA	Environmental Assessment
EAC	Environmental Advisory Committee
EI	Environmental Inspector
EIS	Environmental Impact Statement
EO	Executive Order
EPA	U.S. Environmental Protection Agency
ERP	Emergency Response Plan
ESA	Endangered Species Act
FBE	fusion bond epoxy
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
FGNRA	Flaming Gorge National Recreation Area
FLPMA	Federal Land Policy and Management Act of 1976
FR	Federal Register

Acronym List (Continued)

FSA	Farm Service Agency's
FSM	USFS Manual
GLO	General Land Office
H_2S	hydrogen sulfide
HABS	Historic American Buildings Survey
HAER	Historic American Engineering Record
HAP	hazardous air pollutant
HCA	high consequence areas
HDD	Horizontal Directional Drilling
HEL	highly erodible lands
hp	horsepower
I-25	Interstate 25
I-70	Interstate 70
I-80	Interstate 80
ISO	International Standard Operations
KAQR&S	Kansas Air Quality Regulations and Statues
KDA	Kansas Department of Agriculture
KDHE	Kansas Department of Health and Environment
KDWP	Kansas Department of Wildlife and Parks
KGS	Kansas Geological Survey
KSHS	Kansas State Historical Society
kV	kilovolt
LAER	Lowest Achievable Emission Rate
L_{dn}	day-night (average sound) level
L_{eq}	equivalent sound level
LRMP	Land and Resource Management Plan
MACT	Maximum Achievable Control Technology
MAOP	maximum allowable operating pressure
MAPL	Mid-America Pipeline Company, LLC
mg/l	milligram per liter
mg/m^3	milligrams per cubic meter
MIS	Management Indicator Species
MLA	Mineral Leasing Act
MLRA	Major Land Resource Areas
MLV	mainline valve
MMI	Modified Mercalli Index
MOA	Memorandum of Agreement
MOP	maximum operating pressure
MOU	Memorandum of Understanding
MUID	Map Unit Identifier
mya	million years ago
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Grave Protection and Repatriation Act of 1990
NEPA	National Environmental Policy Act
NESHAP	National Emission Standards for Hazardous Air Pollutants
NFS	National Forest System
NGHA	Non-game Habitat Areas
NGL	Natural Gas Liquids
NHPA	National Historic Preservation Act of 1986
NNSR	Nonattainment New Source Review
NO_2	nitrogen dioxide
NO_3	nitrate
NOI	Notice of Intent
NO_x	oxides of nitrogen

Acronym List (Continued)

NPA	National Programmatic Agreement
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
NPS	National Park Service
NRCS	Natural Resources Conservation Service
NRG	Natural Resource Group
NRHP	National Register of Historic Places
NSA	Noise Sensitive Area
NSPS	New Source Performance Standards
NSR	New Source Review
NWI	National Wetland Inventory
NWIS	National Water Information System
NWP	Nationwide permits
O_3	ozone
OAHP	Office of Archaeology and Historic Preservation
OHV	off-highway vehicle
ONRW	Outstanding Natural Resource Water
OPS	Office of Pipeline Safety
Overland Pass	Overland Pass Pipeline Company LLC
PAM	Polyacrylamide
Pb	lead
PEM	palustrine emergent
PFO	palustrine forested
PLJV	Playa Lakes Joint Venture
PM_{10}	particulate matter with an aerodynamic diameter of 10 microns or less
$PM_{2.5}$	particulate matter with an aerodynamic diameter of 2.5 microns or less
PNG	Pawnee National Grassland
POD	Plan of Development
ppm	parts per million
ppmw	parts per million by weight
PSD	Prevention of Significant Deterioration
psig	pounds per square inch, gauge
PSS	palustrine scrub-shrub
RMP	Resource Management Plan
ROD	Record of Decision
ROW	right-of-way
RP	reference point
RV	recreational vehicle
SCADA	Supervisory Control and Data Acquisition
SEIS	Supplemental Environmental Impact Statement
SHPO	State Historic Preservation Office
SIA	Special Interest Area
SMS	Scenery Management System
SO_2	sulfur dioxide
SO_X	sulfur oxides
SPCC	Spill Prevention, Control, and Countermeasures Plan
spp.	species (plural)
STATSGO	State Soil Geographic
SWPPP	Storm Water Pollution Prevention Plan
tcfy	trillion cubic feet per year
TCP	Traditional Cultural Property
tpy	tons per year
TSS	Total Suspended Solids
TWA	Temporary Workspace Area

Acronym List (Continued)

U.S.	United States
USACE	U.S. Corps of Engineers
USBOR	U.S. Bureau of Reclamation
USC	United States Code
USDA	U.S. Department of Agriculture
USDOE	U.S. Department of Energy
USDOT	U.S. Department of Transportation
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
V	Volt
VRM	Visual Resource Management
WAQS&R	Wyoming Air Quality Standards and Regulations
WDEQ	Wyoming Department of Environmental Quality
WGFD	Wyoming Game and Fish Department
Williams	Willliam's Field Service Company, LLC
WSGS	Wyoming State Geological Survey
WYCRO	Wyoming Cultural Records Office
WYNDD	Wyoming Natural Diversity Database

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1.0 PURPOSE AND NEED

1.1 Introduction

On November 8, 2005, Overland Pass Pipeline Company LLC (Overland Pass), a subsidiary of ONEOK and Willliam's Field Service Company, LLC (Williams), submitted on application to the Bureau of Land Management (BLM) to construct an approximately 760-mile-long, natural gas liquids (NGL) pipeline that would begin at its existing facilities in Opal, Wyoming, and end at its existing facilities in Conway, Kansas (**Figure 1.1-1**). The pipeline would be approximately 14-inch-diameter between Opal and Echo Springs, Wyoming, and 16-inch-diameter from Echo Springs, Wyoming, to Conway, Kansas. The pipeline would transport up to 150,000 barrels per day (bpd) of NGL. Three electric pump stations would move the NGL at a maximum pressure of 1,440 pounds per square inch, gauge (psig). Pump stations are proposed near Echo Springs and Laramie, Wyoming, and near WaKeeney, Kansas. The pipeline would have manual or self-actuating shut-off valves at regular intervals, as well as pigging facilities and meter stations. The project is referred to as the Overland Pass Pipeline Project (Proposed Action). Overland Pass would construct the new pipeline within a temporary 75-foot-wide construction right-of-way (ROW). After construction and reclamation, the permanent ROW would be 50 feet wide, centered on the pipeline. The ownership of land crossed by the project is identified in **Table 1.1-1**. Overland Pass proposes to begin construction of the project in July 2007 with an in-service date by the fourth quarter of 2007.

Table 1.1-1 Ownership of Land Crossed by the Overland Pass Pipeline Project (miles)[1]

	Federal – BLM	Federal – USFS	Tribal	State	Local	Private	Total
Wyoming	98.8	2.0	0.0	21.4	3.9	201.1	327.2
Colorado	0.0	22.4	0.0	11.3	0.4	137.7	171.8
Kansas	0.0	0.0	0.0	0.0	0.0	260.9	260.9
Pipeline Total	**98.8**	**24.4**	**0.0**	**32.7**	**4.3**	**599.7**	**759.9**

[1]Slight discrepancies in total values due to rounding.

Consistent with federal regulations found at 43 Code of Federal Regulations (CFR) 2804.25, the BLM is required to complete a National Environmental Policy Act (NEPA) analysis before issuing a ROW grant. Due to the nature and scope of the proposed project, the BLM decided to prepare an environmental impact statement (EIS).

Beginning in Wyoming, the proposed Overland Pass proposed pipeline route would traverse the state in a west-to-east direction across the lower half of the state. To the extent feasible, the pipeline would be routed from Opal to Echo Springs along various existing utility or pipeline corridors. From Williams' existing facilities in Echo Springs, the proposed pipeline route would run in a southeasterly direction, paralleling the existing Southern Star Pipeline, and traverse to the south of Cheyenne, Wyoming, before entering Colorado.

From the Colorado border, the proposed pipeline route would continue southeasterly into Kansas, paralleling the existing Southern Star Pipeline to the south of WaKeeney, Kansas. It would then follow an existing ROW to an existing BP Amoco (Wattenberg) pipeline to Bushton, Kansas. A new ROW would need to be cleared from Bushton to Mitchell, Kansas, where it would then follow a Williams pipeline corridor to Conway, Kansas. At Bushton and Conway, the transported NGL would be processed and distributed through the existing transportation infrastructure to consumer markets in the Midwest and Texas Gulf of Mexico coast. Approximately 82 percent of the proposed 760-mile-long pipeline would be co-located with existing pipeline corridors.

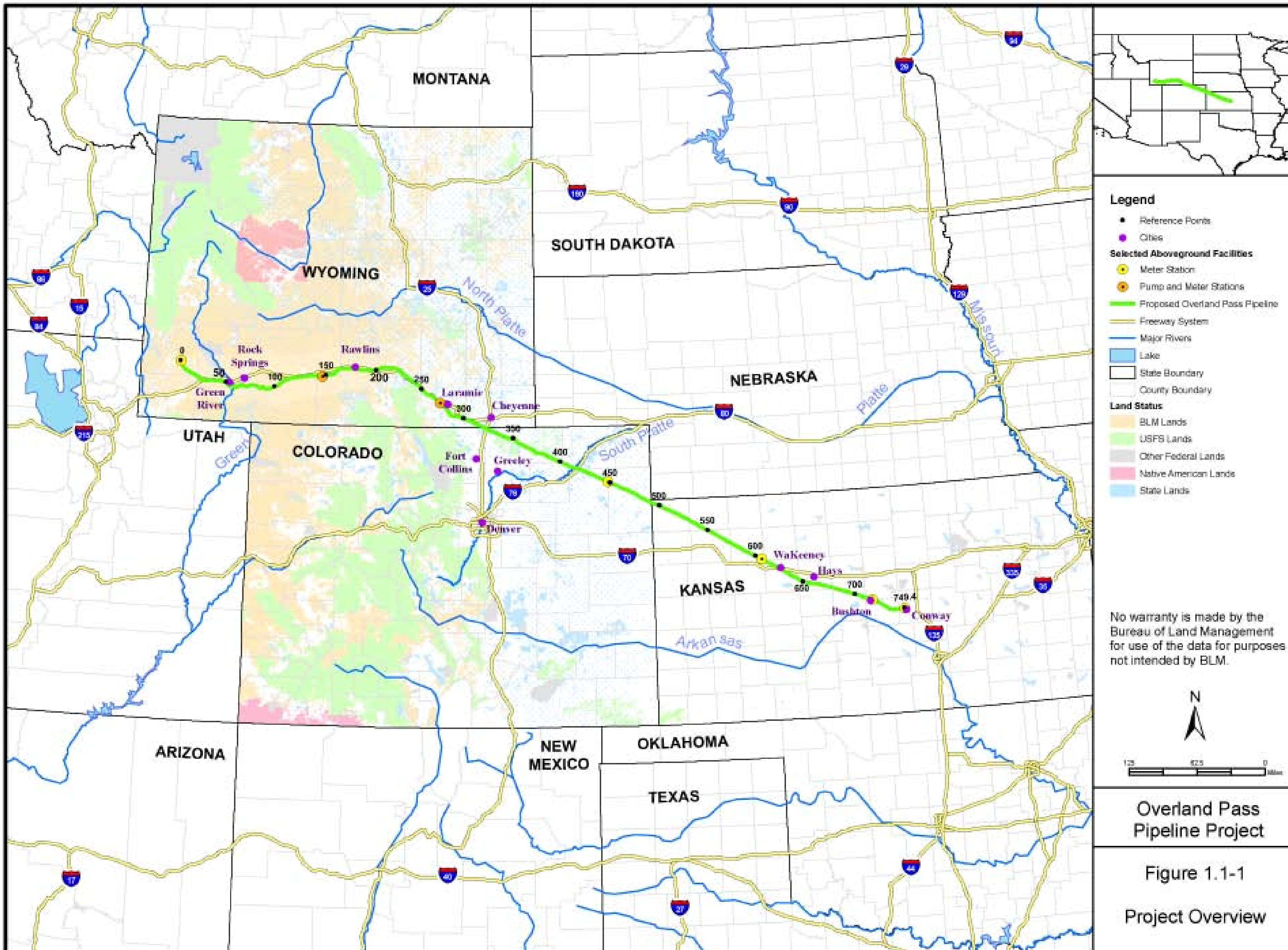

Figure 1.1-1

Project Overview

Overland Pass' proposed pipeline would cross federal lands managed by the BLM and U.S. Department of Agriculture Forest Service (USFS) as shown in **Table 1.1-1**. The BLM is the federal land management agency that regulates and manages public domain lands. The Project would affect public land administered by three BLM field offices in Wyoming: the Kemmerer, Rock Springs, and Rawlins Field Offices. The USFS administers National Forest System (NFS) lands of two units that would be affected: the Flaming Gorge National Recreational Area (FGNRA) in Wyoming and the Pawnee National Grassland (PNG) in Colorado. While the BLM would prepare and issue the ROW grant for the project components sites on federal lands, grant terms and conditions would be included for public and NFS lands.

The Proposed Action also would require the construction of pump stations, meter stations, pigging facilities, as well as the installation of numerous valves. Pump stations would be placed along the pipeline at locations necessary to maintain adequate flow through the pipeline. Meter stations would measure the amount of product transported and delivered by the pipeline. Valves would be installed and located as dictated by the hydraulic characteristics of the pipeline, as required by federal regulations, and with the intent to maximize public safety and environmental protection as part of Overland Pass's integrity management practices. Electrical powerlines would be constructed to provide power for the new pump stations and remotely activated valves located along the proposed pipeline route.

The Overland Pass pipeline would require electrical powerlines and facility upgrades in multiple locations along its route. Local power providers would be responsible for obtaining any necessary approvals or authorizations from federal, state, and local governments for new electrical powerlines and facility construction activities required for the project. The permitting process for the electrical facilities is an independent process and no applications have been submitted for the electrical facilities to date. The construction and operation of these powerlines, however, are considered a connected action under NEPA, and are therefore evaluated within this EIS. The siting and construction assumptions set forth in this EIS would be subject to verification and/or correction by other regulatory agencies upon the agency's receipt of any necessary electrical powerline and/or facility ROW or other permit requests. The electrical powerlines described in this EIS are not included in Overland Pass's ROW Grant application for approval by the BLM.

1.2 Purpose and Need for the Project

NGLs are hydrocarbon liquids that are associated with the production and processing of natural gas. As natural gas production increases, typical NGL production also increases. When natural gas is removed from the ground, it is compositionally different than what is transported through natural gas transmission systems and ultimately used as an energy source for end uses such as home heating and cooking, and industrial energy. When removed from the ground, the mixture is predominately methane, but also includes heavier hydrocarbons and inert gases. Although the mixture can vary greatly, a typical stream may include 85 percent methane, 10 percent heavier hydrocarbons (NGLs), and 5 percent inert gases. Some of the NGLs and inert gases must be removed to make the natural gas salable and transportable.

Currently, existing NGL pipelines are operating at or near capacity. The proposed project would address the needs of producers in Colorado and Wyoming by providing additional NGL pipeline capacity out of the Rocky Mountain region to new and existing markets. Downstream customers would thereby gain access to the Rocky Mountain supply basin. In summary, approval of the proposed Project would meet the mutual needs of producers and downstream customers, and would further federal policy regarding the development of pipeline infrastructure in the Rocky Mountain region.

In addition to being necessary, the removal of NGLs from the natural gas stream also can enhance the value of the components removed. Although only 10 percent of the stream by weight, the NGLs can contribute approximately 15 percent of the energy of the stream. This higher energy content of the NGLs makes them more useful in other applications, such as:

- Ethane – primarily used for the production of plastics;
- Propane – typically used for heating purposes in areas without access to natural gas, but also can be utilized in the production of plastics; and
- Butanes and natural gasoline – primarily used for motor gasoline blending.

Since NGLs must be removed up to a certain level and are often removed in greater quantities for economic purposes, regional NGL production tracks with regional natural gas production. Specifically in the Rocky Mountain region of the United States (U.S.), as natural gas production grows, NGL production also grows.

According to the recently issued *Environmental Assessment for the Mid-America Pipeline Company, LLC (MAPL) Western Expansion Project* (2005), the Rocky Mountain region is a significant contributor to the supply of natural gas in the U.S., producing approximately 25 percent of the U.S. natural gas. Natural gas production in the Rocky Mountains increased 56 percent between 1999 and 2003. Some experts predict that the Rocky Mountain region's gas production could increase from 3.3 trillion cubic feet per year (tcfy) in 2002 to 4.6 tcfy in 2010 and 6.3 tcfy in 2025 (U.S. Department of Energy [USDOE] 2004). Notwithstanding the variance in supply predictions, industry experts agree that production from the Rocky Mountain region would be critical to serving the country's increasing energy needs. Using typical average NGL content (2 gallons per thousand cubic feet) and an average NGL recovery factor (50 percent), this increase in natural gas would produce a significant increase in NGLs that would need to be moved.

The Proposed Action is in the national interest in that it is a major energy facility that would provide significant and much needed NGL transmission capacity. The project would increase the flexibility and reliability of the interstate NGL pipeline grid by offering greater access to NGL supply sources and increased availability of NGL for anticipated projects. As an alternative to the existing MAPL NGL pipeline system, the project would ensure that the increased production of NGLs would reach the market and it would introduce pipeline-to-pipeline competition to the Rocky Mountain markets.

The Proposed Action also would further the interests of national security because it would strengthen the energy infrastructure of the Rocky Mountain area by providing an additional transportation mode for NGLs beyond what currently exists. The Overland Pass pipeline would enhance the reliability and flexibility of the energy infrastructure and security of the NGL supply to existing and new markets.

1.3 Decisions to Be Made

The controlling guidance and source documents for preparation of this EIS include: 1) the Council on Environmental Quality (CEQ) regulations for NEPA (40 CFR Parts 1500-1508); 2) the Resource Management Plans (RMPs) for regional BLM field offices; 3) Forest Management Plans for the PNG and Ashley National Forest (ANF); and 4) Overland Pass' Plan of Development (POD), which describes how and where the project would be constructed and operated and how the ROW would be reclaimed. The decision as to whether the Proposed Action would be authorized would be documented in the Record of Decision (ROD) prepared by BLM. The BLM would require a letter of concurrence from the USFS prior to approval of a ROD affecting USFS-administered land.

1.3.1 Bureau of Land Management

BLM decisions to be made include:

- Whether or not to grant a 30-year ROW to Overland Pass to construct and operate a pipeline and associated aboveground facilities (e.g., pump stations, meter stations, pigging facilities, and valves), including permanent access roads;
- Whether or not to approve temporary workspace areas (TWAs) associated with the construction of the pipeline including the temporary construction ROW, temporary work areas, pipe storage yards, and contractor yards;

- Whether or not to approve the temporary use of access roads associated with the construction of the pipeline; and
- If approved, what terms and conditions and mitigation requirements would be included in the grant authorization.

1.3.2 U.S. Forest Service

The applicant's proposal is dependent on the use and occupancy of lands in the ANF and the PNG. Rather than duplicate NEPA processes and paperwork by considering the potential impacts of the Proposed Action on USFS lands, the USFS is participating as a cooperating agency in the preparation of the EIS.

1.4 Federal Approval Process and Authorizing Actions

In accordance with federal laws governing the management and use of federal lands and laws governing interstate commerce, federal agencies may grant long-term utility uses on federal land, subject to compensation and environmental stipulations. To reach decisions to grant utility uses, the agencies need to: 1) evaluate project conformance with federal land management plans and policies, where applicable; 2) determine whether Overland Pass' committed measures are sufficient to adequately protect the natural and human environment; and 3) decide whether the project is in the public interest after consideration of any significant residual environmental impacts (i.e., after stipulations and mitigation measures have been applied). Projects operating on federal lands also may require additional plans and monitoring. The following sections describe the major federal authorizing actions required for the proposed project to proceed.

1.4.1 Bureau of Land Management

The BLM is responsible for issuing ROW grants across federal lands in accordance with 43 CFR 2880. Specifically, 43 CFR 2881.11 requires a BLM ROW grant for any oil or gas pipeline or related facility that crosses federal land under BLM's jurisdiction or under the jurisdiction of two or more federal agencies. Subpart 2884 describes the application filing, content, processing, and decision steps in granting a ROW under these regulations. With respect to a proposal that would cross multiple federal land management agency jurisdictions, Subpart 2884.26 discusses the granting process when an application crosses lands managed by two or more federal agencies.

Additionally, the BLM has the authority and responsibility under the Mineral Leasing Act (MLA) of 1920, as amended (30 United States Code [USC] Part 185) to grant ROWs for hazardous liquid pipelines and is responsible for imposing stipulations and regulations to protect public safety and the environment. BLM would prepare a ROD to document its decision to either approve or deny the Proposed Action.

If approved, the following documentation would be attached to the ROD and the subsequent ROW grant issued by the BLM, 1) environmental protection measures for federal lands; 2) a concurrence letter or Biological Opinion (BO) from the U.S. Fish and Wildlife Service (USFWS); 3) the Wyoming, Colorado, and Kansas State Historic Preservation Officers (SHPOs) and appropriate consulting parties concurrences with the proposed treatment of cultural resources; 4) additional mitigation measures or permit conditions required by the BLM, USFS, states, and USFWS; and 5) a concurrence letter from the USFS.

1.4.2 U.S. Forest Service

The proposed pipeline ROW traverses a portion of the FGNRA (ANF) in Wyoming and the PNG in Colorado. These areas are administered according to federal laws, Department of Agriculture regulations, and USFS policy and direction. Specific guidance is found in the Forest Plans, which provides direction, goals, and criteria for management, including standards and guidelines for resource use and land management practices.

The MLA authorizes the issuance of permits and easements for oil and gas pipelines across NFS lands. Agency policy for managing special uses and occupancy of NFS lands is contained in 36 CFR Part 257

Subpart B and in the USFS Manual (FSM), Chapter 2700. FSM 2702 directs USFS officers to manage special uses in a manner that protects natural resource values and public health and safety, consistent with forest plans. It provides a basis for administering special uses according to resource management objectives and sound business management principles.

If there is a decision to approve a ROW grant on NFS lands, the USFS would issue a letter to BLM stating their concurrences. This letter would be referenced within the BLM's ROD. The USFS' concurrence decision would be based on consistency with the established forest plan for the affected National Forests and conformance with all other guidance and mandates.

1.4.3 Advisory Council on Historic Preservation

Section 106 of the National Historic Preservation Act (NHPA), as amended, requires the lead federal agency, BLM, to take into account the effects of its undertakings on historic properties on, or eligible for listing on, the National Register of Historic Places (NRHP). The Advisory Council on Historic Preservation (ACHP) also is afforded an opportunity to comment if there would be adverse effects to NRHP-eligible properties. Historic properties are prehistoric or historic districts, sites, buildings, structures, objects, or properties of traditional religious or cultural importance, that are listed or eligible for listing on the NRHP.

To date, record reviews (i.e., Class I inventories) and field inventories (i.e., Class III surveys) have been completed for the Proposed Action's route as well as the proposed new construction sites and temporary access roads. Information from record searches and field inventories have been compiled into reports. The BLM would continue to consult with each state's SHPO to determine site eligibility for the National Register and the project's effects on historic properties within the Area of Potential Effect (APE). If adverse effects to historic properties cannot be avoided, then a Memorandum of Agreement (MOA) would be developed, which would outline the appropriate measures to mitigate the effect.

In addition to Section 106 of the NHPA, the BLM also is responsible for compliance with the American Indian Religious Freedom Act of 1978 (AIRFA) and Native American Grave Protection and Repatriation Act of 1990 (NAGPRA). NAGPRA would apply if burials or objects of cultural patrimony are affected by the Proposed Action. Compliance with NHPA and AIRFA would require consultation with the Tribes on the effects of the Proposed Action to sites of tribal importance. Such sites include, but are not limited to, archaeological sites, Traditional Cultural Properties (TCPs), and religious sites.

1.4.4 U.S. Fish and Wildlife Service

The USFWS is responsible for ensuring compliance with the Endangered Species Act (ESA). The BLM is responsible for initiating informal consultation with the USFWS to determine the likelihood of effects on federally listed species. Section 7 of the ESA, as amended, states that any project authorized, funded, or conducted by any federal agencies should not "…jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat of such species which is determined…to be critical…" [16 USC § 1536(a)(2)(1988)]. The BLM and the applicant as a non-federal party, are required to consult with the USFWS to determine whether any federally listed or proposed endangered or threatened species or their designated critical habitat occur in the vicinity of the proposed project. If, upon review of existing data, the BLM determines that these species or habitats may be affected by the proposed project, the BLM is required to prepare a Biological Assessment (BA) to identify the nature and extent of adverse impact, and to recommend mitigation measures that would avoid the habitat and/or species or that would reduce potential impact to acceptable levels. If, however, the BLM determines that no federally listed or proposed endangered or threatened species or their designated critical habitat would be affected by the proposed project, no further action by the BLM is necessary.

A draft BA with the BLM's findings would be prepared and submitted to the USFWS for review. If the USFWS concurs with the BA's conclusions and finds that the proposed project is not likely to affect a listed species or cirtical habitat, the USFWS issues a letter of concurrence. If, however, the USFWS finds that the project is likely to adversely affect a listed species or critical habitat, the BLM would be required to request formal consultation with the USFWS in which the USFWS, in conjunction with the BLM and the applicant, must prepare and issue a BO and incidental take statement prior to the start of construction.

Conclusions on effects to species are described with the EIS text and would be incorporated into conditions or project approval.

1.4.5 Office of Pipeline Safety

The Office of Pipeline Safety (OPS) within the U.S. Department of Transportation (USDOT) is the primary enforcement agency that regulates interstate transportation of hazardous liquids by pipelines, including NGL. Federal regulations governing the construction and safe operation of pipelines are enforced by the OPS.

To comply with federal regulations (49 CFR Parts 194 and 195), Overland Pass would be required to develop a comprehensive Emergency Response Plan (ERP) for their pipeline system and areas of operation. The OPS would need to review and approve Overland Pass' ERP prior to operation.

Additionally, the OPS would conduct regular inspections of pipeline facilities in the future to enforce continual compliance with federal regulations, including the review and approval of Overland Pass' Integrity Management Plan for High Consequence Areas (HCAs).

1.4.6 U.S. Army Corps of Engineers Section 404 Nationwide Permits under the Clean Water Act

Section 404 of the Clean Water Act (CWA) establishes a permit program administered by the U.S. Army Corps of Engineers (USACE) to regulate the discharge of dredge and fill materials into the waters of the U.S., including their adjacent wetlands. This project would be under the jurisdiction of multiple USACE districts. The following Nationwide permits (NWP) may be applicable; NWP 3 for maintenance activities; NWP 12 for utility construction; and NWP 14 for trail/road crossings of wetlands associated with utilities. Overland Pass intends to submit its Section 404 permit applications to the appropriate USACE District offices in 2007.

1.5 Permits and Relationship to Non-federal Policies, Plans, and Programs

Federal, state, or local agencies that have permit, approval, or consultation authority for portions of the proposed project are identified in **Table 1.5-1**. Individual road crossing and road use permits have not been included in this table, since such permits would be a standard requirement in all counties crossed.

Table 1.5-1 Major Permits, Approvals, and Consultations for the Project

Agency	Permit/Approval/Consultations	Agency Action
Federal [1]		
ACHP	Section 106 Consultation, NHPA	Has the opportunity to comment on the undertaking.
U.S. Department of Interior BLM	ROW Grant for the pipeline and all related facilities located on federal land	Consider issuance of a ROW Grant for the portion of the project on federal land.
	Temporary Use Permit for temporary workspace areas and temporary access roads	Consider the issuance of a Temporary Use Permit for the portion of the project on federal land.
USFWS	Section 7 Consultation under the ESA	Consider lead agency finding of impact on federally listed or proposed species. Provide BO if the project is likely to adversely affect federally listed or proposed species, or their habitats.

Table 1.5-1 Major Permits, Approvals, and Consultations for the Project

Agency	Permit/Approval/Consultations	Agency Action
U.S. Department of Agriculture (USDA) USFS	Special Use Permit for Paleontological Resources	Consider approval of the Unanticipated Discovery Plan for Paleontological Resources.
	Letter of concurrence to the BLM from the ANF and the PNG	Consider issuance of Special Use Authorizations for the portion of the project on National Forest System land. Pursuant to Section 28 of the MLA, the BLM has been delegated authority to issue ROW authorizations across all federal lands for projects involving multiple federal jurisdictions with the concurrence from the agency head.
	Biological Report that includes a biological evaluation for threatened, endangered, proposed, and sensitive species and an analysis of effect for management indicator species	Coordinate with the BLM to ensure pertinent information is included in the environmental impact statement, biological report, and biological evaluation.
Natural Resource Conservation Service (NRCS) Wyoming, Colorado, and Kansas	Consultation	Consultation regarding erosion control recommendations, revegetation specifications, and identification of Conservation Reserve Program lands.
U.S. Department of Defense USACE - Omaha District (Wyoming and Colorado) and Kansas City District	Section 404, CWA	Consider issuance of Section 404 permits for working navigable waters of the U.S. and the placement of dredge or fill material into all waters of the U.S., including wetlands.
U.S. Environmental Protection Agency (USEPA) Regions 7 and 8	Section 401, CWA, Water Quality Certification	In conjunction with states, consider issuance of water use and water crossing permits.
	Section 402, CWA, National Polluant Discharge Elimination System (NPDES)	In conjunction with states, review and issue NPDES permit for discharge of hydrostatic test water and discharge of groundwater associated with construction activities.
	Section 404, CWA (veto power for wetland permits issued by the USACE)	Review CWA, Section 404 wetland dredge-and-fill applications for the USACE with Section 404 veto power for permits issued by the USACE.
	Stormwater Discharge Permit	In conjunction with states, review and issue stormwater permit for activities associated with pipeline and aboveground facilities construction.
State - Wyoming		
Department of Environmental Quality		
Water Quality Division	NPDES Storm Water Permit Program - General Permit for Construction Storm Water Discharge	Consider issuance of a permit regulating discharge of stormwater from the construction work area.
	Water and Wastewater Program - General Permit for Temporary Discharge	Consider issuance of a permit regulating temporary discharges of wastewaters to surface waters of the state associated with hydrostatic testing of pipes, tanks or other similar vessels; construction dewatering, other.

Table 1.5-1 Major Permits, Approvals, and Consultations for the Project

Agency	Permit/Approval/Consultations	Agency Action
Watershed Management Section	Temporary Turbidity Increase Permit	Consider issuance of a permit for temporary increases in turbidity as a result of construction activities.
	Section 401 Certification	Consider issuance of a permit for stream and wetland crossings (blanketed under USACE Section 404 authorization).
State Engineer's Office	Water Appropriation Permit	Consider the issuance of a permit for the use of water for hydrostatic testing.
Wyoming Department of State Parks and Cultural Resources		
SHPO	Consultation under Section 106 of the NHPA	Review and comment on activities potentially affecting cultural resources.
Wyoming Game and Fish (WGFD)	Consultations	Consultations regarding state-listed species.
State - Colorado		
Colorado Department of Natural Resources		
Division of Wildlife	State Listed Species Consultation	Review and comment on activities potentially affecting state-listed species.
	Temporary Use Permit	Consider issuance of a Temporary Use Permit to conduct environmental and engineering surveys.
Colorado Department of Public Health and Environment (CDPHE)		
Air Quality Control Division	Air Pollution Emission Notice	Consider issuance of a permit to construct with the potential for fugitive dust.
Division of Water Resources - Water Quality Control Division	Section 401, CWA, Water Quality Certification	Consider issuance of a permit for stream and wetland crossings (blanketed under USACE Section 404 permits).
	Construction Stormwater Discharge Permit	Consider issuance of a permit regulating discharge of stormwater from the construction work area.
	Construction Dewatering Wastewater Discharge	Consider issuance of a permit regulating dewatering of groundwater from the construction work area.
	Hydrostatic Test Water Discharge Permit	Consider issuance of a permit regulating hydrostatic test water discharge, and construction dewatering to waters of the state.
Division of Water Resources - State Engineers Office	Application for Surface Water Right	Consider use of surface waters for appropriations required for hydrostatic testing.
Colorado Historical Society SHPO	Consultation under Section 106 of the NHPA	Review and comment on activities potentially affecting cultural resources.
Colorado State Land Board	Trust Land Permit	Consider issuance of permit to occupy state-owned land.
State - Kansas		
Kansas Corporation Commission	Certificate of Convenience and Authority to Transport the Business of a Liquids Pipeline Carrier	Certificate to construct pipeline and associated facilities across all land.

Table 1.5-1 Major Permits, Approvals, and Consultations for the Project

Agency	Permit/Approval/Consultations	Agency Action
Kansas Department of Agriculture		
Division of Water Resources	Permit to Appropriate Water	Consider the issuance of a permit for the use of water for hydrostatic testing.
	Permit for Stream Obstructions and Channel Changes	Consider the issuance of a permit to cross waterbodies.
Kansas Department of Health and Environment (KDHE)		
Bureau of Water	Section 401, CWA, Water Quality Certification	Consider issuance of a permit for stream and wetland crossings (Blanketed under USACE Section 404 Permits).
	Stormwater Discharge Permit	Consider issuance of a permit regulating discharge of stormwater from the construction work area.
	Hydrostatic Test Water Discharge Permit	Consider issuance of a permit regulating hydrostatic test water discharge, and construction dewatering to waters of the state.
Kansas Department of Wildlife and Parks (KDWP)	State Listed Species Consultation	Review and comment on activities potentially affecting state-listed species.
Kansas State Historical Society		
SHPO	Consultation under Section 106 of the NHPA	Review and comment on activities potentially affecting cultural resources.

[1]Federal agencies also must review the proposed project for consistency with the following Federal Executive Orders (EO): Invasive Species (FR 1999) and Migratory Birds (FR 2001).

1.6 Non-federal ROW Easement Acquisition Process

The private land easement, usually negotiated with the landowner, is the legal instrument used to convey a ROW easement to the pipeline company (Overland Pass). The easement gives the company the right to operate and maintain its pipeline in the permanent ROW and, in return, compensates the landowner for the use of the land. The easement negotiations between Overland Pass and the individual landowner would include compensation for loss of use during construction, loss of nonrenewable or other resources, and the restoration of unavoidable damage to property during construction. Although BLM does not have the legal authority to impose all stipulations on private lands, private landowners may negotiate with Overland Pass through their easement agreements to implement stipulations on their own land.

If an easement cannot be negotiated with the landowner, Overland Pass may acquire the easement needed for pipeline construction under federal and state eminent domain laws prevailing in the affected states. State statutes have been enacted that define the ROW acquisition process on private and non-federal public lands for utilities engaged in interstate commerce.

1.7 Scoping and Public Involvement

1.7.1 Public Involvement

Scoping is a process of actively acquiring initial input from the public and other interested federal, state, tribal, and local agencies to determine the scope of issues to be addressed. It is used to identify key issues related to a proposed action. Information gained during scoping assists the Lead Agency in identifying potential environmental issues, alternatives, and mitigation measures associated with development of the proposed project. The process provides a mechanism for “narrowing” the scope of issues so that the EIS can focus the analysis on areas of high interest and concern.

On March 24, 2006, the Notice of Intent (NOI) for the project was published in the *Federal Register* (FR), which included a project description and BLM contact information. On this same date, the BLM issued a press release that described the proposed project and included information on the scoping meeting dates, times, locations, and BLM contact information. The press release was distributed to Congressional office staff, landowners, various media outlets throughout the project area, and interested groups via mailings and email.

The BLM hosted four public meetings: Hays, Kansas; Greeley, Colorado; Cheyenne, Wyoming; and Rock Springs, Wyoming. The dates, location, and number of attendees at the scoping meetings are provided in **Table 1.7-1**.

Table 1.7-1 Public Scoping Meetings

Meeting Location	Meeting Date	Number of Attendees
Hays, Kansas	April 17, 2006	20
Greeley, Colorado	April 18, 2006	8
Cheyenne, Wyoming	April 19, 2006	14
Rock Springs, Wyoming	April 20, 2006	11

The public meetings were conducted in an open house format. Attendees were provided information about the project and given an opportunity to ask resource specialists questions as well as express their concerns about the project. Applicant representatives were available to assist in answering specific questions regarding the proposed pipeline route. Display boards provided project information and a description of the NEPA process. A computer-aided presentation of the proposed pipeline route assisted in facilitating the exchange of information and answering route-specific questions.

The 45-day public scoping period for the project ended on May 5, 2006. Comments received during the scoping period were complied into a scoping report, which is available to the public upon request.

BLM received 54 comment submittals (e.g., letter, email) containing 276 comments. Of the total individual comments, private individuals provided 40 comments, of which 33 individual comments were from residences in Arrowhead Springs Subdivision located south of Rock Springs, Wyoming. Additionally, residences of Arrowhead Springs Subdivision submitted a petition with 21 signatures expressing their opposition to the proposed project. Comments also were received from federal, state, and county agencies, non-governmental organizations, and elected officials.

1.8 Issues

Based on comments received during scoping and public meetings, the BLM has identified the following key issues associated with the proposed pipeline construction.

1. Proposed pipeline route and location:

    - Any deviations from existing pipeline ROWs would create new surface disturbance and an additional utility corridor that could adversely affect big game and other wildlife species of concern.
    - The original proposed action had the pipeline located adjacent to the southern boundary of the Arrowhead Springs Subdivision. Residents’ concerns include increased vehicle traffic and potential impacts to health and public safety.
    - Other issues for public health and safety include impacts of consolidating pipeline ROW within existing utility corridors.

2. Construction impacts:

   - The following resources or land uses could be adversely affected by the pipeline construction: the Cherokee and Overland historic trails, livestock grazing, rangeland, and other vegetation communities.

3. Impacts to water quality and quantity:

   - Pipeline construction and location could adversely impact riparian areas, wetlands, fisheries, and streams and rivers including the Green and North Platte rivers. The potential water quality impacts attributable to pipeline construction and operation include sedimentation, channel and bank modification, and water quality degradation due to hazardous material spills or pipeline rupture.
   - Use of water for pipeline construction and operations could result in contamination or depletion of the Colorado and Platte rivers. Excessive depletion can impact fisheries, water quality, and available quantities of water for agricultural use and other downstream users.

4. Impacts to threatened and endangered and sensitive species:

   - Pipeline construction and location could adversely impact habitat and life cycle activities of threatened and endangered species including: black-footed ferret, burrowing owl, and swift fox. State sensitive species include: ferruginous hawk and western sage grouse.
   - Adverse impacts to fisheries: special status and native fish species including flannelmouth sucker and Colorado cutthroat trout.

5. Socioeconomics:

   - Pipeline construction and operations would result in beneficial impacts to the local socioeconomic environment of communities.

2.0 Alternatives Including the Proposed Action

2.1 Introduction

The BLM has identified a range of alternatives based on issues and concerns raised from public comments, through interdisciplinary interaction between resource professionals, and in collaboration with the cooperating state agencies and tribal governments. The alternatives considered and analyzed in detail include:

- The Proposed Action;
- The No Action Alternative; and
- The Southern Energy Corridor – Copper Ridge Bypass Alternative.

The BLM's preferred alternative is the Proposed Action.

All possible activities associated with each alternative including the No Action Alternative are assumed to apply to BLM-administered and NFS lands only. All activities associated with this project are consistent with the following land use plans from west to east:

- ANF Land and Resource Management Plan (LRMP), USFS (1986a);
- Flaming Gorge National Recreation Area Management Plan, USDA Forest Service (1986b);
- Kemmerer Resource Management Plan (RMP), BLM (1986);
- Green River RMP, BLM (1997);
- Great Divide (Rawlins) RMP, BLM (1990), under revision; and
- Revision of the LRMP, Arapaho and Roosevelt National Forests and PNG, USFS (1997).

Any future implementation activity associated with this project based on this EIS must conform to the applicable land use plan in effect.

2.2 Description of Alternatives

Numerous minor deviations and variations from the original proposed pipeline route described in the application submitted by Overland Pass were considered. Three alternatives, including the Proposed Action, were studied in detail. A description of alternatives considered but eliminated from detailed study may be found in Section 2.3.

2.2.1 The Proposed Action

Overland Pass proposes to construct and operate a 760-mile-long interstate NGL transmission system that would begin at existing NGL facilities in Opal, Wyoming, and end at existing storage and processing facilities in Bushton and Conway, Kansas. In addition to the pipeline, Overland Pass would construct 3 pump stations (including 1 future pump station), 7 meter stations, 11 pigging facilities, 144 mainline valves (MLVs) at 92 sites (17 remotely activated block valves, 58 manual block valves, 62 check valves, and 7 valves at the meter stations), and related ancillary facilities. An overview map of the project location and facilities is provided in **Figure 2.2-1**. State maps showing the pipeline route and aboveground facilities are provided in **Figures 2.2-2** to **2.2-4**. Site-specific maps for major aboveground facilities (pump stations, meter stations, pigging facilities, pipe storage, and contractor yards) are provided in **Appendix A**.

Overland Pass proposes to begin construction of the pipeline and associated facilities (e.g., pump stations, valves) in July of 2007. The project would take approximately 6 months to complete. The in-service date for these facilities would be November 30, 2007. BLM anticipates that a final decision for the project would be made no earlier than August 2007 which could delay the in-service date by an unspecified amount of time.

2.2.1.1 Proposed Facilities

<u>Pipeline Facilities</u>

Between Opal Meter Station (Reference Point [RP][1] 0.0) and the Echo Springs Pump Station (RP 146.5), the Overland Pass pipeline would consist of 14-inch-diameter pipe; between Echo Springs Pump Station and Conway Meter Station (RP 749.4), the proposed pipeline would consist of 16-inch-diameter pipe. The maximum operating pressure (MOP) of the system would be 1,440 psig.

The pipeline would be constructed in accordance with applicable USDOT regulations (49 CFR Part 195). For normal mainline construction, the 14-inch pipe would have a wall thickness of 0.219 inch, while the 16-inch-diameter pipe would have a wall thickness of 0.250 inch. Slightly thicker walled pipe would be used at aboveground facilities, under road and rail crossings, within HCAs and as required by federal regulation. The pipeline would be constructed of high-strength steel pipe (grade 5L X70) with factory applied fusion bond epoxy (FBE) external coating. Cathodic protection would be provided by an impressed current system. All pipe would be manufactured, constructed, and operated in accordance with applicable local, state, and federal regulations.

<u>Pump Stations and Ancillary Facilities</u>

Aboveground facilities associated with the Proposed Action would include 3 pump stations (2 proposed, 1 future), 7 meter stations, 144 MLVs at 92 sites, and 11 pigging facilities (**Table 2.2-1**). The new pump stations would enable Overland Pass to maintain the required pressure for firm NGL deliveries and to restore the drop in pressure that would otherwise occur as the NGL flows through the pipeline. Overland Pass would construct the meter stations at interconnections with other pipelines.

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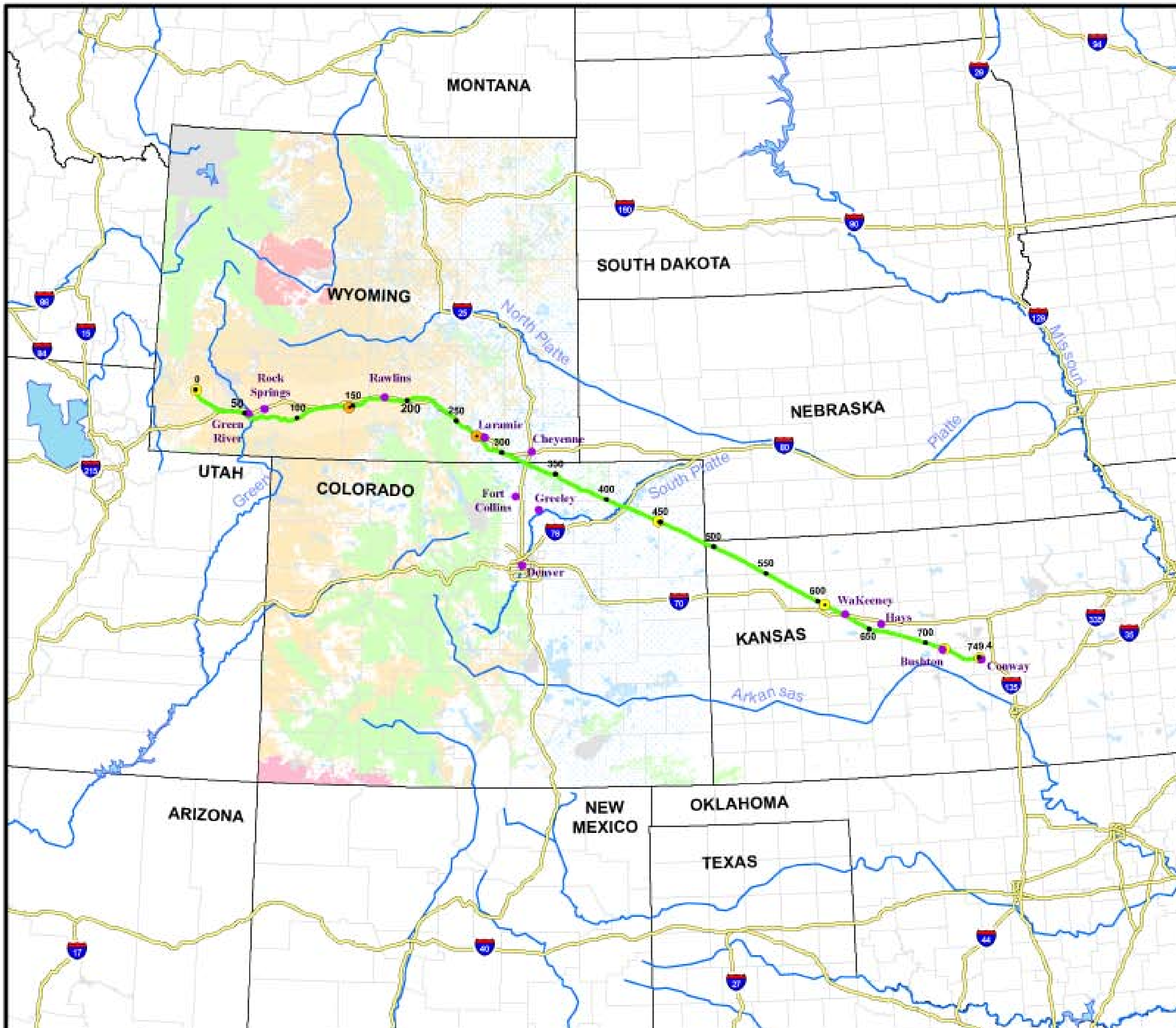
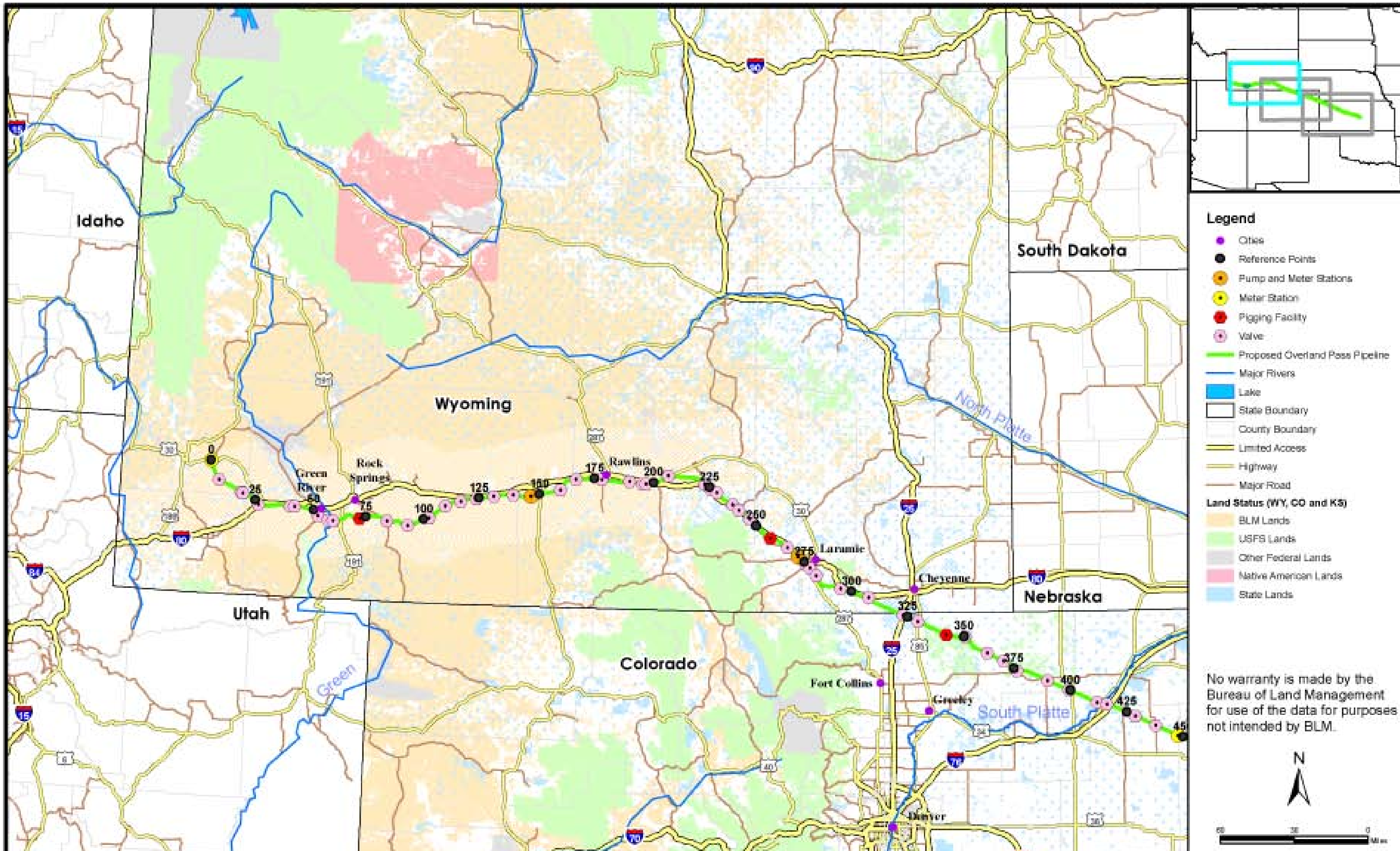
[1] RPs refer to fixed locations along the proposed pipeline route that are used as markers to identify resources and features along the route. The spacing interval between any two adjacent RPs is typically 1 mile; however, the distance may be as little as 1,425 feet or as great as 7,200 feet due to localized adjustments that have occurred in the proposed route alignment since the original route was proposed.



Overland Pass Pipeline Project

Figure 2.2-1

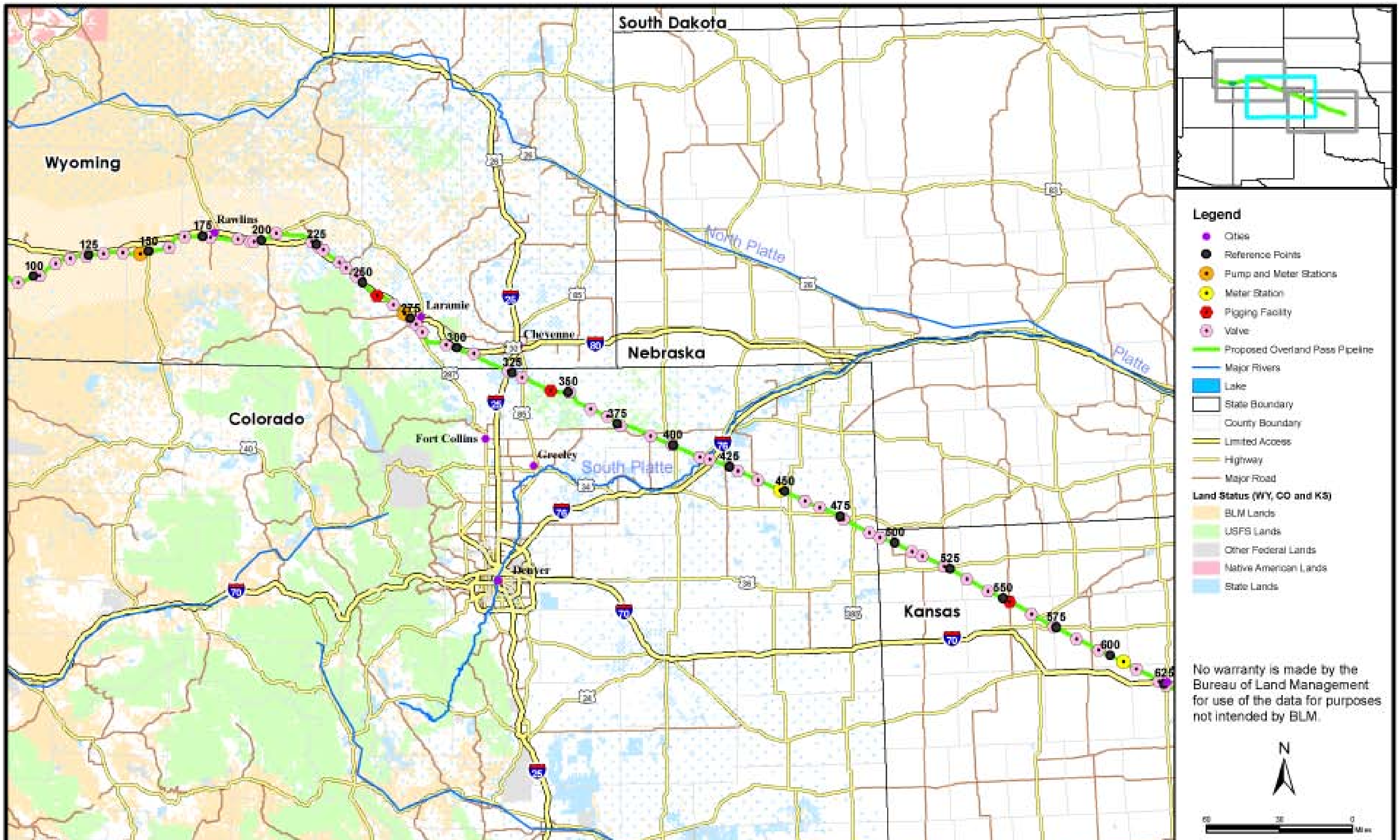
Project Overview



Overland Pass Pipeline Project

Figure 2.2-2

Project Overview Wyoming



Overland Pass Pipeline Project

Figure 2.2-3

Project Overview Colorado

Overland Pass Pipeline Project

Figure 2.2-4

Project Overview Kansas

Table 2.2-1 Proposed Facilities Associated with the Project

Facility Name[1]	RP[2]	County, State
PIPELINE		
Opal, Wyoming to Echo Springs Pump Station (14 inches in diameter)	0.0 – 146.5	Lincoln, Sweetwater, and Carbon counties, Wyoming;
		Sweetwater, Carbon, Albany, and Laramie counties, Wyoming; Weld, Morgan, Logan, Washington, Yuma counties, Colorado;
Echo Springs Pump Station to Conway, Kansas (16 inches in diameter)	146.5 – 749.4	Cheyenne, Rawlins, Thomas, Sheridan, Graham, Grove, Trego, Ellis, Russell, Barton, Ellsworth, Rice, McPherson counties, Kansas
PUMP STATIONS		
Echo Springs Pump Station (Two 1,250 International Organization of Standardization [ISO] horsepower [hp] pumps, one is a backup unit)	146.5	Carbon County, Wyoming
Laramie Pump Station (Two 2,000 ISO hp pumps, one is a backup unit)	271.7	Albany County, Wyoming
WaKeeney Pump Station (future) (estimate total of 3,000 ISO hp)	606.0	Sheridan County, Kansas
METER STATIONS		
Opal Meter Station (Receipt – Williams) (interconnect facility sized for receipt of 80,000 bpd of NGL)	0.0	Lincoln County, Wyoming
Echo Springs Meter Station (Receipt – Williams) (interconnect sized for delivery of up to 40,000 bpd of NGL)	146.5	Carbon County, Wyoming
Laramie Meter Station	271.7	Albany County, Wyoming
Washington County Meter Station	447.8	Washington County, Colorado
WaKeeney Meter Station	606.0	Sheridan County, Kansas
Bushton Meter Station (Delivery – ONEOK) (interconnect sized for delivery of up to 109,000 bpd of NGL)	717.5	Ellsworth County, Kansas
Conway Meter Station (Delivery – Williams) (interconnect sized for delivery of up to 109,000 bpd of NGL)	749.4	McPherson County, Kansas
MAINLINE VALVES (MLV)		
MLV #1 to MLV #63	0.0 – 307.4	Lincoln, Sweetwater, Carbon, Albany and Laramie counties, Wyoming
MLV #64 to MLV #92	322.7 – 488.7	Weld, Morgan, Logan, Washington, Yuma counties, Colorado
MLV #93 to MLV #136	493.5 – 749.4	Cheyenne, Rawlins, Thomas, Sheridan, Graham, Grove, Trego, Ellis, Russell, Barton, Ellsworth, Rice, McPherson counties, Kansas
PIGGING FACILITIES		
Opal Plant – Launcher	0.0	Lincoln County, Wyoming
Sweetwater Pigging Facility – Launcher and Receiver	72.1	Sweetwater County, Wyoming
Echo Springs Pump Facility – Launcher and Receiver	146.5	Carbon County, Wyoming
Albany Pigging Facility – Launcher and Receiver	257.9	Albany County, Wyoming
Weld Pigging Facility – Launcher and Receiver	342.7	Weld County, Colorado
Washington County Pigging Facility – Launcher and Receiver	447.8	Washington County, Colorado
Thomas Pigging Facility – Launcher and Receiver	552.9	Thomas County, Kansas

Table 2.2-1 Proposed Facilities Associated with the Project

Facility Name[1]	RP[2]	County, State
Ellis Pigging Facility – Launcher and Receiver	654.7	Ellis County, Kansas
Bushton Plant (adjacent) – Launcher and Receiver	717.5	Ellsworth County, Kansas
Williams Plant – Launcher and Receiver	736.2	Rice County, Kansas
Conway Plant – Receiver	749.4	McPherson County, Kansas

[1]Aboveground facilities are illustrated in Appendix A.

[2]All reference points are based on Overland Pass' reference system and are approximate.

The two proposed pump stations are capable of delivering up to 109,000 bpd. In the future, Overland Pass could increase its delivery volume to 150,000 bpd with the construction of a pump station at WaKeeney, Kansas. Because the construction of the WaKeeney Pump Station is likely within the foreseeable future, it is included in the Proposed Action for this EIS analysis.

Meter stations consist of custody transfer meter stations and system check meter stations. Three meter stations (Opal, Bushton, and Conway) would occur within existing previously disturbed commercial/industrial areas. The Echo Springs Pump and Meter Station, Laramie Pump Station and Meter Station, Washington County Meter Station, and WaKeeney Meter Station would each disturb new areas.

The Proposed Action would include construction of four custody transfer meter stations (Opal, Echo Springs, Bushton, and Conway). The Opal Meter Station would be adjacent to the Williams Opal Plant (RP 0.0) and would require a 930-foot 12-inch-diameter lateral on Williams' property to interconnect the Opal Plant mainline piping with the Overland Pass mainline. The Echo Springs Meter Station would be at Williams' Echo Springs Plant (RP 146.5) and would require approximately 1,260-foot 12-inch-diameter lateral from the Echo Springs Plant to Overland Pass. Bushton's Meter Station would be located on ONEOK's Bushton Plant property (RP 717.5) and would require a 340-foot 12-inch-diameter lateral to deliver to the Bushton Plant. Finally, the Conway Meter Station would be located in Williams' Conway Plant property (RP 749.4) and would require a short 12-inch-diameter lateral to deliver to the Williams' Conway Plant piping adjacent to the meter station site. The exact tie-in point has not yet been determined. The systems to which Overland Pass would interconnect and the proposed lateral lengths and diameters are summarized in **Table 2.2-2**.

Table 2.2-2 Proposed Receipt and Delivery Laterals for the Project

Station/Interconnection With	Lateral Length[1] (feet)	Lateral diameter (inches)
Opal Custody Transfer Meter Station Delivery from Williams	930	12
Echo Springs Custody Transfer Meter Station Delivery from Williams	1,260	12
Bushton Custody Transfer Meter Station Receipt by Oneok	340	12
Conway Custody Transfer Meter Station Receipt by Williams	Not determined	12

[1]Lateral lengths are approximate.

2.2.1.2 Land Requirements

Table 2.2-3 summarizes the land requirements for the Proposed Action. Overland Pass proposes to use a 75-foot-wide construction ROW for the majority of the proposed pipeline route and for all receipt and delivery laterals. **Figure 2.2-5** illustrates the typical construction ROW and equipment work locations where the proposed pipeline route would not be located near an existing pipeline; **Figure 2.2-6** illustrates the proposed construction ROW where the pipeline would be located parallel to an existing pipeline. Overland Pass also has requested that 50 feet of the construction ROW (centered on the proposed pipeline) be retained as part of Overland Pass' permanent easement, which would be permanently maintained (e.g., by periodic clearing) during operation of the new facilities. At steep slopes or sideslope areas, an additional 25 feet could be needed and additional temporary workspace would be required at roads, railroad, pipeline, powerline, waterline, and waterbody crossings.

Table 2.2-3 Summary of Land Requirements Associated with the Proposed Action

State/Facility	RP	Land Affected During Construction (acres)				Land Affected During Operation (acres)			
		Federal		Other		Federal		Other	
		BLM	USFS	State	Private	BLM	USFS	State	Private
Wyoming									
Pipeline Facilities									
Pipeline ROW [1]	0.0 to 321.1	898.3	17.8	228.2	1,829.6	598.9	11.9	152.1	1,219.8
Additional TWAs	Various	185.2	1.7	68.0	345.2	0.0	0.0	0.0	0.0
Laterals	0.0, 146.5	0.0	0.0	0.0	3.8	0.0	0.0	0.0	2.6
Aboveground Facilities[2]									
Pump Stations	146.5, 271.7	0.0	0.0	0.0	7.4	0.0	0.0	0.0	3.6
Meter Stations	0.0	0.0	0.0	0.0	4.2	0.0	0.0	0.0	0.4
MLVs		0.0	0.0	0.0	0.0	1.1	0.0	0.1	0.2
Launcher/Receivers		0.0	0.0	0.0	3.0	0.0	0.0	0.0	0.8
Yards	0, 18, 84, 146 (2), 178, 281 (2)	0.0	0.0	0.0	66.7	0.0	0.0	0.0	0.0
Permanent Access Roads	Various	0.0	0.0	0.0	0.0	14.9	0.0	0.0	67.3
Wyoming Subtotal		*1,083.5*	*19.5*	*296.2*	*2,258.4*	*614.9*	*11.9*	*152.2*	*1,294.7*
Colorado									
Pipeline Facilities									
Pipeline ROW [1]	321.1 to 492.3	0.0	204.1	106.4	1,252.2	0.0	136.1	70.9	834.8
Additional TWAs	Various	0.0	14.1	19.2	141.5	0.0	0.0	0.0	0.0
Laterals	None	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Aboveground Facilities[2]									
Pump Station	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Meter Stations	447.8	0.0	0.0	0.0	1.2	0.0	0.0	0.0	0.2
MLVs		0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.1
Launcher/Receivers		0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.4
Yards	330, 437, 438 (2), 439	0.0	0.0	0.0	39.3	0.0	0.0	0.0	0.0
Permanent Access Roads		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Colorado Subtotal		*0.0*	*218.3*	*125.6*	*1,435.2*	*0.0*	*136.6*	*70.9*	*835.5*
Kansas									
Pipeline Facilities									
Pipeline ROW [1]	492.3 to 749.4	0.0	0.0	0.0	2,371.6	0.0	0.0	0.0	1,581.1
Additional TWAs	Various	0.0	0.0	0.0	445.3	0.0	0.0	0.0	0.0
Laterals	717	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.5
Aboveground Facilities[2]									
Pump Stations	606.0	0.0	0.0	0.0	0.0[3]	0.0	0.0	0.0	0.0[3]

Table 2.2-3 Summary of Land Requirements Associated with the Proposed Action

State/Facility	RP	Land Affected During Construction (acres)				Land Affected During Operation (acres)			
		Federal		Other		Federal		Other	
		BLM	USFS	State	Private	BLM	USFS	State	Private
Meter Stations	606.0, 717.5, 749.4	0.0	0.0	0.0	3.9	0.0	0.0	0.0	0.6
MLVs		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9
Launcher/Receivers		0.0	0.0	0.0	3.0	0.0	0.0	0.0	1.0
Yards	524, 562, 566, 590 (2), 591 (2), 692, 749	0.0	0.0	0.0	55.9	0.0	0.0	0.0	0.0
Permanent Access Roads		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Kansas Subtotal		*0.0*	*0.0*	*0.0*	*2,880.5*	*0.0*	*0.0*	*0.0*	*1,584.2*
Project Total [4]		**1,083.5**	**237.8**	**421.8**	**6,574.0**	**614.0**	**148.1**	**223.1**	**3,715.4**

[1]Assumes a 75-foot-wide construction ROW and 50-foot-wide operational ROW in all locations.

[2]Construction and operational land use impacts for several aboveground facilities (e.g., MLVs) would occur entirely within the ROW and therefore are included with the pipeline ROW totals.

[3]Does not include a potential disturbance of 3.6 acres (construction) and 1.9 acres (operation) for the future WaKeeney Pump Station.

[4]Slight discrepancies in total values are due to rounding.

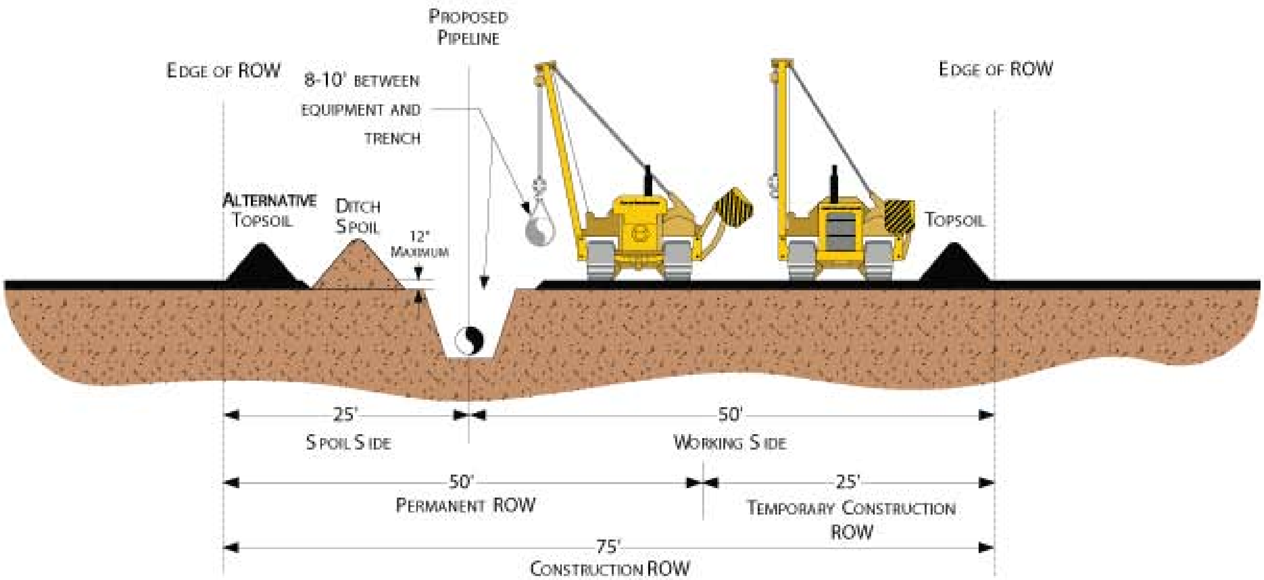
Construction of the Proposed Action would disturb approximately 8,317 acres of land, including the pipeline construction ROW, additional temporary workspace areas, pump stations, and other aboveground facilities. Of this total, about 6,908 acres would be disturbed by the pipeline construction ROW, about 1,220 acres would be disturbed by additional TWAs, and 24 acres would be disturbed for aboveground facilities. Overland Pass also would require 24 pipe storage and contractor yards, resulting in a total of 160 acres of additional disturbance. Disturbance due to construction of powerlines is quantified separately (Chapter 9.0).

These totals do not include the short-term use of about 582 access and haul roads totaling 2,577 miles in length to access the ROW, many of which would require upgrading or maintenance.

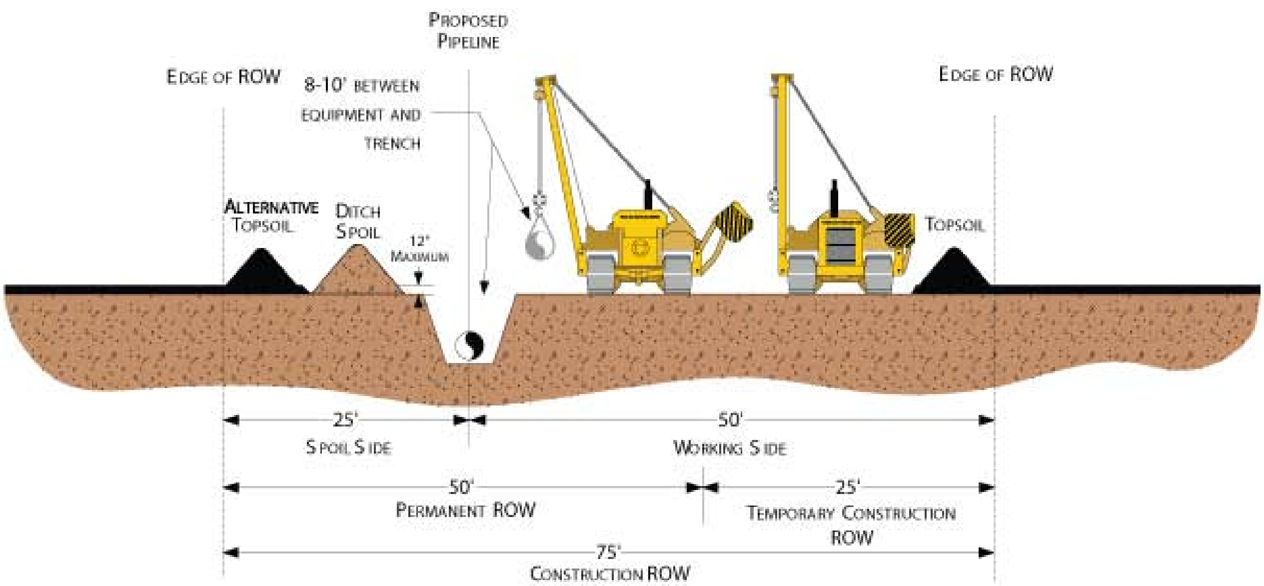
Approximately 4,619 acres of the 8,317 acres used for construction would be required for operation of the project. Of this total, about 4,606 acres would be for the pipeline permanent ROW, 3 acres for lateral permanent ROW, an additional 10 acres would be utilized for the aboveground facilities. Disturbed lands would be restored and allowed to revert to former use.

Approximately 13 percent of the land affected by construction and operation of the project would be BLM-managed lands and about 3 percent are administered by the USFS. Approximately 3 percent of the land affected by construction and operation of the Proposed Action would be on State of Wyoming and Wyoming local government lands, less than 2 percent on State of Colorado lands. There is no federally managed or state owned land traversed by the proposed pipeline in Kansas. The remainder of the land that would be affected (79 percent) is privately owned. A detailed description of land ownership is presented in Section 3.8.

Trench and Spoil Side Stripping



Full ROW Topsoil Stripping



PROFILE

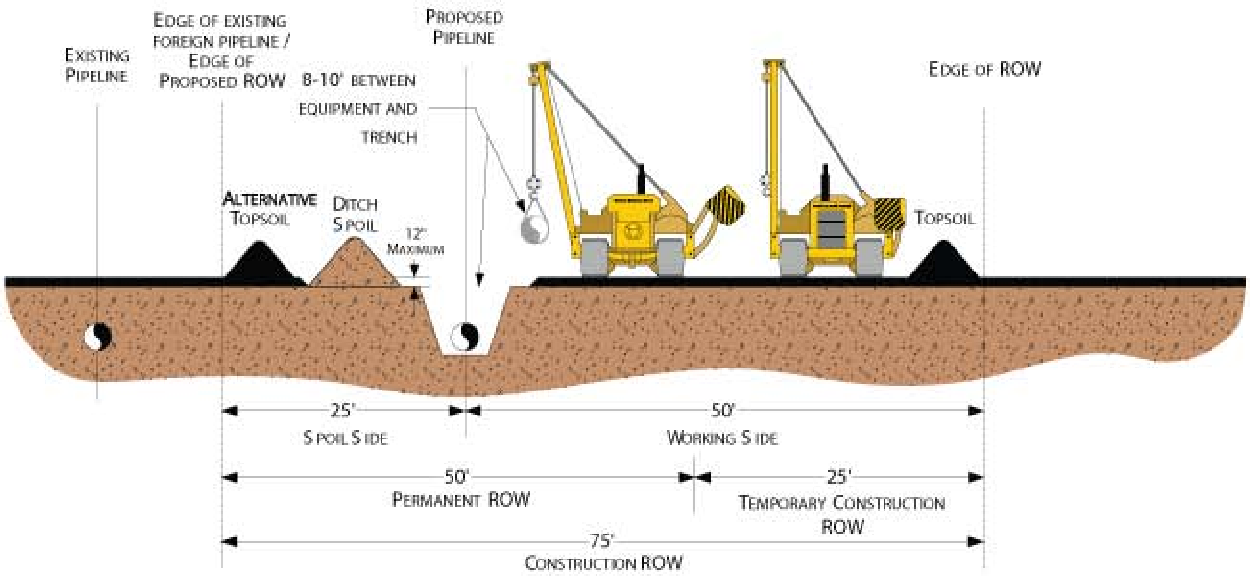
Notes:

1. Construction right-of-way will typically be 75' wide. The permanent right-of-way will be 50' wide. Additional temporary workspace will be necessary at major road, rail, and river crossings; sideslopes; and other special circumstances as required.
2. Stockpile topsoil separately from ditch spoil as shown or in any configuration approved by the Inspector.
3. 2' setback from spoil to edge of trench.

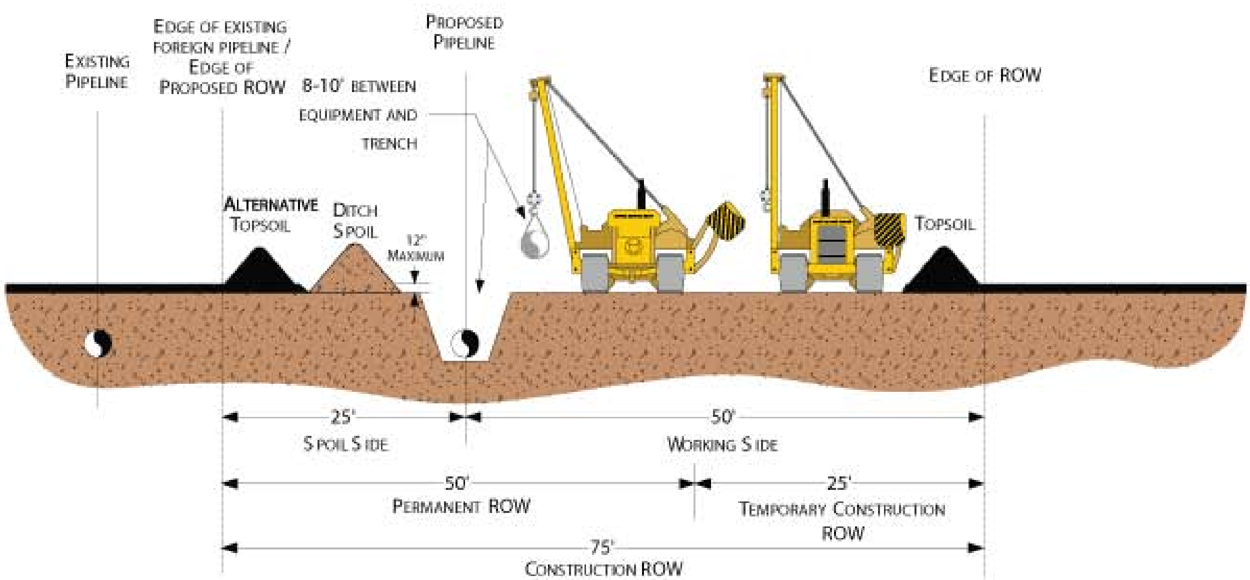
Overland Pass Pipeline Project

Figure 2.2-5
Typical Construction ROW

Trench and Spoil Side Stripping



Full ROW Topsoil Stripping



Notes:

1. Construction right-of-way will typically be 75' wide. The permanent right-of-way will be 50' wide. Additional temporary workspace will be necessary at major road, rail, and river crossings; sideslopes; and other special circumstances as required.
2. Stockpile topsoil separately from ditch spoil as shown or in any configuration approved by the Inspector.
3. The offset from active pipeline, where applicable, will be 50' (centerline to centerline) for most locations but may be increased or decreased depending on the site-specific construction requirements.
4. 2' setback from spoil to edge of trench.

Overland Pass Pipeline Project

Figure 2.2-6
Typical Construction ROW - Adjacent to Existing Pipeline

Pipeline ROW

Approximately 623.7 miles of the 759.9 miles of pipeline (83 percent) would be co-located[2] with existing pipeline, utility, or road ROWs. Approximately 136.1 miles (17 percent) of the route proposed for construction would be newly created ROW (**Table 2.2-4**). Where the proposed pipeline route would parallel existing utilities, Overland Pass' new permanent ROW would be adjacent to the existing permanent ROWs. As proposed, the new pipeline generally would be installed with a 50-foot offset from the nearest existing pipeline centerline.

Table 2.2-4 Overland Pass Pipeline Segments of ROW that are Not Co-located with other Utilities[1]

Begin RP	End RP	Length (miles)
0.0	0.6	0.6
62.0	67.7	5.8
75.5	103.0	27.5
107.9	108.4	0.4
116.6	118.5	1.9
120.1	137.2	17.1
145.9	147.1	1.2
147.7	153.6	5.9
180.3	181.3	1.0
194.8	195.8	1.0
199.7	200.4	0.7
227.0	228.4	1.5
243.5	244.8	1.3
292.4	292.6	0.2
293.3	293.5	0.1
306.5	308.8	2.3
315.5	315.8	0.3
323.4	324.0	0.6
337.2	337.6	0.4
340.5	340.6	0.1
342.1	342.4	0.3
362.4	362.6	0.2
363.2	363.3	0.1
379.2	379.4	0.2
380.1	380.4	0.2
382.8	382.9	0.1
386.0	386.1	0.1
388.2	388.5	0.4
410.2	413.6	3.4
416.4	416.6	0.2
430.6	431.1	0.5
434.9	436.0	1.1
452.9	454.9	2.0
455.6	456.1	0.5

[2] Overland Pass considers its proposed pipeline to be "co-located" with existing ROWs where its proposed construction ROW abuts an existing pipeline, utility, or road ROW; or its proposed pipeline route is located generally parallel to a pipeline, utility, or road ROW and does not stray from this general alignment. Deviations from existing ROWs are limited to areas where site-specific environmental or engineering constraints justify routing away from the existing ROW or where it is necessary to proceed cross-country from one ROW to another to maintain the general direction of the pipeline.

Table 2.2-4 Overland Pass Pipeline Segments of ROW that are Not Co-located with other Utilities[1]

Begin RP	End RP	Length (miles)
458.5	464.2	5.7
475.5	478.0	2.5
480.1	480.5	0.4
482.8	483.1	0.3
487.5	487.8	0.3
488.5	488.8	0.3
494.4	494.7	0.3
498.7	499.1	0.4
503.1	503.2	0.1
504.6	504.7	0.0
509.9	510.3	0.4
514.4	515.0	0.6
538.7	538.8	0.1
542.7	544.3	1.6
549.5	550.4	0.9
560.9	562.5	1.6
564.0	564.1	0.1
566.4	567.7	1.3
572.2	572.7	0.5
575.2	575.4	0.2
582.3	582.5	0.2
586.8	587.2	0.4
588.7	589.0	0.3
595.3	595.5	0.2
608.3	609.0	0.7
610.7	610.8	0.1
612.4	613.4	1.0
614.9	615.1	0.2
615.3	615.4	0.1
621.4	622.1	0.7
623.6	624.2	0.6
635.1	635.4	0.3
645.2	645.8	0.6
650.5	650.7	0.2
656.4	657.0	0.6
659.7	660.2	0.5
662.4	662.9	0.5
668.9	669.7	0.8
696.6	697.0	0.4
700.8	701.3	0.5
703.3	703.6	0.3
705.5	706.1	0.6
707.8	709.8	2.0
715.5	736.1	20.6
748.5	749.4	0.9
	New ROW total	**130.1**

[1]Co-located ROWs are considered to be any ROW (e.g., utility) that is adjacent to the proposed pipeline route. Minor pipeline deviations from an adjacent facility to avoid and accommodate feature crossings still are considered to be co-located.

Additional Temporary Workspace Areas

In addition to the construction ROW, Overland Pass has identified the types of additional TWAs that would be required and where these sites would be located. Dimensions and acreages of typical TWAs are identified in **Table 2.2-5**. These additional TWAs would be needed for areas requiring special construction techniques (e.g., river, wetland, and road crossings; horizontal directional drill entry and exit points; steep slopes; rocky soils) and construction staging areas. Prior to construction, Overland Pass would be required to file a complete and updated list of TWAs with the BLM for review and approval prior to use. Additional TWAs on federal land would require authorization from the BLM.

Table 2.2-5 Dimensions and Acreage of Typical Additional Temporary Workspace Areas

Feature	Dimensions [1] (length by width in feet at each side of crossing)	Acreage [1]
Steep hill or side slopes	Length of area x 25, dependent upon hill and/or side slope grade	Varies
Spread mobilization/demobilization and staging	300 x 300	2.1
Foreign pipeline crossovers	L-shaped	Varies
Foreign pipeline/utility/other buried feature[2]	150 x 25	0.1
Stringing truck turnarounds	100 x 150	0.3
Two-lane roads/single railroad[2]	200 x 75	0.3
Four-lane roads/multiple railroads/Interstate[2]	Length of feature + 50 feet x 50 to 75	Varies
Open-cut waterbodies <25 feet wide[2]	200 x 50 + 200 x 100	0.2 + 0.5
Open-cut waterbodies 25 to 50 feet wide[2]	200 x 75 + 200 x 125	0.3
Open-cut waterbodies 50 to 100 feet wide[2]	250 x 75 + 250 x 125	0.4
Directionally drilled waterbodies[2]	300 x 25 to 100 + the length of the drill	+0.7

[1]Dimensions and acreage are for each workspace; some crossings require workspace on both sides of the feature.

[2]Multiple TWAs could be required at a single feature. Dimensions presented are the minimum required; actual dimensions would depend upon site-specific conditions.

Pipe Storage and Contractor Yards

Off-ROW extra workspace areas that would be used during the construction phase of the project include pipe storage yards and contractor yards. Pipe storage yards are where pipe would be delivered, inventoried, and stored prior to stringing it on the ROW. Contractor yards would be used to stage construction, store materials, park equipment, and set up temporary construction offices. Pipe storage and contractor yards range in size, depending upon the amount of material proposed to be stored at each location.

Overland Pass currently intends to use 24 pipe storage and contractor yards during construction (6 yards would be shared between two different spreads). Each yard is located on non-federal land. Overland Pass has selected, to the extent practical, existing commercial/industrial sites or sites that previously were used for construction. Existing public or private roads would be used to access each yard. Where yards would not be located on previously used sites, Overland Pass selected sites on the best available terrain to minimize the need for grading or filling. Generally, yard preparation would be limited to a small amount of grading and leveling, and possibly importing some fill. Both pipe storage yards and contractor yards would be used on a temporary basis and would be restored upon completion of construction. **Table 2.2-6** lists the locations for each pipe storage and contractor yard.

Table 2.2-6 Proposed Pipe Storage and Contractor Yards Associated with the Proposed Action

Spread and Name[1]	Approximate Reference Point	Acres	County, State	Land Use
Opal (3)	0	0.9	Lincoln County, Wyoming	Developed
Black's Fork	18	8.0	Lincoln County, Wyoming	Rangeland
Thayer Junction	84	18.9	Sweetwater County, Wyoming	Developed
Echo Springs	146	4.3	Carbon County, Wyoming	Rangeland
Echo Springs	146	3.0	Carbon County, Wyoming	Rangeland
Rawlins	178	10.8	Carbon County, Wyoming	Developed
Laramie	281	12.5	Albany County, Wyoming	Developed
Laramie	281	6.8	Albany County, Wyoming	Developed
Carr	330	12.4	Weld County, Colorado	Rangeland
Unnamed #1	437.1	1.3	Washington County, Colorado	Agricultural
Otis (2)	438	23.8	Washington County, Colorado	Developed
Unnamed #2	438.9	1.7	Washington, Colorado	Agricultural
Bird City	524	8.2	Cheyenne County, Kansas	Agricultural/ Developed
Gem	562	12.2	Thomas County, Kansas	Agricultural
Rexford	566	4.1	Thomas County, Kansas	Agricultural
Hoxie (2)	590	10.0	Sheridan County, Kansas	Agricultural
Unnamed Hoxie #1	591.3	3.1	Sheridan County, Kansas	Agricultural
Unnamed Hoxie #2	591.3	3.1	Sheridan County, Kansas	Agricultural
Hoisington	692	13.0	Barton County, Kansas	Developed
Conway	749.2	2.1	McPherson County, Kansas	Agricultural

[1]Maps available in Appendix A.

Access Roads

Overland Pass plans to use 582 existing access roads on a temporary basis to transport personnel, equipment, vehicles including high clearance vehicles and heavy trucks, and materials to the work areas. Approximately 139 access roads would be used in Wyoming, 107 roads would be used in Colorado, and 336 roads would be used in Kansas. These access roads include federal and state highways, and numerous county, BLM, USFS, and private roads. Most paved and many gravel roads may not require improvement or maintenance prior to or during construction unless the road base deteriorated or became unsafe or impassable. “Improvement” is defined for this project as, “grading, blading, or straightening activities that would result in changing the roads’ current condition, prior to use.”

Overland Pass has indicated that it would need to improve and maintain approximately 95 existing roads in order to provide a safe and level transportation surface for construction vehicles (37 in roads in Wyoming, 11 roads in Colorado, and 47 roads in Kansas). These existing roads consist mostly of dirt roads, such as farm, ranch, BLM, or USFS access roads and two-track trails. These roads would probably require some level of improvement to support construction equipment, vehicles and ongoing maintenance during the construction period, especially when rain occurs and travel over the roads degrades their condition. Road improvements such as blading and filling would be restricted to the existing road footprint (i.e., the road may not be widened) wherever possible where there is evidence that the road was previously graded. Overland Pass also has proposed that where there is no evidence of previous grading or if the road required widening, road maintenance only would be allowed after completing biological and cultural resources surveys, and completing appropriate consultations with the SHPO and USFWS. In all cases, roads would be used and maintained only with permission of the landowner or land management agency.

As a part of its permanent aboveground facilities, Overland Pass also would construct short, permanent access roads from public roads to the proposed pump stations, meter stations, and MLVs. The estimated acres of disturbance associated with proposed permanent access roads are included in the Aboveground Facilities discussion. Prior to construction, Overland Pass would finalize proposed permanent access roads along with any additional temporary access roads and submit them to the BLM for review and approval. At a minimum, construction of new access roads would require completion of cultural resources and biological surveys, along with the appropriate SHPO and USFWS consultations and approvals. Other state and local permits also may be required prior to construction. In the future, maintenance of newly created access roads would be the responsibility of Overland Pass, with jurisdiction over the road remaining with the affected land management agency or private landowner. Any permanent access roads on federal land would be considered an ancillary facility to the ROW and added to any grant or special use permit from the BLM or USFS, respectively.

Aboveground Facilities

Overland Pass would use a total of approximately 24 acres of land for construction of aboveground facilities, including pump stations, meter stations, MLVs, pigging facilities, and permanent access roads. Of these 24 acres, 10 acres would be retained and used during operation. The remaining acres of land would be restored and would revert to its previous use.

Overland Pass would construct three new electrical pump stations: Echo Springs, Laramie, and in the future, WaKeeney (**Table 2.2-1**). Each station would consist of a pump building, utility building, and parking area for station personnel. Stations would operate on locally purchased power for electricity for pumps, lights, and heating in the buildings and would be fully automated for unmanned operation. Remote start/stop, set point controls, unit monitoring equipment, and station information would be installed at each location. Pipeline entering and exiting the pump facilities would be below grade as practicable, but would come above ground prior to entering and exiting the pump buildings.

Overland Pass would install seven meter stations along the proposed pipeline route, including four custody transfer meter stations and three system check meter stations. The Opal, Bushton, and Conway Custody Transfer meter stations would occur within existing, previously disturbed commercial/industrial areas, while the Echo Springs, Laramie, Washington County, and WaKeeney System Check meter stations would each disturb new areas (**Table 2.2-1**).

Overland Pass would construct 137 MLVs along the proposed route (**Table 2.2-1**). Valves were located along existing access points where possible. Seventeen of the MLVs would be equipped with electric actuators. These valve facilities would have the capability to be quickly and remotely closed by the master control center's Supervisory Control and Data Acquisition (SCADA) system. Fifty-eight of the MLVs would be block valves that would be manually operated by Overland Pass to shut down the NGL flow in both directions. Sixty-two MLVs would be check valves that are designed to prevent backflow of NGL. Seven valves are associated with meter stations. Check valves operate automatically each time the pipeline is shut down or when flow stops. Block valves and check valves typically are co-located due to their different methods of operation. MLVs would be constructed within the 75-foot construction ROW. The block and check valves would be operated within a 25-foot-wide by 25-foot-long site, while remotely activated valves would operate within a 100-foot by 25-foot site. In either situation, all MLVs would be located within the permanent 50-foot-wide ROW. The MLVs would be located based on engineering hydraulic considerations and in accordance with current USDOT regulations.

A total of 11 pigging facilities would be constructed and operated along the pipeline route (**Table 2.2-1**). Nine of these pigging facilities would have both launcher and receiver capabilities, one would have launcher capabilities only, and one would have receiver capabilities only. Launchers and receivers would allow the pipeline to accommodate a high-resolution internal line inspection tool known as a smart pig. Smart pigs and cleaning pigs would periodically move through the pipeline to inspect and clean it.

The aboveground facilities would be painted a color that would be compatible with the existing character of the surrounding landscape based on consultation with the land management agency or landowner.

2.2.1.3 Construction Processes Common to All Action Alternatives

This section describes the design, layout, and general sequence of actions required to construct a pipeline project. The descriptions in this section would be the same for the Proposed Action and for the Southern Corridor – Copper Ridge Bypass Alternative.

Construction Planning

At a minimum, the proposed facilities would be designed, constructed, tested, and operated in accordance with all applicable requirements included in the USDOT regulations in 49 CFR 192, *Transportation of Natural Gas and Other Gas by Pipeline: Minimum Federal Safety Standards*, and other applicable federal and state regulations. These regulations are intended to ensure adequate protection for the public and to prevent natural gas pipeline accidents and failures. Among other design standards, Part 192 specifies pipeline material and qualification, minimum design requirements, and protection from internal, external, and atmospheric corrosion.

Overland Pass has prepared a draft POD that outlines federal-specific construction procedures, environmental requirements, project plans, and mitigation measures that would be implemented by Overland Pass during construction of the Proposed Action on federally managed land. This document describes routine construction and reclamation procedures in upland areas as well construction methods for crossing wetlands and waterbodies. Applicant-proposed mitigation measures also are contained in Overland Pass' POD. Overland Pass has submitted a draft POD that is available for viewing on the BLM website at: www.blm.gov/wy/st/en/info/NEPA/rfodocs/overland_pipeline.html. Overland Pass will prepare a final POD that includes mitigation measures that are described in this EIS. In addition, site-specific stipulations not included in the POD but determined to be necessary on federal lands would be included in any ROW grant issued by the BLM. The site-specific measures included in the POD would not contradict the mitigation measures of this EIS.

Included in its draft POD, Overland Pass has prepared several specific plans that include measures to mitigate for potential impacts. These plans are intended to serve as overall best management practices (BMPs) for construction and operation of the entire project, on both federally managed and non-federally managed lands. The mitigation plans include:

- *Construction, Reclamation, and Revegetation Plan* (**Appendix B**)*;*
- *Site-specific Waterbody Crossing Plans*;
- *Traffic and Transportation Management Plan;*
- *Emergency Response Plan;*
- *Fire Prevention and Suppression Plan;*
- *Conservation Measure Plan;*
- Spill Prevention, Control, and Countermeasures (SPCC) Plan;
- *Storm Water Protection Plan;*
- *Blasting Plan;*
- *Hydrostatic Test Plan* (**Appendix C**)*;*
- *Horizontal Directional Drilling Inadvertent Release Control Plan;*
- *Weed Management Plan* (**Appendix D**)*;* and
- *Winter Construction Plan*.

For example, Overland Pass' *Weed Management Plan* includes site-specific measures that would be implemented to control noxious weeds and invasive plant species, including the use of cleaned, weed-free equipment; the use of high-pressure water to remove seeds and other propagules from equipment prior to transport from a site (except during freezing conditions when compressed air and mechanical means would be used for cleaning equipment); and the use of certified weed-free straw bales to control erosion. Details of the *Weed Management Plan* including important committed mitigation measures are discussed in Section 4.6.

General Pipeline Construction Procedures

Before starting construction, Overland Pass would finalize engineering surveys of the ROW centerline and extra workspaces, and complete land or easement acquisition on private and state land. On federal land, Overland Pass would need to obtain a ROW grant from the BLM. Overland pipeline construction generally proceeds as a moving assembly line as shown in **Figure 2.2-7**. Construction of the main pipeline is planned for five simultaneous construction areas, called spreads, averaging about 150 miles each (**Table 2.2-7**). The pump stations each would be constructed by separate construction crews. Overland Pass plans to initiate construction in the third quarter of 2007, and construction would be completed by the end of the year. This schedule is contingent on Overland Pass receiving approvals to construct the pipeline.

Table 2.2-7 Construction Spreads for the Project

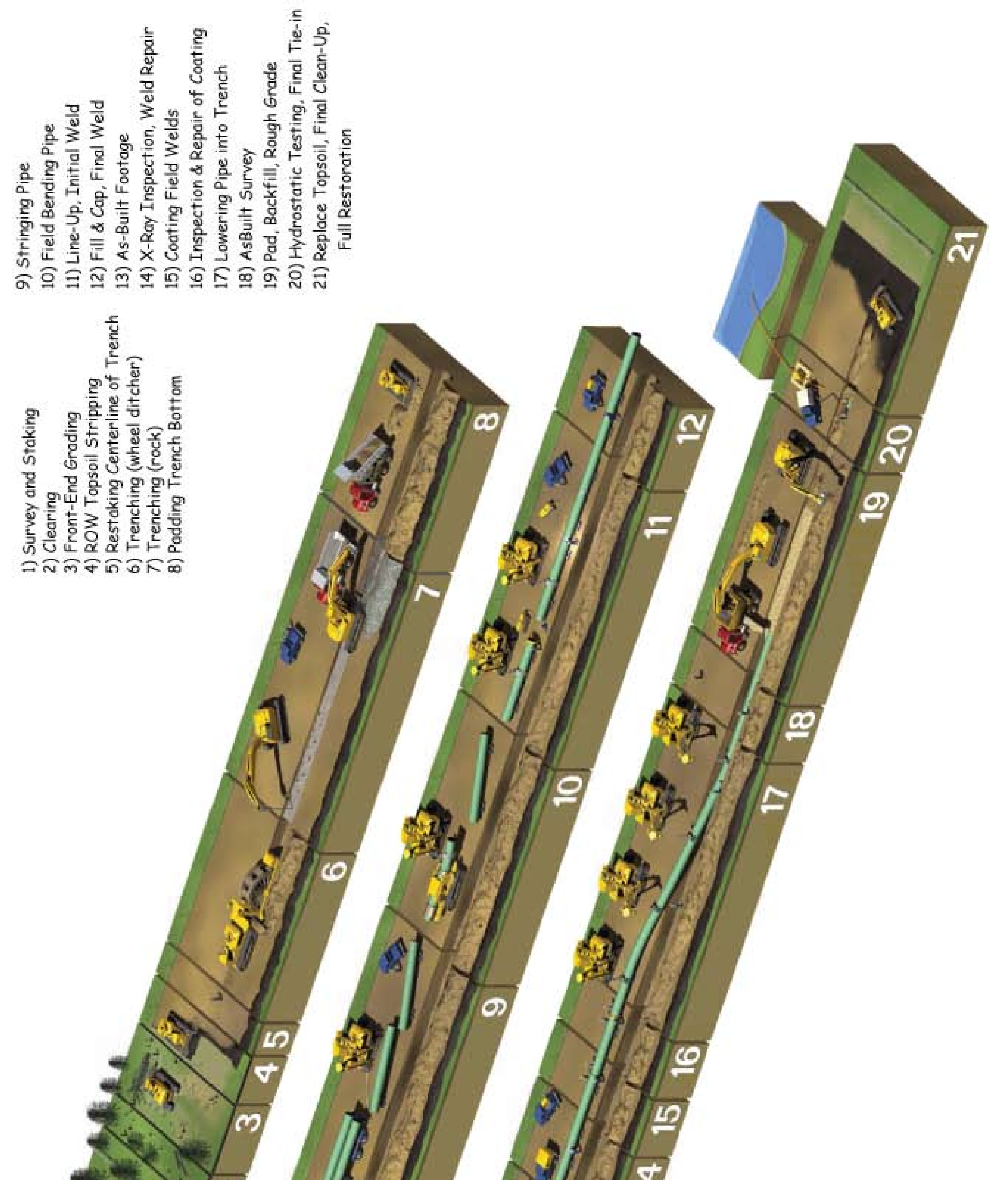
Spread Name	Reference Points	State
Spread 1	0.0 to 147.0	Wyoming
Spread 2	147.0 to 281.0	Wyoming
Spread 3	281.0 to 438.0	Wyoming/Colorado
Spread 4	438.0 to 591.0	Colorado/Kansas
Spread 5	591.0 to 749.4	Kansas

Standard pipeline construction is composed of specific activities including survey and staking of the ROW, clearing and grading, trenching, pipe stringing, bending, welding, lowering-in, backfilling, hydrostatic testing, and cleanup. In addition to standard pipeline construction methods, Overland Pass would use special construction techniques where warranted by site-specific conditions. These special techniques would be used when constructing across rugged terrain, waterbodies, wetlands, paved roads, highways, and railroads (see Special Construction Procedures subsection below).

Survey and Staking. The first step of construction would involve marking the limits of the approved work area (i.e., the construction ROW boundaries, additional temporary workspace areas) and flagging the location of approved access roads and foreign utility lines. Wetland boundaries and other environmentally-sensitive areas also would be marked or fenced for protection at this time. Before the pipeline trench is excavated, a survey crew would stake the centerline of the proposed trench.

Clearing and Grading. Before clearing and grading activities were conducted, landowner fences would be braced and cut, and temporary gates and fences would be installed to contain livestock, if present. A clearing crew would follow the fence crew and would clear the work area of vegetation and obstacles (e.g., trees, logs, brush, rocks). Temporary erosion control measures such as silt fences or straw bales would be installed prior to vegetation removal along wetlands and riparian areas. Grading would be conducted where necessary to provide a reasonably level work surface. Where the ground is relatively flat and does not require grading, rootstock would be left in the ground. More extensive grading would be required in steep side-slopes or vertical areas and where necessary to prevent excessive bending of the pipeline. Temporary erosion controls (e.g., silt fencing or straw bales) would be installed prior to vegetation removal adjacent to wetlands and riparian areas.

Trenching. The trench would be excavated to a depth that provides sufficient cover over the pipeline after backfilling. Typically, the trench will be about 4.5 to 5 feet deep (to allow for about 3 feet of cover) and about 3.5 to 4 feet wide in stable soils. Additional cover would be provided at road and waterbody crossings. Less cover is required in rocky areas (18 inches) in open areas; additional cover (30 inches) would be required in rocky areas in commercial and residential areas, roads, and residential ditches. In sandy, unstable soils, the trench could be considerably wider because the walls could cave or slough during trenching.



Overland Pass Pipeline Project

Figure 2.2-7 Typical Pipeline Construction Sequence

When rock or rocky formations were encountered, tractor-mounted mechanical rippers or rock trenchers would be used for fracturing the rock prior to excavation. In areas where mechanical equipment could not break up or loosen the bedrock, blasting would be required (see Blasting subsection below). Excavated rock would be used to backfill the trench to the top of the existing bedrock profile.

Unless otherwise requested by the landowner, topsoil generally would be separated from subsoil only over the trench itself. Separated topsoil would be stored on the working side of the trench and in a pile separate from subsoil (which would be stored on the spoil side of the trench) to allow for proper restoration of the soil during the backfilling process (**Figure 2.2-5**). In areas where the ROW would be graded to provide a level working surface and where there was a need to separate topsoil from subsoil, the ROW would be graded to collect topsoil before any subsoil was disturbed. Again, topsoil would be piled such that the mixing of subsoil and topsoil would not occur. Gaps would be left between the spoil piles to prevent storm water runoff from backing up or flooding. Topsoil would be returned to its original horizon after subsoil was backfilled in the trench.

In areas where rangeland is used for grazing and livestock could not be temporarily relocated by the landowner, construction activities could potentially hinder the movement of livestock across those allotments. Wildlife accustomed to freely moving through the area in search of food and water also could be hindered by construction activities. To minimize impact on livestock and wildlife movements during construction, Overland Pass would install trench plugs (areas where the trench is excavated and replaced with minimal compaction) to allow livestock and wildlife to safely cross the open trench. Trench plugs would be constructed with a ramp on each side to enable animals that fall into the trench an avenue of escape. To allow for safe passage, trench plugs would be constructed at 0.5-mile intervals and where the trench is intersected by visible livestock or wildlife trails or as directed by the Environmental Inspectors (EI).

Pipe Stringing, Bending, and Welding. Prior to or following trenching, sections of externally coated pipe up to 80 feet long (also referred to as “joints”) would be transported by truck over public road networks and along authorized private access roads to the ROW and placed or “strung” along the trench in a continuous line.

After the pipe sections were strung along the trench and before joints were welded together, individual sections of the pipe would be bent where necessary to allow for uniform fit of the pipeline with the varying contours of the bottom of the trench. A track-mounted, hydraulic pipe-bending machine would shape the pipe to conform to the contours of the terrain. Where multiple or complex bends were required in a section of pipe, that section of the pipeline would be bent at the factory.

After the pipe sections were bent, the joints would be welded together into long strings and placed on temporary supports. The pipeline joints would be lined up and held in position until securely joined by welding. Welds would be inspected by quality control personnel and non-destructive examination to determine the quality of the weld. Federal regulations require nondestructive testing of all welds in areas such as inside railroad or public road ROWs and in certain other areas. Overland Pass has agreed to nondestructively test 100 percent of the girth welds using radio graphic examination or other USDOT-approved method prior to hydrostatic testing. Radiographic examination is one example of a nondestructive method of inspecting the inner structure of welds and determining the presence of defects. Welds that do not meet established specifications would be repaired or removed. Once the welds were approved, a protective epoxy coating would be applied to the welded joints. The pipeline would then be electronically inspected or “jeeped” for faults or voids in the epoxy coating, and visually inspected for any faults, scratches, or other coating defects. Damage to the coating would be repaired before the pipeline was lowered into the trench.

Twenty-foot-wide gaps in the strung pipe string and topsoil piles would be left at least every 0.5 mile and at major game crossing trails or livestock watering trails that intersect the trench line. A corresponding soft plug that would be at least 5 feet wide would be installed to allow passage to livestock and wildlife. Prior to lowering-in of the pipe into the trench, multiple sections of pipeline may be welded together above the ditch to create welded lengths of pipe. These sections of pipeline would be lowered into the ditch after they were joined.

Lowering-in and Backfilling. Before the pipeline is lowered in, the trench would be inspected to be sure it is free of livestock or wildlife, as well as rocks and other debris that could damage the pipe or protective coating. In areas where water accumulated, dewatering could be necessary to inspect the bottom of the trench. The pipeline then would be lowered into the trench. On sloped terrain, trench breakers (stacked sand bags or foam) would be installed in the trench at specified intervals to prevent subsurface water movement along the pipeline. The trench would then be backfilled using the excavated material. In rocky areas, the pipeline would be protected with a rock shield (fabric or screen that is wrapped around the pipe to protect the pipe and its coating from damage by rocks, stones, and roots). Alternatively, the trench bottom would be filled with padding material (e.g., finer grain sand, soil, or gravel) to protect the pipeline. No topsoil would be used as padding material.

Overland Pass estimates that reasonable construction progress will leave 10 to 12 miles of trench open at a time. Overland Pass does not propose to limit the length of trench open at any one time due to practical concerns regarding the rate of construction, estimated to move at a rate of approximately 2 miles per day.

Hydrostatic Testing. The pipeline would be hydrostatically tested in 40 sections to ensure the system was capable of withstanding the operating pressure for which it was designed. This process involves isolating the pipe segment with test manifolds, filling the line with water, pressurizing the section to a pressure commensurate with the MOP and class location, and then maintaining that pressure for a period of 8 hours. The hydrostatic test would be conducted in accordance with Title 49 CFR Part 192. Overland Pass proposes to obtain water for hydrostatic testing from a combination of groundwater and surface water sources through specific agreements with landowners and in accordance with federal, state, and local regulations. The pipeline would be hydrostatically tested after backfilling and all construction work that would directly affect the pipe has been completed. If leaks are found, they would be repaired and the section of pipe retested until specifications were met. Water used for the testing would then be transferred to another pipe section for subsequent hydrostatic testing or the water would be tested to ensure compliance with the NPDES discharge permit requirements, treated if necessary, and discharged. Hydrostatic testing is discussed further in Section 4.5.

Final Tie-in. Following successful hydrostatic testing, test manifolds would be removed and the final pipeline tie-ins would be made and inspected.

Commissioning. After final tie-ins are complete and inspected, the pipeline would be cleaned and dried using mechanical tools (pigs) that are moved through the pipeline with pressurized, dry air. The pipeline would be dried to minimize the potential for internal corrosion. Once the pipe has dried sufficiently, pipeline commissioning would commence. Commissioning involves activities to verify that equipment has been properly installed and is working, the controls and communications systems are functional, and that the pipeline is ready for service. In the final step, the pipeline is prepared for service by purging the line of air and loading the line with natural gas liquids.

Cleanup and Restoration. During cleanup, construction debris on the ROW would be disposed of and work areas would be final graded. Preconstruction contours would be restored. Segregated topsoil would be spread over the surface of the ROW and permanent erosion controls would be installed. After backfilling, final cleanup would begin as soon as weather and site conditions permit. Every reasonable effort would be made to complete final cleanup (including final grading and installation of erosion control devices) within 20 days after backfilling the trench (10 days in residential areas). Construction debris would be cleaned up and taken to a state-approved disposal facility.

After permanent erosion control devices are installed and final grading has occurred, all disturbed work areas would be seeded as soon as possible. Seeding is intended to stabilize the soil, revegetate areas disturbed by construction, and, depending upon land use, restore native flora. Timing of the reseeding efforts would depend upon weather and soil conditions and would be subject to the prescribed dates and seed mixes specified by the landowner, land-managing agency, or NRCS recommendations.

Pipeline markers would be installed at fence, road, and railroad crossings and other locations (as required by 49 CFR 192) to show the location of the pipeline. Markers would identify the owner of the pipeline and convey emergency information. Special markers providing information and guidance to aerial patrol pilots also would be installed.

Special Construction Procedures

In addition to standard pipeline construction methods, Overland Pass would use special construction techniques where warranted by site-specific conditions. These special techniques would be used when constructing across paved roads, highways, railroads, steep terrain, waterbodies, wetlands, and when blasting through rock. These are described below.

Road, Highway, and Railroad Crossings. Construction across paved roads, highways, and railroads would be in accordance with the requirements of Overland Pass' road and railroad crossing permits and approvals obtained by Overland Pass. In general, major paved roads, highways, and railroads would be crossed by boring beneath the road or railroad. Boring requires the excavation of a pit on each side of the feature, the placement of boring equipment in the pit, then boring a hole under the road at least equal to the diameter of the pipe. Once the hole was bored, a prefabricated pipe section would be pushed through the borehole. For long crossings, sections could be welded onto the pipe string just before being pushed through the borehole. Boring would result in minimal or no disruption to traffic at road, highway, or railroad crossings. Each boring would be expected to take 2 to 10 days.

Most smaller, unpaved roads and driveways would be crossed using the open-cut method where permitted by local authorities or private owners. The open-cut method would require temporary closure of the road to traffic and establishment of detours. If no reasonable detour is feasible, at least one lane of traffic would be kept open, except during brief periods when it is essential to close the road to install the pipeline. Most open-cut road crossings would be completed and the road resurfaced within a few days. Overland Pass would take measures, such as posting signs at open-cut road crossings, to ensure safety and minimize traffic disruptions.

Steep Terrain. Additional grading may be required in areas where the proposed pipeline route would cross steep slopes. Steep slopes often need to be graded down to a gentler slope to accommodate pipe-bending limitations. In such areas, the slopes would be cut away, and, after the pipeline is installed, reconstructed to their original contours during restoration.

In areas where the proposed pipeline route crosses laterally along the side of a slope, cut and fill grading may be required to obtain a safe, flat work terrace. Topsoil would be stripped from the entire ROW and stockpiled prior to cut and fill grading on steep terrain. Generally, on steep side-slopes, soil from the high side of the ROW would be excavated and moved to the low side of the ROW to create a safe and level work terrace. After the pipeline is installed, the soil from the low side of the ROW would be returned to the high side, and the slope's original contours would be restored. Topsoil from the stockpile would be spread over the surface, erosion control features installed, and seeding implemented.

In steep terrain, temporary sediment barriers such as silt fence and certified weed-free straw bales would be installed during clearing to prevent the movement of disturbed soil off the ROW. Temporary slope breakers consisting of mounded and compacted soil would be installed across the ROW during grading, and permanent slope breakers would be installed during cleanup. Following construction, seed would be applied to steep slopes, and the ROW would be mulched with certified weed-free straw or covered with erosion-control fabric. Fabric would be installed on all slopes leading to waterbodies, immediately after the bank was recontoured. Overland Pass would use mulching materials approved by the BLM or the USFS, as appropriate on the portion of the route that is under their jurisdictions. Sediment barriers would be maintained across the ROW until permanent vegetation is established.

Waterbody Crossings. Perennial waterbodies would be crossed using one of four techniques: the open-cut method (Overland Pass' preferred method), horizontal directional drill (HDD) method, flume method, or dam-and-pump method as described below.

If a waterbody was flowing at the time of construction, Overland Pass' preferred crossing method would be to use an open-cut. The open-cut method involves trenching through the waterbody while water continues to flow through the construction work area. Pipe segments for the crossing would be fabricated adjacent to the waterbody. Backhoes generally operating from one or both banks would excavate the trench within the streambed. In wider rivers, in-stream operation of equipment may be necessary. Trench plugs (stacked, compacted sand bags) would be placed to prevent the flow of water into the upland portions of the trench. Trench spoil excavated from the streambed generally would be placed at least 10 feet away from the water's edge. Sediment barriers would be installed where necessary to control sediment and to prevent excavated spoil from entering the water. After the trench is dug, the prefabricated pipeline segment would be carried, pushed, or pulled across the waterbody and positioned in the trench. The trench would then be backfilled with native material or with imported material if required by applicable permits. Following backfilling, the banks would be restored and stabilized.

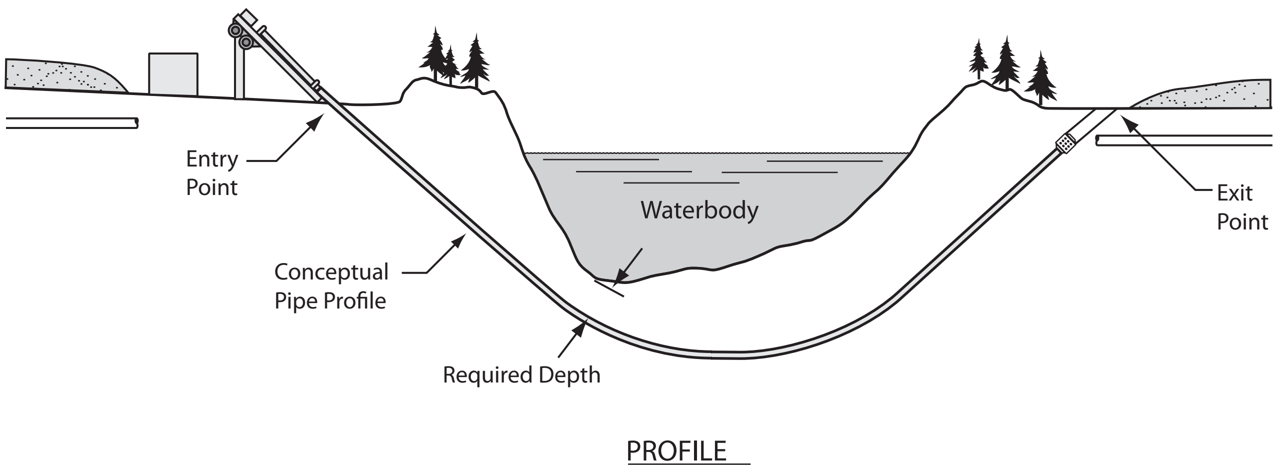
If requested by agencies for specific river crossings, Overland Pass may be required to use the HDD method of construction to reduce overall environmental impacts at these crossings. The HDD method involves drilling a pilot hole under the waterbody and banks, then enlarging the hole through successive reamings until the hole is large enough to accommodate a prefabricated segment of pipe. Throughout the process of drilling and enlarging the hole, a slurry made of non-toxic fluids, such as naturally occurring bentonite and water, would be circulated through the drilling tools to lubricate the drill bit, remove drill cuttings, and hold the hole open. This slurry is referred to as drilling mud. Pipe sections long enough to span the entire crossing would be staged and welded along the construction work area on the opposite side of the waterbody and then pulled through the drilled hole. Ideally, use of the HDD method results in no impact on the banks, bed, or water quality of the waterbody being crossed. **Figure 2.2-8** shows a conceptual HDD waterbody crossing.

Flume and dam-and-pump methods also could be considered as alternative crossing methods. The flume crossing method involves diverting the flow of water across the trenching area through one or more flume pipes placed in the waterbody. The dam-and-pump method is similar to the flume method except that pumps and hoses would be used instead of flumes to move water around the construction work area. In both methods, trenching, pipe installation, and backfilling are done with the streambed in a relatively dry condition while water flow is maintained for all but a short reach of the waterbody at the actual crossing. Once backfilling is completed, the flume or pump hoses are removed and the streambanks restored and stabilized.

The project also would cross intermittent waterbodies. Many of these intermittent waterbodies are dry washes. If these intermittent waterbodies are dry at the time of crossing, Overland Pass proposes to use conventional upland cross-country construction techniques. If an intermittent waterbody is flowing when crossed, Overland Pass may install the pipeline using one of the waterbody crossing methods discussed above or wait until water is not flowing. At ditches lined with concrete and aqueducts made out of pipe, Overland Pass would use the bore crossing method described above. When crossing waterbodies, Overland Pass would adhere to the guidelines outlined in Overland Pass' POD and the requirements of its waterbody crossing permits. For major waterbodies (greater than 100 feet wide measured from bank-to-bank) and sensitive waterbodies, Overland Pass would prepare site-specific crossing plans (Overland Pass 2006).

Additional TWAs would be required on both sides of all waterbodies to stage construction, fabricate the pipeline, and store materials. On federal lands, these workspaces would be located at least 50 feet away from the water's edge. Before construction, temporary bridges (e.g., clean rock fill over culverts, timber mats supported by flumes, railcar flatbeds, flexi-float apparatus) would be installed across all perennial waterbodies to allow construction equipment to cross. Construction equipment would be required to use the bridges, except the clearing crew who would be allowed one pass through the waterbodies before the bridges were installed.

Clearing adjacent to waterbodies would involve the removal of vegetation from the construction ROW and additional TWAs. If no herbaceous strip existed, sediment barriers would be installed at the top of the streambank. Initial grading of the herbaceous strip would be limited to the extent needed to create a safe approach to the waterbody and to install bridges.



Overland Pass
Pipeline Project

Figure 2.2-8
Conceptual Horizontal
Directionally
Drilled Waterbody

During clearing, sediment barriers would be installed and maintained across the ROW adjacent to waterbodies and within additional temporary workspace areas to minimize the potential for sediment runoff. Silt fence and/or certified weed-free straw bales located across the working side of the ROW would be removed during the day when vehicle traffic is present and would be replaced each night. Alternatively, drivable berms could be installed and maintained across the ROW in lieu of silt fence and/or straw bales.

In general, equipment refueling and lubricating at waterbodies would take place in upland areas that are 500 feet or more from the edges of the water on federal lands. When circumstances dictate that equipment refueling and lubricating would be necessary in or near waterbodies, Overland Pass would follow its SPCC Plan to address the handling of fuel and other hazardous materials.

After the pipeline is installed beneath the waterbody using one of the methods described above, restoration would begin. Waterbody banks would be restored to preconstruction contours or to a stable angle of repose. Erosion-control fabrics would be installed immediately after the bank is recontoured. Rock riprap or gabion baskets (rock enclosed in wire bins) would be installed as necessary on steep waterbody banks in accordance with permit requirements. Waterbody banks temporarily would be stabilized within 24 hours of completing in-stream construction. Sediment barriers, such as silt fence and/or certified weed-free straw bales or drivable berms would be maintained across the ROW at all waterbody approaches until permanent vegetation was established. Temporary equipment bridges would be removed following construction.

Wetland Crossings. Pipeline construction across wetlands would be similar to typical conventional upland cross-country construction procedures, with several modifications and limitations to reduce the potential for pipeline construction to affect wetland hydrology and soil structure. To minimize impacts to the environment, Overland Pass would cross wetlands using the procedures outlined in Overland Pass' POD. To precisely identify the wetlands that would be affected by the proposed project, Overland Pass conducted field delineation of wetlands. Prior to construction, Overland Pass would provide final wetland delineation reports to the USACE.

Overland Pass proposes to use a 75-foot-wide construction ROW through wetlands. Additional TWAs would be required on both sides of wetlands to stage construction, fabricate the pipeline, and store materials. These additional TWAs would be located in upland areas a minimum of 50 feet from the wetland edge on federal lands, and a minimum of 10 feet on private land.

Construction equipment working in wetlands would be limited to that essential for ROW clearing, excavating the trench, fabricating and installing the pipeline, backfilling the trench, and restoring the ROW. In areas where there is no reasonable access to the ROW except through wetlands, non-essential equipment would be allowed to travel through wetlands only if the ground was firm enough or had been stabilized to avoid rutting. Otherwise, non-essential equipment would be allowed to travel through wetlands only once.

Clearing of vegetation in wetlands would be limited to trees and shrubs, which would be cut flush with the surface of the ground and removed from the wetland. To avoid excessive disruption of wetland soils and the native seed and rootstock within the wetland soils, stump removal, grading, topsoil segregation, and excavation would be limited to the area immediately over the trenchline. A limited amount of stump removal and grading could be conducted in other areas if dictated by safety-related concerns.

During clearing, sediment barriers, such as silt fence and certified weed-free staked straw bales, would be installed and maintained adjacent to wetlands and within additional TWAs as necessary to minimize the potential for sediment runoff. Sediment barriers would be installed across the full width of the construction ROW at the base of slopes adjacent to wetland boundaries. Silt fence and/or certified weed-free straw bales installed across the working side of the ROW would be removed during the day when vehicle traffic was present and would be replaced each night. Alternatively, drivable berms could be installed and maintained across the ROW in lieu of silt fence or certified weed-free straw bales. Sediment barriers also would be installed within wetlands along the edge of the ROW, where necessary, to minimize the potential for sediment to run off the construction ROW and into wetland areas outside the work area.

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

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

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

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

In wetlands where no standing water is present, the construction ROW would be seeded in accordance with the recommendations of the local soil conservation authorities or land management agency. Lime, mulch, and fertilizer would not be used in wetlands.

Blasting. Overland Pass has stated that blasting might be required in areas where competent shallow bedrock or boulders were encountered that could not be removed by conventional excavation methods. If blasting were required to clear the ROW and to fracture the ditch, strict safety precautions would be followed. Overland Pass would exercise extreme care to avoid damage to underground structures, cables, conduits, pipelines, and underground watercourses or springs. To protect property or livestock, Overland Pass would provide adequate notice to adjacent landowners or tenants in advance of blasting. Blasting activity would be performed during daylight hours and in compliance with federal, state, and local codes and ordinances and manufacturers' prescribed safety procedures and industry practices. Overland Pass currently is developing a *Blasting Plan* for inclusion in the POD.

Residential Construction. Based on aerial alignment sheets, no residences would be located within 50 feet of the Proposed Action area. Additionally, no commercial buildings were identified within 50 feet of the proposed construction work area. Should reroutes be required that would place the pipeline within 50 feet of an occupied home or building, Overland Pass would develop site-specific construction plans to mitigate the impacts of construction on residential and commercial structures located within 50 feet of the proposed project area.

Fences and Grazing. Fences would be crossed or paralleled by the construction ROW. Overland Pass would contact grazing lessees prior to crossing any fence on public lands or any fence between public and private land, and would offer the lessee the opportunity to be present when the fence is cut so that the lessees can be satisfied that the fence is adequately braced and secured. The grazing permitees would be contacted prior to the start of construction and reclamation on their allotments. Before cutting the wires for pipeline construction, each fence crossed by the ROW would be braced and secured to prevent the slacking of the wire. To prevent the passage of livestock, the opening in the fenceline would be temporarily closed when construction crews left the area. If gaps in natural barriers used for livestock control were created by the pipeline construction, the gaps would be fenced according to the landowners or land management agency requirements.

All existing improvements, such as fences, gates, irrigation ditches, cattle guards, and reservoirs would be maintained during construction and repaired to pre-construction conditions or better. If pipelines transporting water for livestock and wildlife were damaged by construction activities, Overland Pass would repair the pipelines to the landowner or land management agency specifications. If needed, Overland Pass has committed to providing an emergency source of agricultural-use water.

Aboveground Facility Construction Procedures

Construction activities at each of the three pump stations would follow a standard sequence of activities: clearing and grading, installing foundations for the pump and control buildings, and erecting the structures to house the pumps and associated facilities. A MLV would be required at each station. In addition, a pipeline pig launcher and/or pig receiver facility would be installed at each of the pump stations. Construction activities and the storage of building materials would be confined to the pump station construction sites.

The sites for the pump stations would be cleared of vegetation and graded as necessary to create a level surface for the movement of construction vehicles and to prepare the area for the building foundations. Foundations would be constructed for the buildings, and soil would be stripped from the area of the building foundations.

Each pump station would include two buildings: one utility building and one pump building. The utility building would include control equipment to filter, measure, and regulate fuel gas. The pump building at each station would house the pumps. The natural gas piping, both aboveground and belowground, would be installed and pressure-tested using methods similar to those used for the main pipeline. After testing is successfully completed, the piping would be tied in to the main pipeline. Piping installed below grade would be coated for corrosion protection prior to backfilling. In addition, all below-grade facilities would be protected by a cathodic protection system. Before being put into service, pumps, controls, and safety devices would be checked and tested to ensure proper system operation and activation of safety mechanisms.

Electrical power would be required at each of the major aboveground facilities (pump stations and meter stations) and at each of the remotely operated valves. Currently, Overland Pass anticipates that a 4,160-volt (V) powerline would be extended from a nearby high voltage transmission powerline into the Echo Springs Pump Station and Meter Station site, within the proposed ROW. Additionally, a 480-V powerline would be extended from a nearby high voltage transmission powerline into the proposed Opal Meter Station site, within the proposed pipeline ROW. The remaining pump stations and meter stations would be located at sites in close proximity to high voltage transmission powerlines to operate the proposed facilities. The details of the powerlines that would be extended currently are being determined and will be provided at a later date. **Table 2.2-8** summarizes electrical power and distribution lines requirements.

After the completion of startup and testing, the pump station sites would be graded and landscaped. A permanent security fence would be installed around each pump station site. Because each of the pump station sites would be located in remote, undeveloped areas and/or adjacent to existing commercial/industrial facilities, the station buildings would be designed to be as consistent as possible with the character of the surrounding land uses. The pump stations would be painted a color to enable the structures to blend into the surrounding landscape, native vegetation would be used for landscaping, and the minimum lighting necessary for safe operation of the facilities would be installed. Overland Pass proposes to construct the stations in 2007; any landscaping would occur in the spring or early summer of 2008.

Table 2.2-8 Summary of Electrical Power Supply Requirements for Valves, Pump Stations, and Meter Stations

Facility	Reference Point	Utility Company	Length of Connection	Line Voltage
Opal Meter Station with Remote Valve	0.0	Power to be provided by Williams at the Opal Plant power to be run underground	<0.25 mile	480 V
Remote Valve and Sweetwater Pigging Facility	72.1	Pacific Power and Light (Rocky Mountain Power)	100 feet	12,240 V
Echo Springs Pump Station and Meter Station with Remote Valve	146.5	Power to be provided by Williams at the Echo Springs Plant	<0.25 mile	34.5 kilovolt (kV)
Remote Valve	207.0	Carbon Power and Light	2.9 miles	13.2 kV
Laramie Pump Station and Meter Station with Remote Valve	271.7	Laramie Pump Station, power to be provided by Carbon Power and Light as part of the entire station	2.4 miles	34.5 kV
Remote Valve	307.4	High West Energy	0.2 mile	12,470 V
Remote Valve	323.0	Poudre Valley REA	Powerline crosses valve site	15 kV
Remote Valve	342.7	High West Energy	<1 mile (within 0.5)	12,470 V
Remote Valve	389.8	Xcel Energy	1 to 1.5 miles	13.2 kV
Washington County Meter Station with Remote Valve	447.8	YW Electric	1 to 1.5 miles	12,470 V
Remote Valve	507.9	Prairieland Electric	1 to 1.5 miles	13.2 kV
Remote Valve and Thomas Pigging Facility	552.9	Midwest Energy	<0.5 mile (within 0.25)	13.2 kV
WaKeeney Meter Station with Remote Valve	606.0	Western COOP	0.5 mile	13.2 kV
Remote Valve and Ellis Pigging Facility	654.7	Western COOP	<0.5 mile (within 0.25)	13.2 kV
Bushton Meter Station with Remote Valve	717.5	Power to be provided by ONEOK at the Bushton Plant	<0.25 mile	480 V
Remote Valve	736.2	Power to be provided by Williams at the Mitchell Plant	0.1 mile	480 V
Conway Meter Station with Remote Valve	749.4	Power to be provided by Williams at the Conway Plant	0.1 mile	480 V

Construction activities would include clearing, grading, trenching, installing piping, erecting buildings, fencing the facilities, cleanup, and restoration. The meter stations would operate on locally provided power.

Mainline valve construction would be concurrent with the construction of the pipeline with valves installed at spacings as required by the USDOT (49 CFR 192). Where practical, mainline valves typically would be located near public roads to allow year-round access. Permanent access roads or approaches may be constructed within the permanent ROW to some mainline valve sites.

The construction of pig launchers and receivers would be concurrent with the construction of the meter stations and mainline valves. Activities such as clearing, grading, trenching, and clean-up and restoration would occur simultaneously with construction activities associated with the pipeline and pump stations.

Corrosion Protection

An external coating would be applied to the pipeline and all buried facilities to protect against corrosion. Cathodic protection would be provided by an impressed current.

Construction Workforce and Schedule

Overland Pass proposes to begin construction in July 2007; construction would last 6 months. Overland Pass proposes to complete construction and begin service by the fourth quarter of 2007. Overland Pass anticipates a peak workforce of approximately 600 construction personnel. Construction personnel would consist of Overland Pass employees, contractor employees, construction inspection staff, and environmental inspection staff. Overland Pass is planning to build the pipeline in five spreads, with construction activity occurring simultaneously in each spread. Overland Pass anticipates 50 to 75 construction and inspection personnel associated with each spread, plus an additional 20 persons for activities such as pipe unloading. The construction of the aboveground facilities would require an additional 50 to 75 workers. During construction, personnel would work during daylight hours, 6 to 7 days per week depending on schedule constraints. **Table 2.2-9** outlines Overland Pass' proposed construction schedule and workforce requirements by spread for the proposed project.

Table 2.2-9 Pipeline Construction Workforce and Proposed Schedule

Spread	Associated Aboveground Facilities (RP)	Begin RP	End RP	Estimated Workforce	County and State
1	Echo Springs Pump Station (147.5) Opal and Echo Springs Meter Stations (0.0 and 146.5)	0.0	147.0	75 to 150	Lincoln, Sweetwater and Carbon counties, Wyoming
2	Laramie Pump Station (271.7) Laramie Meter Station (271.7)	147.0	281.0	75 to 150	Sweetwater, Carbon and Albany counties, Wyoming
3	No pump or meter stations	281.0	438.0	50 to 100	Albany and Laramie counties, Wyoming; Weld, Morgan, Logan, and Washington counties, Colorado
4	Washington County Meter Station (RP 447.8)	438.0	591.0	50 to 100	Washington and Yuma counties, Colorado; Cheyenne, Rawlins, Thomas, and Sheridan counties, Kansas
5	WaKeeney Meter Station (606.0) Bushton and Conway Meter Stations (717.5 and 749.4)	591.0	749.4	75 to 150	Sheridan, Graham, Gove, Trego, Ellis, Russell, Barton, Ellsworth, Rice, and McPherson counties, Kansas

Overland Pass, through its construction contractors and subcontractors, would attempt to hire temporary construction staff from the local population, if the local population offers skilled workers in fields related to pipeline construction. At peak workforce, Overland Pass anticipates that up to about 20 percent of the total construction workforce could be hired locally (currently residing in Kansas, Colorado, or Wyoming). The remaining portion of the workforce (80 percent or more) would include non-local personnel. Based on the specialized nature of the position, environmental inspection staff most likely would consist entirely of non-local employees.

Overland Pass estimates that 5 to 20 permanent employees would be required to oversee the operation and maintenance of the pipeline, including the pumping stations. These employees most likely would be non-local, as they would have specialized responsibilities or have current employment with Overland Pass. No additional personnel would be hired to operate and maintain the pumping stations as these facilities would be constructed to operate automatically. Any specific operation and maintenance task which could not be completed by the existing staff would be completed on a contractual and as-need basis.

Only work vehicles would be allowed on the construction ROW or additional temporary workspace areas during construction. Equipment operators would drive a company-owned or personal pick-up truck to the construction site. Parking would be limited to the construction ROW, additional temporary workspace areas, or along existing authorized access roads. Adjacent ROWs would not be used for parking. Construction workers would not be permitted to travel cross-country during construction of the project.

Environmental Inspection, Compliance Monitoring, and Post-approval Variances

Environmental Inspection. The environmental inspection and compliance monitoring programs for the project would address requirements placed on the project by the federal and other agencies.

Overland Pass proposes to assign EIs to each construction spread. The EIs would likely be hired from a qualified third-party contractor. The responsibilities of the EIs are outlined in Overland Pass' POD and would include ensuring that the ROW Grant and environmental conditions attached to other permits and authorizations are met. During the construction phase, Overland Pass' EIs would inspect all construction and mitigation activities to ensure compliance with the requirements of environmental plans, permits, and conditions. EIs also may oversee cultural resource monitors and/or biological monitors that may be required to monitor and evaluate construction impacts on resources as specified in this EIS.

Inspectors from the BLM and USFS, as appropriate, also would conduct field inspections during construction. Other federal and state agencies also may conduct oversight of inspection to the extent determined necessary by the individual agency.

After construction is completed, the BLM and USFS, as appropriate, would continue to conduct oversight inspection and monitoring. If it is determined that any of the proposed monitoring timeframes are not adequate to assess the success of restoration, Overland Pass would be required to extend its post-construction monitoring programs. The BLM would retain Overland Pass' bond or other security until the BLM is satisfied with Overland Pass' reclamation efforts.

Compliance Monitoring. In addition to the EI program, Overland Pass would provide funding to implement a third-party compliance monitoring program during construction of the project. The compliance monitoring program would be implemented under the direction of the BLM and USFS.

The overall objective of the compliance monitoring program is to monitor and document Overland Pass' compliance and/or noncompliance with environmental requirements during construction of the Project. The environmental requirements to be monitored would be limited to those requirements and conditions that are either located on federal land (BLM and NFS) or those conditions that result from a federal permit requirement including:

- The environmental mitigation measures that were proposed by Overland Pass throughout the permitting phase of the project;
- The Overland Pass POD, which would be appended to the BLM ROW Grant;
- The conditions contained in the BLM ROD and the BLM ROW Grant and Temporary Use Permits;
- The USFWS BO concerning listed endangered or threatened federal species or their habitat;
- The approved treatment plan(s) and MOA for the treatment and protection of cultural resources; and

- Additional stipulations included in permits from other authorizing federal agencies.

During construction, full-time Compliance Monitors would conduct daily ongoing inspections of construction activities and mitigation measures and provide regular feedback on compliance issues to the BLM, Overland Pass, and Overland Pass' EI team. Construction progress and environmental compliance would be tracked and documented by the preparation and submittal of daily and weekly reports. The Compliance Monitors would report directly to a Compliance Manager. The Compliance Manager would report directly to the designated BLM Project Manager and USFS Project Manager.

Other objectives of the compliance monitoring program are to:

- Facilitate the timely resolution of compliance-related issues in the field;
- Provide continuous information to the BLM and USFS regarding noncompliance issues and their resolution; and
- Review, process, and track construction-related variance requests in a timely manner.

Compliance Monitors would assist with implementation of the variance process in accordance with a predetermined level of decision-making authority granted by the BLM and USFS.

Post-approval Variance Process. Surface disturbance locations and acreages identified in this EIS are anticipated to be sufficient for the construction and operation (including maintenance) of the project and all ancillary improvements. However, route realignments and other project refinements often continue past the project review phase and into the construction phase. As a result, work area locations and disturbed acreages documented in the EIS often change after project approval. These changes frequently involve minor route realignments or moving approved temporary workspace, adding new temporary workspace, and adding access routes to work areas and associated temporary use areas. This section describes the procedure used for assessing impact on workspace areas outside those specifically listed in this EIS and for approving their use.

Subsequent to project approval, when work areas outside those evaluated in this EIS are found to be needed, additional inventory and evaluation would be performed to ensure that the impact on biological, cultural, and other resources would be avoided or minimized to the maximum extent practicable. New workspace location and survey results would be documented and forwarded to the BLM and USFS, as applicable, in the form of a "variance request;" one of the two federal agencies would take the lead on reviewing the request, depending on the ownership status of the subject land. Appropriate agency consultations/approvals would be conducted/obtained prior to approval of the variance. At the conclusion of the project, as-built drawings would be provided to the BLM and the USFS.

Operation and Maintenance

Overland Pass would operate and maintain the project facilities in accordance with the USDOT regulations in 49 CFR 195 and other applicable federal and state regulations. Operation and maintenance of the pipeline system would, in most cases, be accomplished by Overland Pass personnel. Overland Pass estimates that operation of the pipeline would require up to 20 additional employees. Operation of the pipeline would require access along the pipeline ROW by Overland Pass personnel. While Overland Pass would make an effort to notify landowners prior to entering private property, landowner notification is not required for entry along the ROW, particularly in emergency situations.

ROW Monitoring and Maintenance. In order to maintain accessibility of the ROW and to accommodate pipeline integrity surveys, woody vegetation that might affect the integrity of the pipeline would periodically be cleared over the pipeline. In most areas, the ROW would be maintained in an herbaceous state. Large trees would be removed from the permanent ROW. Overland Pass would use only mechanical mowing or cutting along its ROW for normal vegetation maintenance.

Noxious weeds and invasive plant monitoring and control activities would occur during routine ROW monitoring and maintenance activities. Noxious weeds and invasive plants discovered within the ROW would be controlled according to the measures specified in Overland Pass' *Weed Management Plan* (**Appendix D**).

In the future, pipeline integrity surveys and vegetation maintenance could identify areas on the ROW where permanent erosion control devices need to be repaired or additional erosion control devices may be needed. If problem areas were evident, erosion control devices would be repaired or installed as necessary and the ROW would be stabilized to prevent future degradation.

In the vicinity of waterbodies, wetlands, and upland areas, Overland Pass would adhere to the operation and maintenance procedures described in Overland Pass' POD and its appendices. Operation and maintenance procedures, including record keeping, would be performed in accordance with the USDOT requirements.

Pipeline Integrity

Overland Pass's pipeline facilities would be operated and maintained in accordance with the federal safety standards (49 CFR 195). Operation and maintenance of project facilities would be performed by or at the direction of Overland Pass. The pipeline would be inspected periodically from the air and on foot as operating conditions permit, but no less frequently than as required by 49 CFR 195. These surveillance activities would provide information on possible encroachments and nearby construction activities, erosion, exposed pipe, and other potential concerns that may affect the safety and operation of the pipeline. Evidence of population changes would be monitored and class locations changed as necessary. MLVs also would be inspected annually and the results documented.

Future Plans and Abandonment

Overland Pass has no plans to expand the system or increase its capacity at the present time. If, in Overland Pass' judgment, future market demands warrant expansion of the project, Overland Pass would file an appropriate application with the BLM at that time.

Properly maintained, the proposed pipeline is expected to operate for 50 or more years. If and when Overland Pass abandons any of the proposed facilities, the abandonment would be subject to separate approvals by the BLM, USFS, and other land management agencies. On federal lands, the BLM would require Overland Pass to submit an abandonment plan at least 90 days prior to anticipated abandonment. Overland Pass has no plans for abandonment of the pipeline system.

Upon abandonment of the pipeline, in part or in whole, the ROWs associated with the abandoned facilities normally would be returned to the landowners/land management agencies according to the specific easement agreements between the landowners/land managing agencies. However, on federal lands, the pipeline ROW could be used for other utility ROW (e.g., fiber optic lines) depending upon future decisions made by the BLM.

2.2.2 The No Action Alternative

Under the No Action Alternative, the BLM would reject the project as proposed. The BLM would not issue a ROW grant for the project. Without a ROW grant across federal lands, the Overland Pass pipeline could not be constructed due to the federal land ownership patterns in the region.

Since it is not possible to construct an interstate pipeline without crossing BLM-administered land as proposed, the Overland Pass pipeline could not be constructed. There is an existing pipeline system (Enterprise NGL Pipeline) that is currently operating near its capacity (225,000 bpd). The Enterprise Pipeline system (Enterprise) transports NGL to Mont Belvieu, Texas. The recently approved Western Expansion Project (MAPL 2005) could expand the capacity of Enterprise by accommodating up to 50,000 bpd of additional capacity. Despite these expansions, regional gas development is expected to outpace the pipeline capacity in the near future. Consequently, Enterprise, including the Western Expansion Project, was evaluated as a System

Alternative, but was eliminated from detailed evaluation because it did not meet the purpose and need (Section 2.3.1.2).

Despite the lack of sufficient transportation capacity, the extraction of natural gas (and associated NGLs) would continue unabated due to the nationwide demand for these products. Since the amount of NGLs being produced in the region is expected to exceed the existing pipeline transportation capacity and given the market values of NGL, alternative proposals to transport or store the NGL likely would be developed.

If the project were not approved, other pipeline projects may be proposed in the future. Given the market value of the volumes of natural gas liquids being produced in the region, ONEOK, Williams, Overland Pass, or other companies could submit a new ROW grant application to the BLM for a different pipeline route. This would initiate a new and separate NEPA process. To date, the BLM has not received any other NGL transmission pipeline applications in this region.

As a consequence of the No Action Alternative, pipeline transportation alternatives for regional natural gas liquid producers would not exist in the forseeable future. The No Action Alternative would eliminate pipeline-to-pipeline shipping competition between Enterprise and Overland Pass pipeline systems for the Rocky Mountain NGL markets. In addition, the No Action Alternative would not increase the regional NGL pipeline system diversity, which can help stabilize national supplies.

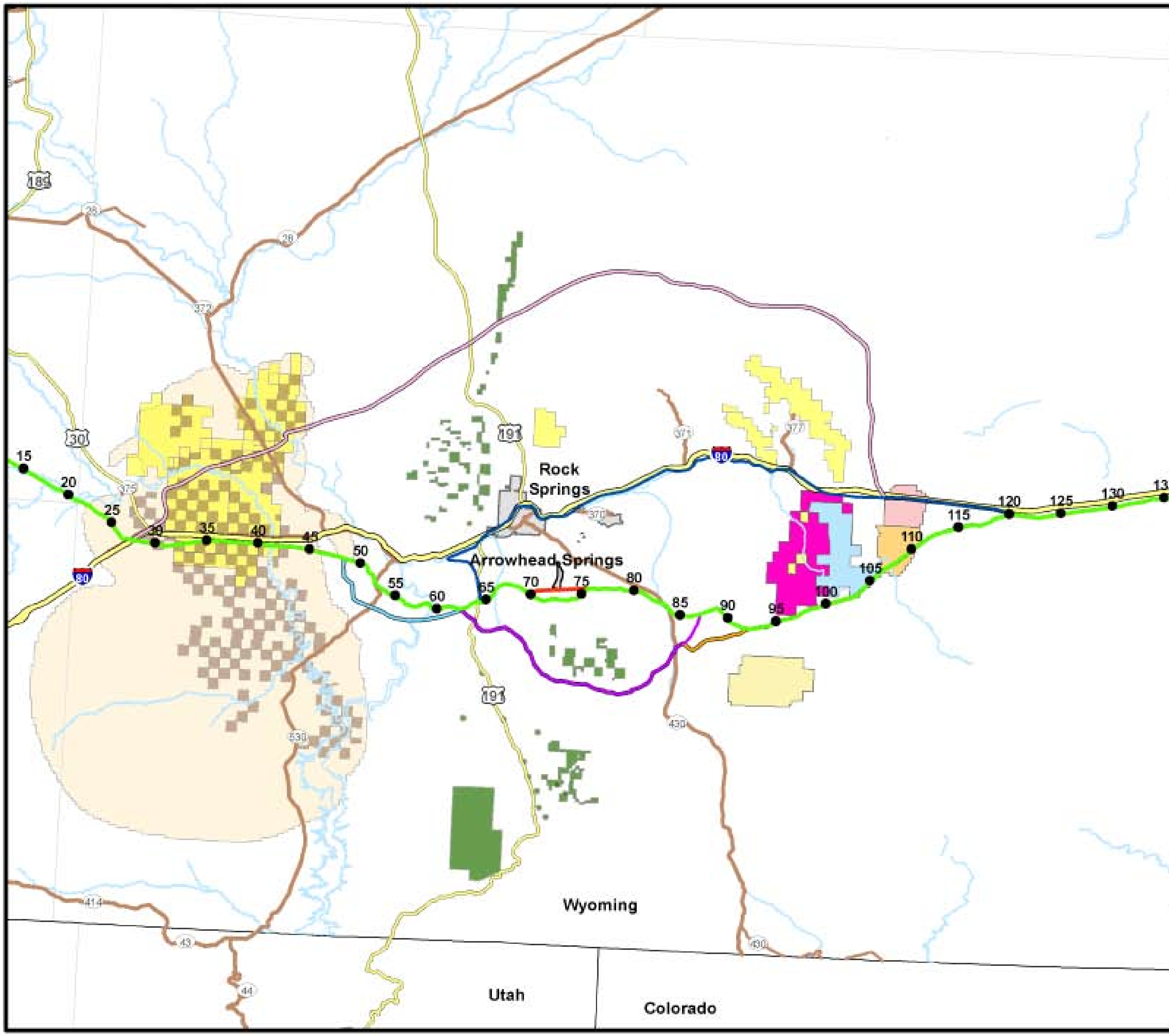
2.2.3 Southern Energy Corridor – Copper Ridge Bypass Alternative

The Southern Energy Corridor – Copper Ridge Bypass Alternative is a ROW window identified in the Green River RMP. The BLM encourages, but does not require, new linear projects (e.g., pipelines, electrical transmission powerlines, communication cables) to construct within these windows. Based on a number of issues, including physical constraints and constructability issues, this route alternative would follow a portion of the Southern Energy Corridor as described below.

The Southern Energy Corridor diverges from the Proposed Action at approximately RP 62 to avoid potential future development of the City of Green River and eventually follows the Mid-America Pipeline System (MAPL System) from approximately RP 92 to RP 120. In contrast to the Proposed Action, the Southern Energy Corridor – Copper Ridge Bypass Alternative generally follows the MAPL pipeline southeast until it intersects with County Road 430 where the corridor then begins to head back northeast toward Interstate 80 (I-80) (**Figure 2.2-9**). The Southern Energy Corridor – Copper Ridge Bypass Alternative would diverge from the MAPL route and rejoin the Proposed Action at approximately RP 87, thereby skirting around the north edge of Copper Ridge in a relatively flat valley (Cutthroat Draw). This would avoid extremely steep terrain associated with Copper Ridge. The Southern Energy Corridor – Copper Ridge Bypass is approximately 4.8 miles longer than the corresponding segment of the Proposed Action.

2.2.3.1 Proposed Facilities

The proposed facilities for this alternative would not change substantially from the Proposed Action. Overland Pass would still construct a 14-inch diameter pipeline. The pump station configuration would not be changed and meter station locations would not change. The Sweetwater pigging facility at RP 72.1 would be shifted to an accessible location along the alternative route.



Overland Pass Pipeline Project

Figure 2.2-9

Route Alternatives Rock Springs Area

2.3 Alternatives Considered but Eliminated from Detailed Study

The NEPA process requires that the lead federal agency evaluate reasonable alternatives to the Proposed Action, including the No Action Alternative. With the exception of the No Action Alternative, alternatives would need to meet the project objective of delivering NGL volumes of 150,000 bpd from the project origins at Opal and Echo Springs to midstream delivery points at Bushton and Conway. Key issues identified in the scoping process are used to identify alternatives that could potentially reduce environmental impacts. Alternatives evaluated in detail within the EIS must be reasonable, feasible, and result in similar or reduced impacts compared to the Proposed Action.

Based on these considerations, the BLM considered but eliminated many variations to the original proposed route including:

- System Alternatives
  - Trucking or Railroad Transport;
  - Enterprise Pipeline System;
  - Alternative pipeline configurations;
- Route Alternatives
  - I-80 Energy Corridor Route Alternative;
  - Northern Energy Corridor Route Alternative;
  - Western Segment of the Southern Energy Corridor Route Alternative;
  - MAPL Route Alternative; and
- Local Route Variations.

2.3.1 System Alternatives

System alternatives are alternatives to the Proposed Action that would make use of other existing, modified, or proposed transmission systems to meet the stated objectives of the project. A system alternative would make it unnecessary to construct all or part of the proposed project, although some modifications or additions to one or more pipeline systems may be required to increase existing capacity, or another entirely new system may need to be constructed. Such modifications or additions would result in environmental impacts; however, the impacts could be less than, similar to, or greater than that associated with construction of the Proposed Action.

2.3.1.1 Trucking or Railroad Transport

While NGLs potentially could be transported via trucking or by rail transport, both alternative forms of transport would be more costly than shipping by pipeline. Moreover, statistics indicate that pipelines tend to be safer modes of transport.

Pipelines operate more safely than other transportation modes as indicated in **Table 2.3-1**. These statistics indicate that trucking is 87 times more likely to result in human fatalities than by pipeline. Similarly, trucking results in 35 times more fires and explosions than pipelines (Associations of Pipe Lines [AOPL] 2006).

Assuming one truck could load and unload every 2 minutes, it is estimated that a fleet of over 2,500 trucks would be necessary to transport a volume of NGLs similar to the Overland Pass Pipeline (Allegro Energy Group 2001). Because trucks shared the same highways and roads as the general public, this large number of trucks transporting NGLs poses a greater safety hazard than pipelines and railroads that utilize a different set of ROWs. In addition to the potential hazards to public safety, this large number of trucks also would increase the cost of transportation; increase fuel consumption; increase emissions; increase local traffic congestion (particularly in rural areas such as Opal, Bushton, and Conway); and increase the number of animal-vehicle collisions when compared to transport by pipeline.

Table 2.3-1 Relative Risk[1] of Pipelines Compared to Other Transportation Methods

	Fatalities	Injuries	Fire/Explosion
Truck	87	2	35
Rail	3	0.1	9
Barge	0.2	4	4
Tank Ship	4	3	1
Pipeline	1	1	1

[1]Relative risk is calculated on incidents per ton*mile for each transportation mode (AOPL 2006).

Similarly, replacement of the Overland Pass pipeline would require the daily arrival and departure of 75 pressurized railcars (assuming 2,000 barrel capacity)[3]. While substantially safer than trucking, rail transport is not as safe as pipeline transport in terms of fatalities and fires and explosions. Moreover, the significant increase in railcars would increase the cost of NGL transportation, increase fuel consumption; increase emissions; increase local rail traffic (particularly in rural areas such as Opal, Echo Springs, Bushton, and Conway); and increase animal-railcar collisions when compared to transport by pipeline.

Given the increased number of trucks or pressurized railcars that would be required to transport similar volumes of NGLs and the associated increased public safety risk and environmental impacts, truck and rail transport were not considered viable alternatives to the Proposed Action.

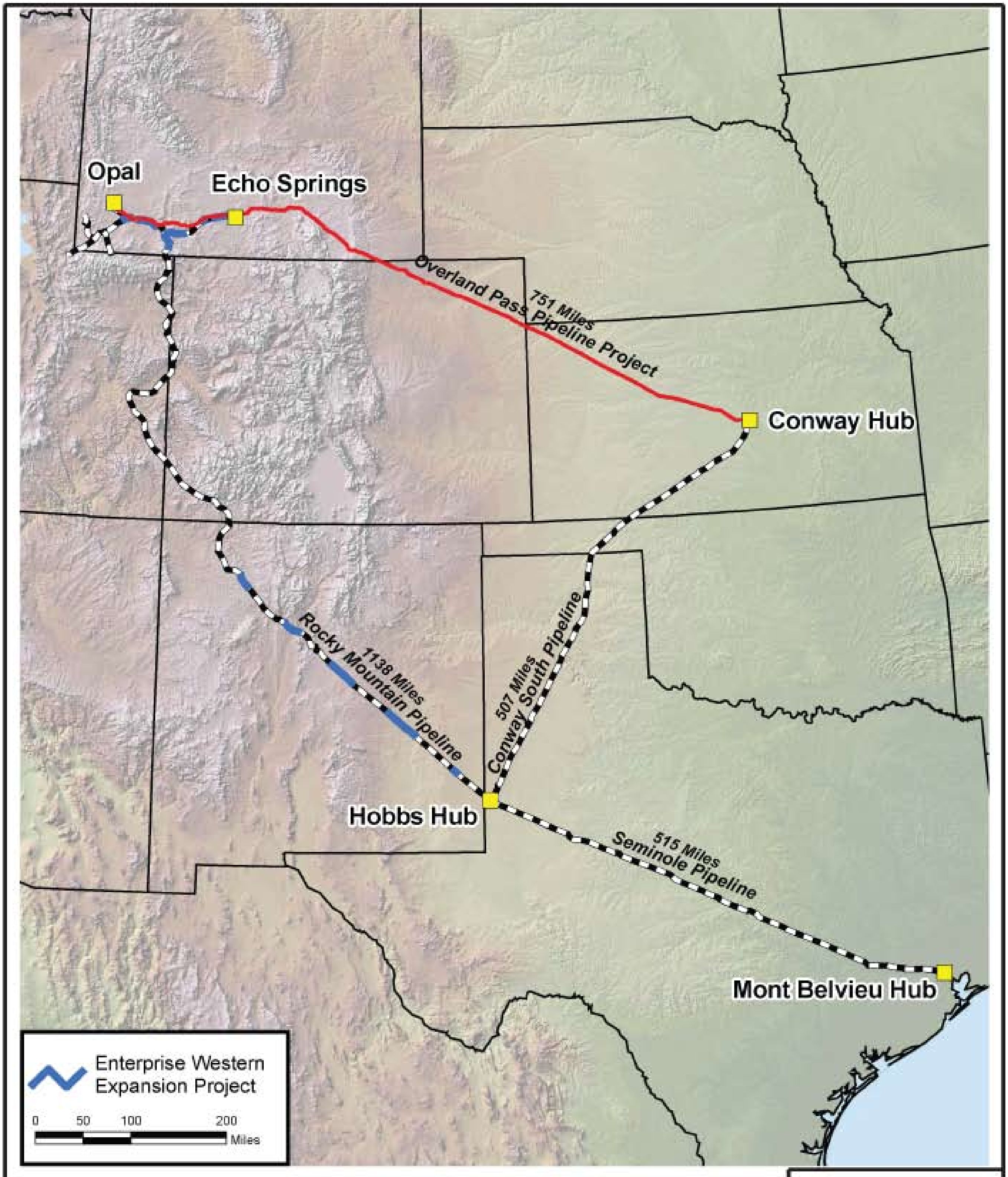
2.3.1.2 Enterprise Pipeline System

Enterprise, an existing pipeline system was evaluated as a system alternative to the proposed Overland Pass Pipeline route. Enterprise is the only pipeline system that currently moves NGL from southwestern Wyoming. Enterprise operates the MAPL System and the Seminole Pipeline System (Federal Energy Regulatory Commission [FERC] 2005; MAPL 2005a) (**Figure 2.3-1**). The MAPL system includes the Rocky Mountain Pipeline and the Conway South Pipeline (MAPL 2005a). The Rocky Mountain Pipeline is approximately 2,548 miles long and transports NGL from points in Wyoming to Hobbs-Gains, Texas. The Conway South Pipeline is a bi-directional pipeline approximately 1,938 miles long that extends between Hobbs-Gains, Texas, and Conway, Kansas.

Enterprise currently does not transport NGL from the Rocky Mountains to the Conway Hub. Instead, it transports mixed NGL via the Rocky Mountain Pipeline from the Rocky Mountain Overthrust and San Juan basins to the Hobbs Hub located on the Texas-New Mexico border. It also connects the Conway Hub to the Hobbs Hub via the Conway South Pipeline. Under normal operations, the Conway South pipeline moves NGL from Kansas refineries toward Hobbs Hub, and does not move mixed NGL toward Conway (MAPL 2005a). NGL in the Enterprise system is shipped from Hobbs via the Seminole Pipeline to Mont Belvieu, where it is fractionated into its constituents for commercial and residential uses.

Enterprise reports that because of strong drilling activity and increasing production of rich natural gas and associated NGL in the Upper Green River, Piceance, and San Juan basins, the Rocky Mountain Pipeline is operating near full capacity and that NGL dedicated to the Enterprise-affiliated Mont Belvieu NGL fractionator continue to exceed the capacity of the fractionator (MAPL 2005b). As a result, Enterprise has begun two expansion projects to increase NGL capacity, one of which is the Western Expansion Project, the other is expansion of the Mont Belvieu fractionator facility.

[3] Estimate based on 10,000 barrel capacity per railcar, traveling 500 miles per day of travel, and transporting 150,000 bpd.



Overland Pass Pipeline Project

Figure 2.3-1
Enterprise Pipeline System Alternative

The proposed Western Expansion Project would increase the capacity of the Rocky Mountain segment of the Enterprise Alternative from its current capacity of 225,000 bpd to 275,000 bpd. Because of the Western Expansion Project and increasing NGL production, the Enterprise-affiliated Mont Belvieu complex is considering the construction of a new NGL fractionator that could increase the facility's fractionation capacity by an additional 60,000 bpd.

Currently, the Rocky Mountain region produces approximately 25 percent of the natural gas in the U.S., and experts predict that gas production in the Rocky Mountain region could increase from 3.3 tcfy in 2002 to 6.3 tcfy in 2025 (USDOE 2004). Given this relatively significant increase in natural gas production, NGL available for transport also would increase. Despite the added 50,000 bpd capacity brought by the proposed Western Expansion Project, further expansion would be needed to accommodate the forecast NGL production from the Rocky Mountain area.

In order to transport additional volumes of NGL proposed by the project, the Enterprise system would require further expansion through construction of pipeline loops on the Rocky Mountain Pipeline. In addition to a new loop pipeline, its pumping capacity would have to be increased by constructing new pumping stations or upgrading the many existing pumping stations.

The Rocky Mountain Western Expansion Project is compared to the Proposed Action in **Table 2.3-2**. Because the Enterprise Alternative would not meet Overland Pass' capacity, infrastructure diversity, schedule, or delivery to Conway Hub goals, it was eliminated as a viable alternative to the Proposed Action.

Table 2.3-2 Comparison of the Western Expansion Project to the Proposed Action

Comparison Factor	Enterprise Western Expansion Project	Proposed Action
Proposal	About 202 miles of pipeline broken into 12 loops connected to existing MAPL System, between Wamsutter, Wyoming and Hobbs, New Mexico	About 760 miles of new, contiguous pipeline between Opal, Wyoming and Conway, Kansas
Services Echo Springs and Opal?	Yes	Yes
Takes advantage of existing fractionation facilities near the Conway Hub?	No	Yes
Adds alternative means to transport NGL from Rockies?	No	Yes
Proposed in-service date	December 2006	December 2007
Additional capacity offered	50,000 bpd	150,000 bpd
Federal lands crossed	53.4 miles	123.2 miles
Co-location with other transportation or energy facilities	100 percent	83 percent

2.3.1.3 Alternative Pipeline Configurations

Alternative pipeline configurations were considered that included a pipeline diameter configuration of 16 to 18 to 20 inches in diameter, changing the diameter from 16 to 18 inches at Echo Springs and from 18 to 20 inches at Laramie. The larger diameter pipeline would require less pump capacity to move the 150,000 bpd of NGL proposed by Overland Pass. However, increasing pipe diameter and wall thickness would increase capital costs that eventually become economically infeasible. Conversely, utilizing small diameter pipe for the project would require more pumping capacity due to hydraulic friction to move the 150,000 bpd of NGL through a smaller pipe. Overland Pass conducted an analysis and determined that the 14-inch- and 16-inch-diameter pipeline would balance efficiency and cost in moving 150,000 bpd along this pipeline route.

The amount of surface disturbance would be comparable for all pipe diameters considered since the construction ROWs for 12- to 20-inch-diameter pipe would be the same (i.e., 75 feet wide).

2.3.2 Route Alternatives

Due to the concerns expressed during scoping by agency personnel and by the public in the Green River and Rock Springs area, route alternatives were examined for this portion of the pipeline. Major route alternatives are substantially different route alignments that still fulfill the project's purpose. Across the Green River area, the Proposed Action currently follows portions of Enterprise's existing east-west MAPL pipeline and I-80 (**Figure 2.2-9**).

Appendix E provides a summary table that compares the various route alternatives in terms of length of pipeline, amount of side-slope construction, additional surface disturbance, waterbody crossings, the number of occupied structures within 500 feet, and other relevant factors.

2.3.2.1 I-80 Energy Corridor

To minimize surface disturbance, the most direct west-to-east pipeline route was evaluated. This route would follow the I-80 Energy Corridor through the Green River area. Overland Pass provided a preliminary route that would utilize the I-80 Energy Corridor to the extent practical. This route alternative would avoid the City of Green River by initially following the Proposed Action until it intersects U.S. Highway 191. The I-80 Energy Corridor route alternative then heads north primarily along U.S. Highway 191 in a designated corridor, and then reconnects with the I-80 Energy Corridor (**Figure 2.2-9**).

The I-80 Energy Corridor passes through portions of the cities of Green River and Rock Springs and is highly congested with existing pipelines. There are two areas in particular that are physically constrained from further corridor expansion. The first is located around the City of Green River. In this area, the I-80 Energy Corridor is constrained to the north by difficult terrain and by residential development to the south. Due to the recognized lack of space within this corridor, the Green River RMP recommends that any remaining space within the corridor be used for local pipelines dedicated to local transportation of natural gas. The second severely constrained portion of the I-80 Energy Corridor is located further east near Black Butte and BBC Mine Permit areas. In this area, the I-80 Energy Corridor already is heavily congested and is constrained from expansion to the north and south by these coal leases.

This I-80 Energy Corridor route alternative is approximately 8.2 miles longer than the Proposed Action, including 0.4 mile of land with greater than 30 percent slope. The route would cross or closely approach areas with documented subsidence near the town of Rock Springs and near Point of Rocks. The I-80 Energy Corridor already is close to carrying capacity with 8 to 22 existing utility lines in place depending on location along the corridor. Finally, the route would be located in 9.4 more miles of populated areas than compared with the Proposed Action route.

In the Green River RMP, the BLM states that the I-80 corridor is "an avoidance area for major utility lines" between Green River and Point of Rocks and suggests that the area be restricted to local distribution service lines. This decision was based on the congestion in the area as well as surface mining. In order to avoid the over-congestion and physical constraints of the I-80 Energy Corridor, a pipeline potentially could be routed further north along the Northern Energy Corridor or south along the Southern Energy Corridor.

As a result of the utility line congestion, the 8.2 miles of additional pipeline required (and greater land disturbance), and the two physical constraints along the I-80 Energy Corridor, this route alternative was considered but eliminated from more detailed consideration (**Appendix E**).

2.3.2.2 Northern Energy Corridor

The Northern Energy Corridor primarily follows a pipeline and the electrical transmission powerline associated with the Jim Bridger power plant located north of Rock Springs. This route heads northeast from approximately

RP 28, just west of the U.S. Highway 30 interchange, crossing approximately 20 miles of mineable trona deposits, including FMC Corporation's (FMC's) Westvaco trona mine. The route reaches the Table Mountains, then heads southeast back toward I-80, reconnecting with the I-80 corridor near the Bitter Creek Road interchange. This route bypasses the congestion and geographic constraints associated with the I-80 corridor. However, the route is approximately 14.4 miles longer than the Proposed Action, would intersect 0.1 mile of slopes greater than 30 percent, and bisects 20 miles of trona mine leases.

This route was eliminated as a reasonable alternative due to its overall length, amount of surface disturbance, construction difficulty and cost (i.e., amount of side-slope and steep slopes), number of perennial waterbodies crossed, conflicts with trona mine leases, and increased proximity to populated areas and occupied structures (**Appendix E**).

2.3.2.3 Western Segment of the Southern Energy Corridor

At about RP 62, the Southern Energy Corridor diverges south of the Proposed Action, avoiding the southern portion of the City of Green River Development Area, an area identified for potential future development by the City of Green River. Within this western portion of the Southern Energy Corridor, the route alternative would not be co-located with other existing utilities. Construction access and existing slopes at this alternative's Green River crossing would pose a serious construction issue. It also would require the construction of a separate roadway. This alternative would cost an additional $3 million and would require an additional work crew. Additionally, the length (7.4 miles) of the Western Segment would be more than twice the length of the Proposed Action through this area (3.2 miles), causing greater surface disturbance. This alternative was eliminated due to poor construction feasibility, increased surface disturbance, increased need for reclamation, and increased potential for future maintenance issues.

2.3.2.4 MAPL Route

Preliminary routing efforts along the Southern Energy Corridor attempted to co-located the new Overland Pass Pipeline ROW with existing utilities to the maximum extent practical. The MAPL route would diverge from the Proposed Action at RP 62.3, follow the Southern Energy Corridor, and rejoin the Proposed Action at RP 92.2. Similarly, the MAPL route would diverge from the Southern Energy Corridor – Copper Ridge Bypass Alternative near County Road 430. The MAPL route would follow the existing MAPL pipeline up a steep slope that crosses Copper Ridge (**Figure 2.2-9**). The MAPL Route Alternative generally lies within the Southern Energy Corridor and would be approximately 4.8 miles longer than the Proposed Action. It would cross 4 perennial streams and be located within 500 feet of 14 buildings.

The Southern Energy Corridor, including the MAPL route, is broadly characterized by rocky and rough terrain and would require substantial portions to be constructed using steep and side slope construction techniques. In particular, Copper Ridge, with slopes in excess of 50 degrees, would pose extreme challenges for pipeline construction, operations, and maintenance. Because of the severity of the steep slopes in areas such as Copper Ridge, large earth-moving equipment would need to be suspended from cables and winches in order to construct the pipeline, posing an elevated risk to the construction workers and equipment. Along this alternative, 7 miles of rocky soils may require blasting to construct the pipeline.

When compared to other routes, the MAPL route has an elevated potential for landslide activity because it closely approaches small landslide deposits in Circle Creek Canyon (Township 16 North [T16N] Range 105 West [R105W]). In 1981, a landslide on Copper Ridge caused the complete rupture of the existing MAPL pipeline. Slope instability may have been partially attributable to the difficulty of maintaining the pipeline ROW in extreme slopes with unstable soils and poor reclamation potential. Consequently, this alternative was eliminated from more detailed analysis.

2.3.3 Local Route Variations

2.3.3.1 Arrowhead Springs Subdivision Variation

During scoping, comments were received from residents of the Arrowhead Springs subdivision. Many comments focused on issues related to the proximity of the pipeline to the residential area and concerns about impacts to water quality, particularly in a nearby spring that flows north towards the subdivision. Based on these scoping comments, Overland Pass evaluated whether the pipeline could be routed approximately 1 mile south of the Arrowhead Springs subdivision (**Figure 2.2-9**). After conducting field reconnaissance and based on BLM's recommendation, Overland Pass revised their proposed route to address concerns of the Arrowhead Springs Subdivision.

The Arrowhead Springs Subdivision Variation represents Overland Pass' original route through this area. Because the potential impacts associated with the revised Proposed Action are less than those associated with the original route through the area, the Arrowhead Springs Subdivision Variation was eliminated from further analysis.

2.3.3.2 Green River Crossing Variation

Concerns were initially expressed regarding the Proposed Action's Green River crossing, located at the upper end of the Flaming Gorge reservoir. Preliminary evaluations raised the possibility of the Proposed Action being located within an area subject to potential scour due to the fluxuations in the full pool of Flaming Gorge Reservior. A route variation was suggested that would be further north of the Proposed Action location, but would be closer to residential areas near the City of Green River.

The USFS conducted a site visit and concluded that the proposed Green River crossing location minimized potential environmental impacts and was preferable to the location of the proposed variation because access to the proposed site was better, it was further from residential development and the town of Green River and that scour potentials were likely comparable at both locations. In addition, the variation does not parallel existing pipeline facilities and would create a second potential corridor and crossing for any future projects. Consequently, the Green River Crossing Location Variation was eliminated from further consideration.

2.3.3.3 Trona Mines Variations

Mineable trona deposits are located to the west of the City of Green River. The original proposed pipeline route would bisect trona mine leases in this area, including General Chemical and FMC leases. During scoping, concerns were raised about the pipeline's route through this area, potential conflicts with use in the future, and potential mine-induced subsidence issues. FMC plans to mine these deposits in 2009 and General Chemical mining activity is schedule for 2020. As a result of these issues, Overland Pass evaluated an alternative route that would bypass these areas approximately 1 mile to the north to eliminate conflicts with future mining activities. Overland Pass incorporated this reroute into their Proposed Action that added 1.1 miles to the entire project length between RP 33.5 and RP 36.2.

After Overland Pass developed a reroute for this area, it was determined that the reroute would interfere with a planned ventilation shaft associated with mining activities near Little America. Based on this additional issue, Overland Pass subsequently revised their proposed route to avoid this area.

The Trona Mines Variation represents the original routes through the mine lease areas. Because the potential impacts associated with the revised Proposed Action are less than those associated with the original routes through the area, the Trona Mines Variations was eliminated from further analysis.

2.3.4 Aboveground Facility Location Alternatives

Review of the proposed aboveground facility locations did not identify any significant issues. Consequently, no alternative facility locations were identified.

2.4 Comparison of Alternatives

2.4.1 Summary and Comparison of Action Alternatives

Land requirements and aboveground facilities required for the construction and operation of the Proposed Action are described in Section 2.2.1.

The Southern Energy Corridor – Copper Ridge Bypass Alternative (Section 2.2.3) would have the similar facility requirements as the Proposed Action, with the number and location of pump stations, meter stations, pigging facilities, valves, and pipe storage and contractor yards remaining the same. While many impacts to environmental resources from the Southern Energy Corridor – Copper Ridge Bypass Alternative would be similar in magnitude and duration compared to the Proposed Action, the alternative would cause greater surface disturbance, be more difficult to construct and reclaim, be in close proximity to a greater number of buildings, and be more costly to construct. The Proposed Action would cross more miles of OPS-designated High Consequence Areas (HCAs) due to its proximity to the Rock Springs area. The primary differences between the Proposed Action and the Southern Energy Corridor – Copper Ridge Bypass Alternative are identified in **Table 2.4-1**.

Under the No Action Alternative, the proposed project would not be constructed and the resources discussed in **Table 2.4-1** would not be affected. Because natural gas development would continue in the region, regardless of whether this project was constructed or not, the supply of natural gas liquids would exceed the existing, regional NGL transportation capacity. As a result, other NGL transportation projects likely would be proposed in the foreseeable future.

Table 2.4-1 Comparison of Differences Between Action Alternatives for Segment RP 62.3 to RP 87.1

	Proposed Action	Southern Energy Corridor— Copper Ridge Bypass	Additional Discussion
Construction Impacts			
Length of Route (miles)	26.0	30.8	Chapter 2
Co-located ROW (estimated miles)	7.8	26.4	**Table 2.2-4**
Surface Disturbance:			**Table 4.8-1**
Temporary (acres)	236	280	
Permanent (acres)	158	181	
Additional surface disturbance associated with side-slope construction (acres)	Base case	Base case + 18 acres	Sections 3.4 and 4.4
TWAs (acres)	73.7	87.3	Sections 3.8 and 4.8
Access Roads (#)	11	23	Sections 3.8 and 4.8
Road crossings:			Sections 3.8 and 4.8
Paved (#)	1	1	
Gravel/Dirt (#)	20	19	
Installation Costs ($millions)	Base Case	Base Case + $4.4 M	
Major Constraints for Construction	None	More steep and difficult terrain	Sections 4.3 or 4.4
Water Resources			
Waterbody Crossings:			Sections 3.5 and 4.5, **Appendix F**
Intermittent (#)	46	47	
Perennial (#)	2	4	
Total (#)	48	51	
Water Depletions:			Sections 4.5 and 4.7, **Appendix C**
Hydrostatic Test Water (estimated gallons)	Base Case	Base Case + 300,000	
Dust Control Water (estimated gallons)	764,263	905,359	
Vegetation			
Wetland Habitat (estimated acres)	<0.01	0.2	Sections 3.5, 3.6, 4.5, and 4.6

Table 2.4-1 Comparison of Differences Between Action Alternatives for Segment RP 62.3 to RP 87.1

	Proposed Action	Southern Energy Corridor— Copper Ridge Bypass	Additional Discussion
Wildlife, Fisheries, and Special Status Species			
Big Game Crucial Habitat (acres)	0	5.4	Sections 3.7 and 4.7
Threatened and Endangered Species Habitat (acres)	Base Case	No substantial difference from Base Case with exception of cliff-associated species (e.g., golden eagles)	Sections 3.7 and 4.7
Land Use			
Federal Land Ownership (miles)	10.9	18.5	Sections 3.8 and 4.8
Cultural Resources			
Eligible Sites (Unevaluated Sites) (#)	0 (0)	1 (6)	Sections 3.9 and 4.9
Public Health and Safety			
OPS-designated HCAs:			Sections 3.12 and 4.12
Drinking water (miles)	6.4	0	
Ecological Areas (miles)	0	0	
Populated Areas (miles)	3.5	0	
Buildings within 500 feet of the ROW (#)	3	14	Sections 3.12 and 4.12

Note: Distance between Reference Points may not equal 1 mile.

3.0 Affected Environment

3.1 Introduction

The Affected Environment is described from existing environmental resource information and Overland Pass' responses to BLM and USFS data requests. BLM and USFS staff have evaluated and verified information supplied by Overland Pass and have conducted additional independent data collection efforts and data reviews.

The Affected Environment addresses the natural and human resources potentially affected by the proposed pipeline route and aboveground facilities associated with the proposed pipeline. Affected environment for the electrical powerlines is presented in Chapter 9.0. Environmental resources addressed include air quality and climate, geology, soils, surface water and groundwater resources, wetlands, vegetation, wildlife, aquatic resources, and special status species. Human resources addressed include land use and recreation as well as aesthetic, cultural, and socioeconomic resources. This chapter contains descriptions of affected resources for both the Proposed Action and the Southern Energy Corridor – Copper Ridge Bypass Alternative.

3.2 Climate and Air Quality

3.2.1 Proposed Action

3.2.1.1 Regulatory Framework

Air emission sources in Colorado, Wyoming, and Kansas are regulated at the federal level by the CAA, as amended, and at the state level by the Colorado Air Quality Control Commission (AQCC) Regulations, the Wyoming Air Quality Standards and Regulations (WAQS&R), and the Kansas Air Quality Regulations and Statues (KAQR&S). The significant federal regulations established as a result of the CAA and incorporated in the AQCC Regulations, the WAQS&R, and the KAQR&S that are potentially applicable to the project include:

- New Source Review (NSR)/Prevention of Significant Deterioration (PSD);
- New Source Performance Standards (NSPS);
- Title V Operating Permits;
- National Emission Standards for Hazardous Air Pollutants (NESHAPs);
- Federal Class I Area Protection;
- Conformity of General Federal Actions; and
- State regulations.

3.2.1.2 New Source Review/Prevention of Significant Deterioration Review

Separate procedures have been established for federal pre-construction review of certain large proposed projects in attainment areas versus nonattainment areas. In attainment areas, the PSD/NSR process constitutes the federal pre-construction review for new or modified major sources. The review process is intended to prevent the new source from causing existing air quality to deteriorate beyond acceptable levels. The federal pre-construction review for new or modified major sources located in nonattainment areas is commonly called Nonattainment New Source Review (NNSR). NNSR only applies to the pollutants that are classified as nonattainment; therefore, a new facility can undergo both types of review, depending on the emissions of the various pollutants and the attainment status.

Prevention of Significant Deterioration

The emission threshold for “major stationary sources” varies under PSD according to the type of facility. As defined by Title 40 CFR Part 52.21(b)(1)(i), a facility is considered major under PSD if it emits or has the potential to emit 250 tons per year (tpy) or more of any criteria pollutant, or 100 tpy for specified source categories. The pump station sources are not one of the specified source categories; therefore, the PSD threshold for these facilities is 250 tpy.

Nonattainment New Source Review

All facilities located in nonattainment areas with proposed emissions that exceed the applicable major source thresholds are subject to NNSR provisions, particularly the application of lowest achievable emission rate (LAER) and a requirement to obtain emission offsets. The facilities associated with this project would be located in attainment or maintenance areas; therefore; the project sources would not be subject to NNSR permitting.

3.2.1.3 New Source Performance Standards

NSPS, codified in Title 40 CFR 60, establish pollutant emission limits and monitoring, reporting, and recordkeeping requirements for various emission sources based on source type and size. The NSPS apply to new, modified, or reconstructed sources. There are no NSPS regulations that apply to the emissions sources associated with this project.

3.2.1.4 Title V Operating Permits

Title V of the CAA requires states to establish an air operating permit program. The requirements of Title V are outlined in Title 40 CFR 70 and the permits required by these regulations are often referred to as Part 70 permits.

If a facility's potential to emit exceeds the criteria pollutant or hazardous air pollutant (HAP) thresholds, the facility is considered a major source. The major source threshold level for an air emission source is 100 tpy for criteria pollutants. The major source HAP thresholds for a source are 10 tpy of any single HAP or 25 tpy of all HAPs in aggregate. Potential HAP emissions estimates from the proposed pump station facilities would not exceed the 10/25 tpy major source thresholds. The potential emissions for each pollutant at the pump stations would not exceed the Title V thresholds; therefore, the proposed stations would not be major sources of air emissions requiring a Part 70 permit.

3.2.1.5 National Emission Standards for Hazardous Air Pollutants

The NESHAPs, codified in 40 CFR Parts 61 and 63, regulate HAP emissions. Part 61 was promulgated prior to the 1990 Clean Air Act Amendments (CAAA) and regulates only eight types of hazardous substances: asbestos, benzene, beryllium, coke oven emissions, inorganic arsenic, mercury, radionuclides, and vinyl chloride.

The 1990 CAAA established a list of 189 HAPs, resulting in the promulgation of Part 63. Part 63, also known as the Maximum Achievable Control Technology (MACT) standards, regulates HAP emissions from major sources of HAP emissions and specific source categories that emit HAPs. Part 63 defines a major source of HAPs as any source that has the potential to emit 10 tpy of any single HAP or 25 tpy of HAPs in aggregate.

The proposed pump stations are not one of the source categories regulated by Part 61; therefore, the requirements of Part 61 are not applicable. Additionally, there are no MACT standards that apply to the facilities proposed as a part of this project; therefore the requirements of Part 63 do not apply.

3.2.1.6 Federal Class I Area Protection

The U.S. Congress designated certain lands as mandatory federal Class I (Class I) areas in 1977. Class I areas were designated because air quality was considered a special feature of the area (e.g., national parks or wilderness area). Class I areas are given special protection under the PSD program. The PSD program establishes air pollution increment increases that are allowed by new or modified air emission sources. If the new source is a major PSD source and is near a Class I area, the source is required to determine its impacts on the nearby Class I area(s). The source also is required to notify the appropriate federal land manager(s) for the nearby Class I area(s).

As determined previously, the proposed pump stations are not anticipated to be subject to the PSD regulations. Therefore, the federal Class I area protection provisions would not apply to this project.

3.2.1.7 Conformity for General Federal Actions

According to Section 176(c) of the CAA (Title 40 CFR Section 51.853), a federal agency must make a conformity determination in the approval of a project having air emissions that exceed specified thresholds in nonattainment and/or maintenance areas. The project does not pass through nonattainment or maintenance areas. Consequently, general conformity analysis would not be required for this project.

3.2.1.8 State Regulations

Wyoming

Wyoming air emissions are regulated by the WAQS&R. Chapter 3 of the WAQS&R addresses emissions of particulates, nitrogen oxides (NO_x), sulfur oxides (SO_x), carbon monoxide (CO), volatile organic compounds, hydrogen sulfide (H_2S), and asbestos. There would be no quantifiable emissions of the regulated pollutants from the proposed pump stations during normal operation. This regulation also requires the control of fugitive dust generated during the construction. Overland Pass would comply with the fugitive dust requirements by implementing the dust control measures outlined in the Traffic and Transportation Management Plan.

Chapter 6 of WAQS&R requires construction permits for any source of air emissions; however, emergency equipment generally receives waivers of permit requirements. Overland Pass would submit a letter describing the proposed pump stations and would request a written notice of a waiver for emergency flaring.

Colorado

Colorado air emissions are regulated by the AQCC per AQCC-1001. The Colorado regulations incorporate much of the federal regulatory requirements for air quality.

Regulation 1 of AQCC-1001 addresses emissions of particulates, smoke, CO, and SO_x. Specific requirements in this regulation can potentially apply to the operation and construction of the proposed Overland Pass pump stations. Such requirements address opacity emissions from stationary sources, particulate matter from fuel burning sources, roadway emissions, and construction activities. The proposed pipeline construction would require a fugitive dust permit under Regulation 3 of the Colorado AQCC. Therefore, Overland Pass would be required to submit a fugitive particulate dust control plan as part of the construction permit application.

Kansas

Kansas air regulations 28-19-20 through 28-19-31 contain specific emissions limitations for particulate matter, sulfur compounds, carbon monoxide and hydrocarbons, in addition to general emissions limitations. The emission limitations and restrictions generally apply to full time operation of process equipment or combustion units. The emergency flares would not emit pollutants that exceed the allowable emission rates.
Regulation 28-19-300 contains the requirements for construction permits. Flaring at the pump stations are exempt from the construction permit requirements based on emission rates.

3.2.1.9 Climate

The regional climate of the proposed project area is predominantly classified as continental with some areas in Wyoming and Kansas classified as temperate semi-arid. Surface wind direction and precipitation vary in the proposed project area due to significant geographical features. However, the specific characterization of the local weather based on data from Fort Collins, Colorado, indicates an average annual maximum temperature of 63 degrees Fahrenheit (ºF) and an average annual minimum temperature of 35.8ºF with an average annual precipitation of 15.8 inches. The average annual snowfall in Fort Collins from January 1900 through December 2001 was 47.1 inches. A representative station in Cheyenne, Wyoming, with wind observations from 1930 to 1996 indicates an annual average wind speed of 13 miles per hour and a predominant wind direction of west-northwest.

3.2.1.10 Air Quality

Federal and state air regulations are designed to ensure that ambient air quality, including background, existing, and new sources are in compliance with the ambient standards. The USEPA has designated all areas of the U.S. as “attainment,” “non-attainment,” or “unclassified” with respect to ambient air quality standards.

Air Quality Data Reports from the Colorado Department of Public Health and Environment (CDPHE), Wyoming Department of Environmental Quality (WDEQ), Kansas Department of Health and Environment (KDHE), and monitoring data provided by the USEPA were reviewed to characterize background air quality related to regulated criteria pollutants. The criteria pollutants are sulfur dioxide (SO_2), CO, nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM_{10} and $PM_{2.5}$), and lead (Pb). The USEPA has established National Ambient Air Quality Standards (NAAQS) for these seven pollutants. The NAAQS were set at levels the USEPA believed were necessary to protect human health (primary standards) and human welfare (secondary standards). The federal NAAQS for criteria pollutants are the same as the state standards established by the CDPHE, KDHE, and WDEQ, except the WDEQ regulates SO_x instead of SO_2. All parts of Colorado, Wyoming, and Kansas, through which the proposed project would be located, are classified as attainment for all criteria pollutants. The USEPA classifies the southern portion of Weld County, Colorado, as non-attainment for 8-hour O_3. However, the proposed pipeline route and associated facilities would be located only in the northern portion of Weld County outside of the non-attainment area. Weld County also was redesignated from “non-attainment” to “maintenance” for CO in 2003. The federal and state air quality standards are listed in **Table 3.2-1**.

Table 3.2-1 National and State Ambient Air Quality Standards

Air Pollutant	Averaging Period	NAAQS/CDPHE/ KDHE Standards	WDEQ Standards	Significant Impact Level ($\mu g/m^3$)
SO_2	3-Hour [1]	0.5 ppm	1,300 $\mu g/m^3$ / 0.5 ppm	NA
	24-Hour [1]	0.14 ppm	260 $\mu g/m^3$ / 0.10 ppm	25
	Annual [2]	0.03 ppm	60 $\mu g/m^3$ / 0.02 ppm	5
CO	1-Hour [1]	35 ppm	40 mg/m^3 / 35 ppm	2,000
	8-Hour [1]	9 ppm	10 mg/m^3 / 9 ppm	500
NO_2	Annual [2]	0.05 ppm	100 $\mu g/m^3$ / 0.05 ppm	1
O_3	8-Hour	0.08 ppm	0.08 ppm	NA
PM_{10}	24-Hour [1]	150 $\mu g/m^3$	150 $\mu g/m^3$	5
	Annual [2]	50 $\mu g/m^3$	50 $\mu g/m^3$	1
$PM_{2.5}$	24-Hour [1]	65 $\mu g/m^3$	65 $\mu g/m^3$	NA
	Annual [2]	15 $\mu g/m^3$	15 $\mu g/m^3$	NA
Pb[3]	1-Month	1.5 $\mu g/m^3$	Not Applicable	NA
	3-Month	1.5 $\mu g/m^3$	1.5 $\mu g/m^3$	NA

[1]The second high designation indicates that the concentration listed is representative of the second high concentration measured at the monitoring station.

[2]Annual average concentration.

[3]The Colorado lead standard is a 1-month average. The federal lead standard is a 3-month average.

$\mu g/m^3$ = micrograms per cubic meter.

mg/m^3 = milligrams per cubic meter.

ppm = parts per million.

NA = Not Available.

3.2.2 Southern Energy Corridor – Copper Ridge Bypass Alternative

Climate and air quality are the same as the Proposed Action.

3.3 Geology

3.3.1 Proposed Action

3.3.1.1 Physiography and Geology

Physiography

The Proposed Action would be located within three major physiographic provinces: the Wyoming Basin, the Southern Rocky Mountains, and the Great Plains (Howard and Williams 1972). (**Table 3.3-1**). Each of these major physiographic provinces is defined as having common topography, rock types and structure, and geologic and geomorphic history, although the boundaries between the provinces are transitional. Within these physiographic provinces, the landscape has been modified to its present form and character through erosion, deposition, and mass wasting by the actions of glaciers, flowing water, wind, and gravity.

Table 3.3-1 Geologic Conditions Along the Proposed Overland Pass Pipeline Route

Physiographic Province/ Section	RP Range[1]	General Surface Geology/Physiography
Wyoming Basin Province, RP 0.0 to RP 217.0 and RP 258.0 to RP 286.0		
Green River Basin	0.0 to 62.0	Unconsolidated alluvial and colluvial Quaternary deposits along drainages. Tertiary sedimentary bedrock comprised of shale, oil shale, mudtone, sandstone, trona, halite, and limestone. Land forms consist of gently rolling uplands; isolated, rugged badlands; shallow and incised drainages associated with intermittent streams; and well-defined floodplains associated with perennial streams. The majority of the proposed pipeline route would traverse slopes of less than 3 percent grade, although isolated slopes of 20 to 50 percent exist where the proposed pipeline route crosses escarpments, major streams, or the walls of incised drainages.
Rock Springs Uplift	62.0 to 107.0	Unconsolidated alluvial and colluvial Quaternary deposits along drainages. Tertiary and Cretaceous sedimentary bedrock comprised of shale, coal, limestone, siltstone, and sandstone. Physiography similar to Green River Basin above.
Wamsutter Arch	107.0 to 201.0	Unconsolidated alluvial and colluvial Quaternary deposits along drainages. Tertiary and Cretaceous sedimentary bedrock comprised of shale, coal, limestone, siltstone, chalk, and sandstone. Physiography similar to Green River Basin above.
Hanna-Carbon Basin	201.0 to 217.0	Unconsolidated alluvial and colluvial Quaternary deposits along drainages. Tertiary and Cretaceous sedimentary bedrock comprised of shale, carbonaceous shale, coal, limestone, siltstone, and sandstone. Physiography similar to Green River Basin above.
Laramie Basin	258.0 to 286.0	Unconsolidated alluvial and colluvial Quaternary deposits along drainages. Permian and Cretaceous sedimentary bedrock comprised of shale, limestone, mudstone, and sandstone. Physiography similar to Green River Basin above.

Table 3.3-1 Geologic Conditions Along the Proposed Overland Pass Pipeline Route

Physiographic Province/ Section	RP Range[1]	General Surface Geology/Physiography
Southern Rocky Mountain Province, RP 217.0 to RP 258.0 and RP 286.0 to RP 308.0		
Medicine Bow Mountains	217.0 to 258.0	Quaternary unconsolidated deposits comprised of alluvium and colluvium located along drainages and river beds; and gravel, pediment, and fan deposits located adjacent to areas of greater topographic relief. Sedimentary formations range in age from Cretaceous to Eocene and are comprised primarily of shale, mudstone, siltstone, sandstone, and limestone. The Medicine Bow Mountains, particularly from approximately RP 239.0 to RP 258.0, present the most rugged terrain crossed by the project. The overall relief along the proposed pipeline route through the Medicine Bow Mountains is moderate, although the pipeline would cross isolated slopes of greater than 30 percent.
Laramie Range	286.0 to 308.0	Proposed pipeline route is underlain by sedimentary (7.4 miles), igneous (11.5 miles), and metamorphic (3.1 miles) rock formations. Sedimentary rocks consist of Pennsylvanian to Permian sandstone, shale, and carbonates. Early Proterozoic metamorphic rocks consist primarily of schist with some quartzite and marble. The igneous bedrock consists of the Sherman Granite of Proterozoic age. The area of the Laramie Mountains crossed by the proposed pipeline route is characterized as rolling hills with less than 10 percent slopes, resulting in a notably less rugged landscape than the proposed pipeline route along the flanks of the Medicine Bow Mountains.
Great Plains Province, RP 308.0 to RP 749.4		
Colorado Piedmont	308.0 to 425.0	Unconsolidated deposits, primarily wind-blown sand and silt, underlie approximately 28 percent of the proposed pipeline route. Cretaceous and Tertiary sedimentary bedrock units consist of shale, sandstone, and volcaniclastic deposits. Physiography is characterized as isolated badlands, broad plains, and rolling hills separated by drainages where slopes can approach 15 percent.
High Plains	425.0 to 540.0	Unconsolidated deposits, primarily wind-blown sand and silt, underlie approximately 49 percent of the proposed pipeline route. Cretaceous and Tertiary sedimentary bedrock units consist of shale, sandstone, and volcaniclastic deposits. Physiography is characterized as isolated badlands, broad plains, and rolling hills separated by drainages where slopes can approach 15 percent.
Plains Border	540.0 to 749.4	Unconsolidated deposits, primarily wind-blown sand and silt, underlie approximately 61 percent of the proposed pipeline route. Cretaceous and Tertiary sedimentary bedrock units consist of shale, sandstone, limestone and chalk. Physiography is characterized as broad plains and rolling hills separated by drainages where slopes can approach 15 percent.

[1]Boundaries between physiographic provinces and sections are transitional.

Sources: NRG 2006; Howard and Williams 1972; Kansas Geological Survey 1991; Love and Christensen 1985; Trimble 1980; Tweto 1979.

Wyoming Basin Province. The western portion of the proposed pipeline route is located within the Wyoming Basin Province (**Table 3.3-1**). The province occupies southwestern and south-central Wyoming and part of northwestern Colorado and is comprised of broad, downwarped, sedimentary basins separated by basement-cored uplifts, some of which have little or no surface expression. These structures formed during the Laramide orogeny, which was a series of mountain-building events that affected much of western North America from Late Cretaceous (70 million years ago [mya]) to Early Tertiary time (40 mya). Most peaks within the province lie between 6,000 to 8,000 feet above mean sea level (amsl) and basin floors are at typically 3,000 to 5,000 feet amsl.

Nomenclature for individual physiographic areas within the Wyoming Basin Province varies, but from west to east the proposed pipeline route generally crosses the Green River Basin Rock Springs Uplift, Wamsutter Arch, Hanna-Carbon Basin, and Laramie Basin (**Table 3.3-1**). Land forms in these areas consist of gently rolling uplands; isolated, rugged badlands; shallow and incised drainages associated with intermittent streams; and well-defined floodplains associated with perennial streams. Based on a review of U.S. Geological Survey (USGS) topographic maps for the area, the majority of the proposed pipeline route through the Wyoming Basin Province would traverse slopes of less than 3 percent grade, although isolated slopes of 20 to 50 percent exist where the proposed pipeline route crosses escarpments, major streams, or the walls of incised drainages (Natural Resource Group [NRG] 2006).

In general, approximately 57.7 miles (24 percent) of the proposed pipeline route in the Wyoming Basin Province is underlain by unconsolidated Quaternary deposits (1.8 mya to present) (NRG 2006). These unconsolidated deposits are comprised of alluvium and colluvium located along drainages and river beds; and gravel, pediment, and fan deposits located adjacent to areas of greater topographic relief. The remainder of the proposed pipeline route in the Wyoming Basin Province, approximately 187.5 miles, is underlain by sedimentary rocks deposited in marine, marginal marine, terrestrial, and lacustrine (lake) environments. These sedimentary formations range in age from Permian (286 to 245 mya) to Eocene (54 to 38 mya) and are comprised primarily of shale, mudstone, siltstone, sandstone, and limestone.

Southern Rocky Mountains Province. The proposed pipeline route crosses portions of the Southern Rocky Mountains Province in Albany, Carbon, and Laramie counties, Wyoming (**Table 3.3-1**). Within the province the proposed pipeline route crosses approximately 5.1 miles of federally managed land.

The province extends from southeastern Wyoming through central Colorado and consists of linear, rugged, basement-cored mountain ranges separated by intermontane basins, with hogbacks and cuestas often located along the flanks of mountains. Most peaks within the province lie between 6,000 to 8,000 feet amsl, although some reach 14,000 feet amsl, and basin floors are typically at 3,000 to 5,000 feet amsl. Thus, the province exhibits from 3,000 to 11,000 feet of relief. Since the Miocene (5 to 23 mya), the Southern Rocky Mountains have undergone substantial vertical uplift of at least one mile, and deep erosion by streams and glaciers has carved the modern topography.

Within the Southern Rocky Mountains Province, the proposed pipeline route crosses the northern flank of the Medicine Bow Mountains and the Red Buttes area of the Laramie Mountains (**Table 3.3-1**). The Medicine Bow Mountains, particularly from approximately RP 239.0 to RP 258.0, present the most rugged terrain crossed by the Proposed Action. Peaks in the core of the Medicine Bow Mountains exceed 11,000 feet amsl. However, the proposed pipeline route would cross a maximum elevation of approximately 8,000 feet amsl near RP 239.2 along the north flank of Mount Arlington. The overall relief along the proposed pipeline route through the Medicine Bow Mountains is moderate, although the pipeline would cross isolated slopes of greater than 30 percent (**Table 3.4-2**).

The highest elevation along the entire proposed pipeline route occurs in the Laramie Mountains: approximately 8,360 feet amsl near RP 294.5. However, the area of the Laramie Mountains crossed by the proposed pipeline route is characterized as rolling hills with less than 10 percent slopes, resulting in a notably less rugged landscape than the proposed pipeline route along the flanks of the Medicine Bow Mountains (NRG 2006).

Unconsolidated Quaternary deposits underlie approximately 7.3 miles (24 percent) of the proposed pipeline route through the Medicine Bow Mountains (Love and Christensen 1985). These unconsolidated deposits are comprised of alluvium and colluvium located along drainages and river beds; and gravel, pediment, and fan deposits located adjacent to areas of greater topographic relief. The remainder of the proposed pipeline route in the Medicine Bow Mountains, approximately 33.7 miles, is underlain by similar sedimentary rocks as encountered in the Wyoming Basin Province. These sedimentary formations range in age from Cretaceous (146 to 65 mya) to Eocene (54 to 38 mya) and are comprised primarily of shale, mudstone, siltstone, sandstone, and limestone.

The proposed pipeline route in the Laramie Mountains is underlain by sedimentary, igneous, and metamorphic rock formations (Love and Christensen 1985). The igneous Sherman Granite underlies approximately 11.5 miles of the proposed pipeline route and is of Proterozoic age (2,500 to 544 mya). Early Proterozoic (2,500 to 1,600 mya) metasedimentary and metavolcanic rocks comprised primarily of schist with some quartzite and marble underlie approximately 3.1 miles of the proposed pipeline route. The remainder of the proposed pipeline route through the Laramie Mountains, approximately 7.4 miles, is underlain by sedimentary sandstone, shale, and carbonates dating from the Pennsylvanian to Permian (325 to 245 mya). Available geologic maps do not identify any significant unconsolidated deposits crossed by the proposed pipeline route in the Laramie Mountains, although shallow, localized, unconsolidated deposits likely exist along drainages and stream beds.

Great Plains Province. The remainder of the proposed pipeline route crosses the Great Plains province beginning in southeastern Wyoming to central Kansas. Physiographic sections within the Great Plains Province that are generally crossed by the proposed pipeline route from west to east are the Colorado Piedmont, High Plains, and the Plains Border (**Table 3.3-1**). The Great Plains Province is a remnant fluviatile plain that stretches from the Rocky Mountains on the west to the Central Lowlands Province on the east (Trimble 1980). The province formed as overloaded streams deposited unconsolidated silt, sand, and gravel ranging in thickness from nearly zero where the underlying bedrock is exposed in isolated hills, to more than 500 feet where the underlying bedrock surface was eroded prior to being covered. Elevations along the proposed pipeline route in the Great Plains Province gradually decrease from west to east, from approximately 7,400 feet amsl near the eastern flank of the Laramie Mountains to the lowest elevation along the entire proposed pipeline route, 1,565 feet amsl, at the crossing of the Little Arkansas River near RP 740.6 in Rice County, Kansas. Physiography along the proposed pipeline route is characterized as broad plains and rolling hills separated by drainages where slopes can approach 15 percent.

Quaternary (1.8 mya to today) unconsolidated deposits underlie approximately 217.8 miles (49 percent) of the proposed pipeline route in the Great Plains Province. These unconsolidated deposits are comprised of wind-blown deposits (208.0 miles) and alluvium and terrace deposits located along drainages and river beds (9.8 miles). The remainder of the proposed pipeline route in the Great Plains Province, approximately 223.7 miles, is underlain by sedimentary rocks which range in age from Early Cretaceous to Miocene (146 to 5 mya) (Tweto 1979; Kansas Geological Survey 1991). The predominant bedrock unit is the Ogallala Formation, which underlies approximately 92.4 miles (41 percent of the sedimentary bedrock formations) of the proposed pipeline route in the Great Plains Province. The Ogallala Formation is primarily composed of sandstone and conglomerate beds deposited in alluvial environments. An additional 53.9 miles (24 percent of the bedrock formations) of the proposed pipeline route is underlain by predominantly shale units deposited in shallow marine environments. The remainder of the sedimentary bedrock formations underlying the proposed pipeline route in the Great Plains Province consist of sandstone, siltstone, limestone, chalk, and volcaniclastic claystone, siltstone, and ash deposited in terrestrial, marginal marine, and shallow marine environments.

3.3.1.2 Mineral Resources

<u>Wyoming</u>

Oil and Natural Gas. The proposed pipeline route and its associated aboveground facilities in Wyoming are located in sedimentary basins with oil and gas production. The proposed pipeline route crosses oil and gas producing areas of the Moxa Arch, Rock Springs Uplift, Washakie Basin, Wamsutter Arch, Great Divide Basin, Hanna Basin, Laramie Basin, and the Denver-Julesburg (D-J) Basin (DeBruin 2002). The location of oil and gas fields that are crossed by the proposed pipeline route are listed on **Table 3.3-2**. The proposed pipeline route crosses 12 oil and gas fields in Wyoming.

Table 3.3-2 Oil and Gas Fields Crossed by the Proposed Project

State/County	Approximate RP	Field Name	Status
Wyoming			
Lincoln	13.0-25.0	Wilson Ranch, Zeglers Wash, and Moxa	Active
Sweetwater	74.0-76.5	South Baxter Basin	Active
	98.0-99.0	Brady South	Active
	106.8 to 110.0	Patrick Draw	Active
	110.0-112.0	Monell Unit	Active
	115.0-118.0	Table Rock	Active
	143.0 to 153.0	Echo Springs	Active
Carbon	229.0-230.0	Elk Mountain	Active
	245.4 to 246.4	Dutton Creek	Active
Albany	248.5 to 249.5	Copper Cove	Active
	264.7 to 265.1	Little Laramie	Active
Laramie	315.0-316.0	Brush	Abandoned
Colorado			
Weld	333.0-3334.0	Longs Peak	Active
	346.0-346.5	Pawnee Pioneer	Active
	377.0-378.0	Active Pommel	Active
	399.0-400.0	Tepee	Abandoned
	410.0-411.0	Merino	Active
	415.0-415.5	Prewitt	Abandoned
Yuma	453.5-454.5	Whisper	Active
	460.0-463.0	Shout	Active
Kansas			
Cheyenne	514.0-515.0	Orlando, Orlando East	Abandoned
Sheridan	582.0	Sequin	Abandoned
	583.0-584.0	Koster	Active
	602.0-603.0	Tilton, Northeast	Active
Trego	615.0-616.0	Garner West	Active
	617.0-617.5	Garner South	Abandoned
	619.0-620.0	Joe K	Active
	639.0-640.0	Locker North	Active
	644.0	Kroeger South	Active
Ellis	647.0 to 648.0	Solburn/Springhill	Active
	653.5 to 656.0	Kraus/Antonino	Active
	658.0-659.0	Lookout Hollow	Abandoned
	659.0-660.0	Engel West	Active
	662.2 to 663.7	Linges	Active
	654.0	Wheatland	Active
Russell	678.0-678.5	Odom North	Abandoned

Table 3.3-2 Oil and Gas Fields Crossed by the Proposed Project

State/County	Approximate RP	Field Name	Status
Barton	682.0-683.0	Galatia North	Active
	683.5	Galatia	Active
	685.0-686.0	Herman Northeast	Abandoned
	688.0-689.0	Templing	Active
	688.5 to 696.5	Trapp	Active
	698.8 to 699.3	Braver South	Active
	700.6 to 701.0	Odin	Active
Barton/Ellsworth	704.0 to 711.0	Kraft, Prusa West	Active
Ellsworth	715.0 to 716.0	Heiken	Active
	718.0	Prosper	Active
Rice	720.5 to 721.5	Frederick	Active
	726.0-729.0	Lyons Gas Area	Active
	729.0-730.5	Geneseo/Edwards	Active
	730.5-731.0	Lyons Gas Area	Active
Rice/McPherson	743.0 to 745.0	Welch-Bornholdt	Active

Sources: DeBruin (2002); Kansas Geological Survey (2006a); Wray et al. (2002).

Coal. The proposed pipeline route also crosses surface and subsurface coal-bearing formations that are potentially mineable in the Green River, Hanna, and Rock Creek coal fields of Sweetwater, Carbon, and Albany counties (Averitt 1972). The operations of the Black Butte Coal Mine are 2,500 feet north of the proposed pipeline route at RP 96.0.

Trona. From approximate RP 21.0 to RP 54.0, the proposed pipeline route crosses one of the largest trona (natural sodium carbonate) deposits in the world, in western Sweetwater County, and the mineral is currently mined at five underground mines in the region (Wyoming Mining Association 2006). Underground workings associated with trona mining are present beneath the proposed pipeline route (NRG 2006). The proposed pipeline route avoids trona mine leases near RP 33.5 to RP 36.2 that will be mined in the foreseeable future (Section 2.3.3.3).

Sand and Gravel. Where the proposed pipeline route crosses drainages, the surface materials (alluvium, colluvium, and fan deposits) are potentially mineable. Sand and gravel operations within 1,500 feet of the Proposed Action in Wyoming are listed in **Table 3.3-3**. Eighteen sand and gravel operations are located within 1,500 feet of the proposed project in Wyoming (NRG 2006). Three of these operations, located at RP 27.9, RP 169.2, and RP 228.8 to RP 229.0, may be affected by construction due to their proximity to the proposed pipeline route.

Table 3.3-3 Mining Operations Within 1,500 Feet of the Proposed Project

State/County	Approximate RP	Offset and Direction	Operation/Notes
Wyoming			
Sweetwater	27.9	South-adjacent	Gravel pit [1]
	32.5-36.1	1,300-4,200 feet north	Underground trona mine
	99.0	500 feet south	Gravel pit [1]
	106.8	1,400 feet northwest	Gravel pit
	106.9	200 feet northwest	Gravel pit
	107.0	900 feet northwest	Gravel pit

Table 3.3-3 Mining Operations Within 1,500 Feet of the Proposed Project

State/County	Approximate RP	Offset and Direction	Operation/Notes
Carbon	142.2	200 feet north	Gravel pit
	169.2	50 feet south	Gravel pit
	181.4	700 feet north	Tailing [1]
	195.5	1,000 feet north	Gravel pit, North Platte River
	196.2	800 feet north	Gravel pit, North Platte River
	208.3	400 feet north	Gravel pit
	223.6 to 224.8	1,200 feet south	Carbon Basin Mine (surface coal mine)
	224.2 to 224.8	Crosses	Carbon Pass Coal Area
	228.8 to 229.0	Crosses	Gravel pit
	246.3	1,500 feet northeast	Gravel pit
Albany	256.6	900 feet southwest	Gravel pit
	266.2 to 266.5	1,100 feet northeast	Gravel pit
	279.9	100 feet northeast	Possible gravel pit
	298.2 to 298.6	1,000 feet south	Gravel pit
	300.0 to 301.0	Crosses	Granite quarry
Laramie	303.8	100 feet north	Gravel pit
	303.8	1,000 feet north	Gravel pit
Colorado			
Weld	379.3	800 feet north	Gravel pit
Kansas			
Rawlins	532.5	1,500 feet north	Quarry
	536.5	1,500 feet south	Possible quarry or gravel pit
Thomas	570.2	300 feet north	Possible gravel pit
	570.2	500 feet south	Possible gravel pit
Ellis	674.7	1,000 feet south	Gravel pit
Russell	677.1	1,300 feet north	Possible gravel pit

[1]Mineral material operations on federally managed lands.

Source: NRG (2006).

Other Minerals. One granite quarry is located within 1,500 of the proposed pipeline route at RP 300.0 to RP 301.0 (NRG 2006). Other areas of known or potential mineral resources include uranium in the Medicine Bow Mountains, and copper, gypsum, and carbonates along the flanks of the Laramie Range. None of these mineral resources are crossed by the proposed pipeline route. The proposed pipeline route does not cross any active mining claims in Wyoming (BLM 2006a).

Colorado

Oil and Natural Gas. The primary mineral resources in the vicinity of the proposed pipeline route in Colorado are oil and natural gas. Within Colorado, the proposed pipeline route is entirely located in the D-J Basin (Wray et al. 2002). The proposed pipeline route crosses eight fields, six of which are still in production (**Table 3.3-2**). Weld County produces more oil and gas than any other county in Colorado. The great majority of petroleum production in Weld County comes from the giant Wattenberg Field, but its northernmost-extent is approximately 20 miles to the south of the proposed pipeline route. In the general project area, oil and natural gas is produced from smaller, widely scattered fields throughout northeastern Colorado.

Coal. The proposed pipeline route crosses the Denver Coal Region between approximate RP 321.2 and RP 380.0 in Weld County. The coal is found primarily in the upper Cretaceous Laramie Formation (Kirkham and Ladwig 1980). However, based on information from the Colorado Geological Survey (CGS), review of USGS topographic maps and aerial photographs of the proposed pipeline route, there are no active surface or underground coal mines in the project area (Cappa et al. 2005).

Sand and Gravel. Construction sand and gravel is recovered from numerous surface pits throughout the project area in Colorado (Guilinger and Keller 2004). As indicated in **Table 3.3-3**, one gravel pit was identified approximately 800 feet north of the proposed pipeline route near RP 379.3 in Weld County (NRG 2006).

Other Minerals. Other mineral commodities are produced in Colorado, including marble, gypsum, limestone, dimension stone, uranium, and precious metals. However, according to the CGS, there are no significant mining operations for these minerals in the counties crossed by the proposed pipeline route (Guilinger and Keller 2004).

Kansas

Oil and Gas Fields. The proposed pipeline route in Kansas crosses approximately 60 miles (23 percent) of oil and gas fields, with the greatest concentration of fields in Ellis, Barton, and Rice counties (Kansas Geological Survey [KGS] 2006a). The proposed pipeline route does not cross existing oil and gas fields in Rawlins, Thomas, or Gove counties.

Coal. There are no mineable coal resources in the proposed pipeline route area (USGS 2006a).

Sand and Gravel. There are 366 active mineral recovery operations located in those Kansas counties crossed by the proposed pipeline route (KGS 1998). Of these operations, 257 (70 percent) are sand and gravel; 82 (22 percent) are limestone or dolomite; 19 (5 percent) are clay and/or shale; 6 (2 percent) are salt; and 2 (less than 1 percent) are sandstone. The nearest mining operation to the proposed pipeline route is an apparent gravel pit approximately 300 feet north of RP 570.2 in Thomas County (NRG 2006) (**Table 3.3-3**).

Other Minerals. Salt occurs in layers that, in aggregate, can be approximately 300 feet thick and are located 300 to 600 feet below the land surface throughout central Kansas (Swain and Buchanan 2002). Salt has been mined by underground dissolution mining in Barton, Ellsworth, Rice, and McPherson counties.

3.3.1.3 Geological Hazards

Seismic-Related Hazards

Primary and secondary seismic-related hazards potentially could impact the proposed pipeline. Primary seismic hazards consist of strong ground motions (earthquakes) and surface faulting, and secondary effects include soil liquefaction and related slope failures. As discussed in the following sections, the potential for prolonged, strong ground shaking and surface faulting is low along the proposed pipeline route and, therefore, the potential for secondary seismic-related impacts to develop also is low.

Earthquakes. Earthquakes are characterized by magnitude (a measure of the amount of energy released during the event) and intensity (a measure of the effects of the event at the land surface). Generally, the area crossed by the proposed pipeline route historically has experienced low-magnitude and low intensity earthquakes. From 1534 to 1986, most earthquakes in the proposed project vicinity were magnitude 4.0 or less (USGS 2006b). The strongest earthquake occurred in southern Larimer County, Colorado, approximately 45 miles south of RP 300.0 on November 7 and 8, 1882, with an estimated magnitude of 6.2 to 6.5. This earthquake resulted in category VI damage on the Modified Mercalli Index (MMI) in Laramie, Wyoming, which is characterized as “slight.”

Ground Motion. An earthquake generates waves of energy that cause the ground to shake. Surface structures are susceptible to ground motion, but buried pipelines also may be at risk of rupture or damage, but to lesser degree depending on site-specific conditions (Pelmulder 1995). Ground motion hazard mapping indicates that along the proposed pipeline route there is a low potential for ground motion to cause serious damage from a maximum quake.

Surface Faults. Surface faults that have demonstrated significant historical seismicity or geologic displacement during the last 11,000 years (Holocene) are considered to be active (USGS 2006c). Faults that displace Quaternary deposits are considered potentially active. The proposed pipeline route does not cross any active or potentially active faults (USGS 2006d).

Soil Liquefaction. Secondary seismic effects often are more damaging than shaking or surface faulting. Soil liquefaction is a phenomenon which occurs when saturated, cohesionless soils are subjected to strong and prolonged shaking from seismic events. Liquefaction can lead to loss of load bearing strength and can result in lateral spreading, flow failures, and flotation of buried pipelines.

For soil liquefaction and the related effects to occur, a relatively shallow water table, rapid, strong ground motions, and susceptible soils all must be present. Unconsolidated materials and shallow water tables occur coincidentally where the proposed pipeline route crosses streams and waterbodies. As previously discussed in this section, the potential for strong ground shaking to occur along the proposed pipeline route is low, resulting in a low potential for soil liquefaction and related effects to develop. In Wyoming, where predicted ground motions are the highest along the entire proposed pipeline route (but there is still a low overall potential for ground motion), there are no liquefaction-prone areas within at least 25 miles of the project (Wyoming State Geological Survey [WSGS] 1986).

Landslides and Steep Slopes

Landslide refers to the downward and outward movement of slope-forming materials reacting under the force of gravity and usually consists of natural soil, rock, artificial fill, or a combination of those items. The term covers a range of events including mudflows, mudslides, rock flows, rockslides, debris flows, debris avalanches, debris slides, and earth flows. Landslides can be initiated by natural events or by human activity. Naturally occurring landslides are more likely to occur in areas where high average annual precipitation and steep slopes contribute to slope instability. The type of geologic formation exposed at the surface also influences landslide occurrence, as does the intensity and frequency of seismic activity.

No landslide areas were identified along the proposed pipeline route (NRG 2006; Radbruch-Hall et al. 1982; WSGS 2006). In west-central Kansas, there is an increased susceptibility to landslides where loess and unconsolidated materials are underlain by Cretaceous shale exposed in drainages river valleys (Radbruch-Hall et al. 1982). Cretaceous shale is exposed in various places between RP 674.0 and RP 696.0.

Pipeline construction on steep slopes could initiate localized landslides. Based on review of USGS topographic maps for the area, there are several areas of isolated slopes of more than 20 percent grade (**Table 3.3-4**). Due to steeper slopes, the risk of landslides is higher in these areas when compared to the remainder of the proposed pipeline route.

Table 3.3-4 Potential Geologic Hazards Within the Proposed Overland Pass Pipeline Project

State	Approximate RP	Potential Geologic Hazard
Wyoming	1.8, 29.6, 50.9, 51.2, 55.7, 62.2, 85.4, 86.7, 226.5, 229.2, 239.8, 251.7	Increased potential for construction-related landslides to occur on isolated slopes of greater than 20 percent (slope estimates based on USGS topographic maps). Construction-related landslides could impact workers and cause project delays.
	21.0 to 54.0	Elevated potential for broad subsidence to occur gradually over underground trona mine workings. Subsidence could potentially damage pipeline facilities by subjecting them to undue stress.

Table 3.3-4 Potential Geologic Hazards Within the Proposed Overland Pass Pipeline Project

State	Approximate RP	Potential Geologic Hazard
Wyoming (continued)	49.0 to 71.0	High susceptibility but low incidence of landslides in proximity to the Flaming Gorge Reservoir; no actual landslide deposits mapped in the area. Landslides could damage pipeline facilities.
	235.0 to 250.0	Moderate incidence of landslides in the area. Proposed pipeline route crosses near documented landslide deposits from RP 239.2 to RP 239.4.
	0.0 to 321.1	Stream bed scour may occur in conjunction with seasonal and flash flooding of perennial and intermittent stream crossings, potentially exposing the pipeline.
	0.0 to 38.0, 66.0 to 94.0, 140.0 to 230.0, 245.0 to 280.0, 310.0 to 321.1	Expansive soils are documented in the Green River Basin and may exist in other sedimentary basins in Wyoming. Expansive soils increase the potential for slope instability and reduce traction for heavy equipment if soils become wet.
Colorado	323.7	Increased potential for construction-related landslides to occur on isolated slopes of greater than 20 percent (slope estimates based on USGS topographic maps). Construction-related landslides could impact workers and cause project delays.
	321.1 to 492.2	Stream bed scour may occur in conjunction with seasonal and flash flooding of perennial and intermittent stream crossings, potentially exposing the pipeline.
	321.1 to 492.2	Expansive soils may exist in surficial deposits throughout the project area in Colorado. Expansive soils increase the potential for slope instability and reduce traction for heavy equipment if soils become wet. Swelling soil potential may be very high from RP 320.0 to RP 460.0.
Kansas	674.0 to 674.9, 679.6 to 684.0, 685.0 to 694.3, 695.0 to 696.0	Elevated potential for landslides and slumps to occur on steep slopes and bluffs where the Blue Hill Member of the Carlile Shale is exposed at the land surface.
	608.0 to 644.0	Underlain by outcrops or thinly buried Niobrara Formation, potential for solution and surface subsidence.
	494.2 to 749.4	Stream bed scour may occur in conjunction with seasonal and flash flooding of perennial and intermittent stream crossings, potentially exposing the pipeline.
	494.2 to 749.4	Expansive soils may exist in surficial deposits throughout the project area in Kansas. Expansive soils increase the potential for slope instability and reduce traction for heavy equipment if soils become wet.
	675.0 to 749.4	Potential subsidence hazards areas associated with mining or dissolution of salt.

Subsidence

Subsidence is the loss of surface elevation due to removal of subsurface support and is one of the most diverse forms of ground failure, ranging from small or local collapses to broad regional lowering of the earth's surface. Potential causes of subsidence along the proposed pipeline route include underground mining and dissolution of soluble formations (salt).

In Wyoming, a common form of subsidence occurs over abandoned underground coal mines. The proposed pipeline route does not cross abandoned underground coal mines or mined-out areas that have experienced subsidence (Case 1986). The proposed pipeline route does not cross areas susceptible to other causes of subsidence (Davies et al. 1984).

The proposed pipeline route avoids underground trona mine workings that are located between approximate RP 32.5 to RP 36.1 in Sweetwater County, Wyoming (**Table 3.3-3**). Subsidence has been documented over some underground trona mines. Subsidence over trona mines can be on the order of 6 feet and generally occurs gradually over a broad area, rather than as a sudden, localized collapse.

Similarly, subsidence in northeastern Colorado is commonly associated with underground mines. No areas along the proposed pipeline route in Colorado were identified to have the potential for subsidence resulting from underground mining activities (Turney and Murray-Williams 1983). Other types of subsidence in Colorado such as dissolution of soluble rocks (gypsum) and collapsible soil are not present along the proposed pipeline route (CGS 2001).

The proposed pipeline route crosses potential subsidence hazard areas in central Kansas (**Table 3.3-4**). One potential subsidence hazard involves the natural dissolution of salt beds that lie several hundred feet below the surface. An example of natural subsidence is Lake Inman in MacPherson County (Swain and Buchanan 2002). Lake Inman is in an area of natural salt dissolution that occurs from a line north of Conway, Kansas (just west of MacPherson) to Colwich (4 miles northwest of Wichita). This area is just a few miles east of the end of the proposed pipeline route and is thought to coincide with the eastern margin of the salt deposits that underlie the area (Williams and Lohman 1949).

Another cause of subsidence associated with salt beds in central Kansas involves salt mining and oil and gas production water disposal wells (Walters 1978). Surface collapse has occurred at salt mines in Reno and Ellsworth counties associated with removal of salt either by mining or solution. Another cause of salt solution results from oil field brine disposal wells where annular displacement of water migrates into salt layers and dissolves them. The dissolution can result in surface subsidence manifested as sinkholes or broad depressions (Swain and Buchanan 2002). An example of this type of subsidence generated by brine disposal has occurred at the Gorham Oil Field near Russell, Kansas, that has resulted in heavy damage to Interstate (I)-70. Other subsidence incidents related to oil wells have been documented in central Kansas, but the incidence is extremely rare given the thousands of wells and small number of associated subsidence incidents (Walters 1978). Subsidence features have not been identified along the proposed pipeline route in McPherson County (NRG 2006). The proposed pipeline route does not cross salt mining areas in Kansas although it passes approximately 2 miles south of the abandoned Little River Salt Mine in Section 18, T19S, R6W in Rice County Kansas. Some collapse features have been reported at the main shaft of the mine, but remedial work was conducted to convert the mine voids into underground liquefied petroleum gas storage (Walters 1978).

Another potential subsurface solution involves the Niobrara Formation which is largely composed of chalk. Small fissures may form in the Niobrara Formation and if the covering Ogallala or surficial materials are thin, these fissures may be manifested by depressions on the surface (Davies et al. 1984). The proposed pipeline route crosses areas of thinly covered or exposed Niobrara Formation in Trego County (RP 608.0 to RP 644.0).

Flooding

In general, seasonal flooding hazards exist where the proposed pipeline route would cross major streams and rivers, and flash flooding hazards exist where it would cross localized drainages. The proposed pipeline route would cross perennial and intermittent waterbodies, all of which are locations where seasonal or flash flooding could occur (**Appendix F**).

Expansive Soils

Expansive, or swelling, soils are geologic deposits that expand when wet and shrink when dry. Depending on the mineralogy and physical conditions, an expansive soil may swell to as much as 13 times its dry volume when wet (Gillott 1968). Site-specific information regarding expansive soils is not available for the entire length of the proposed pipeline route, but expansive soils are known to exist in portions of the Green River Basin of southwest Wyoming and the Great Plains Province (Colorado and Kansas) crossed by the proposed pipeline route. Areas crossed that have a high shrink-swell potential area shown in **Table 3.3-4**. An area of very high potential for shrink-swell soils is in northeastern Colorado (Olive et al. 1989).

3.3.1.4 Paleontological Resources

A paleontological study was conducted to review existing data and identify geological units and known fossil localities crossed by the proposed pipeline route (Uinta Paleontological Associates, Inc. 2006). The study examined geologic maps, publications, and paleontological site information obtained from the University of Colorado Museum at Boulder, Denver Museum of Nature and Science, University of Wyoming, Carnegie Museum in Pittsburgh, University of California Museum of Paleontology, as well as Colorado and Wyoming BLM state and district offices. In addition to literature review, field surveys were conducted to identify areas of relative paleontological importance crossed by the proposed pipeline route.

In Wyoming, the geologic study identified 33 formal geological formations ranging in age from Precambrian to Quaternary informal units along the proposed pipeline route (Uinta Paleontological Associates, Inc. 2006). In Colorado and Kansas, the study identified 12 formations and 4 Quaternary informal units along the proposed pipeline route. Many of the Mesozoic and Cenozoic units have vertebrate, invertebrate, and plant fossil localities sites in the vicinity of the proposed project. There is little information on paleontological resources for the proposed pipeline route in Colorado and Kansas because much of that portion of the route is covered with undetermined thicknesses of well-vegetated Quaternary deposits that are not known to be fossiliferous.

Evaluation of the paleontological sensitivity of all geological formations along the ROW on federal lands is mandated in the following statutes and guidance:

- The NEPA of 1969 (P.L. 91-190; 31 Stat. 852, 42 USC 4321-4327);
- The Federal Land Policy and Management Act of 1976 (FLPMA) of 1976 (P.L. 94-579; 90 Stat. 2743, USC 1701-1782); and
- BLM Paleontology Resources Management Manual and Handbook H-8270-1 (1998).

Similar guidelines also are outlined by Wyoming and Colorado state laws and regulations regarding paleontological resource protection: Wyoming Title 36-1-114 through 36-1-116 (as of 2003) and Colorado Revised Statute 1973, 24-80-401 through 409.

The BLM Paleontology Resources Management Manual establishes a classification system for ranking paleontological areas as to their potential for noteworthy occurrences of fossils (BLM 1998). The BLM classifies areas as:

- Condition 1 – Areas that are known to contain vertebrate fossils or noteworthy occurrences of invertebrate or plant fossils. Consideration of paleontological resources would be necessary if the Field Office review of available information indicates that such fossils are present in the area.
- Condition 2 – Areas with exposures of geological units or settings that have high potential to contain vertebrate fossils or noteworthy occurrences of invertebrate or plant fossils. The presence of geologic units from which fossils have been recovered elsewhere may require further assessment of these same units where they are exposed in the area of consideration.
- Condition 3 – Areas that are very unlikely to produce vertebrate fossils or noteworthy occurrences of invertebrate or plant fossils based on their surficial geology, igneous or metamorphic rocks, extremely young alluvium, colluvium, or aeolian deposits or the presence of deep soils. However, if possible, it should be noted at what depth bedrock may be expected to determine if fossiliferous deposits may be uncovered during surface disturbing activities.

Either Condition 1 or Condition 2 may trigger the initiation of a formal analysis of existing data prior to authorizing land-use actions involving surface disturbance or transfer of title. Condition 3 suggests that further paleontological consideration is generally unnecessary.

Based on review of paleontological literature, geologic formations along the proposed pipeline route were classified accordingly (Uinta Paleontological Associates, Inc. 2006):

- Condition 1: 122.0 miles in Wyoming (54.0 miles on BLM and 1.6 miles on USFS); 73.3 miles in Colorado (17.5 miles on USFS); and 4.4 miles in Kansas;
- Condition 2: 142.1 miles in Wyoming (42.4 miles on BLM); 38.7 miles in Colorado (4.9 miles on USFS); and 94.0 miles in Kansas; and
- Condition 3: a total of 274.66 miles along the entire proposed pipeline route.

Field surveys conducted in the summer of 2006 provided the following findings:

- Within the survey corridor, 199 new occurrences of fossils were identified, many of which were grouped into 33 new formal localities;
- 22 localities with 171 occurrences were found in Wyoming, 9 localities with 19 occurrences in Colorado, and 2 localities with 9 occurrences in Kansas; and
- Within 1 mile of the corridor, 201 localities were identified in Wyoming, 3 in Colorado, and 7 in Kansas.

3.3.2 Southern Energy Corridor – Copper Ridge Bypass Alternative

The underlying geology along the Southern Energy Corridor – Copper Ridge Bypass Alternative would be the same as the Proposed Action. The Southern Energy Corridor – Copper Ridge Bypass Alternative would cross approximately 5.9 miles more of steep and side slopes compared to the Proposed Action (**Appendix E**).

Geological formations along the Southern Energy Corridor – Copper Ridge Bypass Alternative were classified as either Condition 1 or Condition 2 and are comparable to the Proposed Action through this same segment.

3.4 Soils

The State Soil Geographic (STATSGO) database was used to obtain information regarding soils that occur along the proposed pipeline route. STATSGO data contain physical and chemical properties, as well as interpretative groupings for approximately 18,000 soil series recognized in the U.S. These data apply to the whole soil (e.g., hydric or prime farmland soils, estimated crop yields, soil classification, slope class) as well as soil horizons (e.g., particle size, available water-holding capacity, permeability). These data can be used in conjunction with spatial data to quantitatively describe the soils in a particular area.

Soils data were grouped and evaluated according to characteristics that could affect construction or increase the potential for soil impacts. These sensitive soil characteristics include: highly erodible soils; prime farmland and hydric soils; compaction-prone soils; stony/rocky soils and shallow bedrock; droughty soils; depth of topsoil; and percent slope as defined below. Additional soil-related issues considered in the analysis include revegetation and soil contamination.

Highly Water and Wind Erodible Soils

Highly erodible soils along the proposed pipeline route were identified based on soil parameters that are directly related to water or wind soil erosion susceptibility. Highly erodible lands (HEL) include soils with severe to extreme erosion limitations for agricultural use as well as soils with slopes of 9 percent or greater that are susceptible to erosion. Soils susceptible to wind erosion include soils that have surface-soil properties that affect their resistance to soil blowing, including texture, organic matter content, and aggregate stability. Sandy-textured soils with poor aggregation are particularly susceptible to wind erosion. Because management and construction mitigation techniques used to minimize wind erosion hazards are different from those used to minimize water erosion, separate groupings for water and wind erosion were developed. Some overlap between these two interpretive groupings is expected.

Prime Farmland and Hydric Soils

Percentage and length of prime farmland and hydric soils along the proposed pipeline route were quantified using STATSGO data. Hydric soils may indicate the presence of wetlands or agricultural drain tiles.

Compaction-prone Soils

Compaction-prone soils along the proposed pipeline route were identified by soil series that have both: 1) a surface texture of sandy clay loam or finer and 2) a drainage class of somewhat poorly drained through very poorly drained.

Stony/Rocky Soils

Soils with significant quantities of stones in the surface were identified by soil series that have either: 1) a cobbley, stony, bouldery, gravelly, or shaly modifier to the textural class of the surface layer or 2) have a surface layer that contains greater than 5 percent (weight basis) stones larger than 3 inches.

Shallow Bedrock

Shallow-to-bedrock soils (shallow soils) were identified by soil series that have a bedrock contact listed above 60 inches in depth. The analysis also identified whether the near surface bedrock is hard and would require blasting to excavate or is soft and could be ripped and dug without blasting.

Droughty Soils

Droughty soils along the proposed pipeline route were identified by soil series that have: 1) a surface texture of sandy loam or coarser and 2) are moderately well to excessively drained.

Topsoil Depth

Topsoil depths along the proposed pipeline route were quantified by grouping the lower limit of the component soil-series A horizons into one of five groups: 0 to 6 inches, greater than 6 to 12 inches, greater than 12 to 18 inches, greater than 18 to 24 inches, and greater than 24 inches.

Slope Class

Because of the importance of slope to assess erosion hazards, a separate evaluation of slope of soils along the ROW was conducted. A complex query was used to reduce the large number of slope classes used by the NRCS to a more useable grouping. The analysis identified the average of the slope range provided for each soil series into one of five classes: 0 to 5 percent, greater than 5 to 8 percent, greater than 8 to 15 percent, greater than 15 to 30 percent, and greater than 30 percent slopes.

3.4.1 Proposed Action

Many of the soils crossed by the proposed pipeline route are considered susceptible to water (417.4 miles) and wind erosion (56.6 miles). Approximately 323.3 miles (approximately 43 percent) of the soils crossed by the proposed pipeline route are considered prime farmland or potentially prime farmland (**Table 3.4-1**). Most of the prime farmland is located in Colorado and Kansas with minimal prime farmland in Wyoming. Roughly 4 percent of prime farmland would be on federally managed lands.

Approximately 8.1 miles of the soils crossed by the proposed pipeline route are characterized as hydric soils. A total of 1.4 miles of the soils crossed by the proposed pipeline route are considered compaction prone; 77.4 miles of the soils crossed by the proposed pipeline route are considered to be stony/rocky soils; approximately 197.0 miles of the soils crossed by the proposed pipeline route are considered to have a bedrock contact listed above 60 inches in depth; and approximately 102.2 miles of the soils crossed by the proposed pipeline route are considered droughty.

Approximately 365 miles of soils (approximately 49 percent) crossed by the proposed pipeline route have between 6 and 12 inches of topsoil. Another 300 miles of soils crossed have between 0 and 6 inches of topsoil. Only approximately 85 miles of the proposed pipeline route would cross soils with more than 12 inches of topsoil. A majority of the proposed pipeline route (approximately 489 miles) crosses lands within the average slope class of 0 to 5 percent. An additional 242 miles of soils crossed fall within the average slope class of 5 to 30 percent. Only 19 miles of soils crossed exhibit an average slope of greater than 30 percent. **Table 3.4-2** lists topsoil depth and slope presented as classes based on the aggregate percentages of component soil series that are within a particular class.

The following text provides information on the Major Land Resource Areas (MLRAs) crossed and identifies sensitive soil locations along the Proposed Action and the Southern Energy Corridor – Copper Ridge Bypass Alternative by state. **Table 3.4-1** summarizes the soil characteristics by county crossed by the proposed pipeline route.

Wyoming

In Wyoming, the proposed pipeline route would cross three MLRAs recognized by the NRCS: The Central Desertic Basins, Mountains, and Plateaus (MLRA 34), the Wasatch and Uinta Mountains (MLRA 47), and the Southern Rocky Mountain Foothills (MLRA 49).

Central Desertic Basins, Mountains, and Plateaus (MLRA 34). Slightly more than half of the Central Desertic Basins, Mountains, and Plateaus MLRA in Wyoming are federally owned. The remainder is occupied by sheep and cattle ranches. Land along the few large streams that cross the area (approximately 2 to 5 percent of this MLRA) is irrigated. The physiography of the area is characterized by alluvial fans, piedmont plains, and pediments slope from the surrounding mountains that form broad intermountain basins. Elevations

Table 3.4-1 Mileage Summary by State of Soil Characteristics for the Proposed Overland Pass Pipeline Route[1]

State/County	Highly Erodible Water[2]		Highly Erodible Wind[3]		Prime Farmland[4]		Hydric[5]		Compaction Prone[6]		Stony – Rocky[7]		Shallow-to-Bedrock[8]		Droughty[9]	
	Federal	Other	Federal	Other	Federal	Other	Federal	Other	Federal	Other	Federal	Other	Federal	Other	Federal	Other
Wyoming																
Lincoln	8.2	7.2	2.3	2.4	0.0	0.0	0.1	0.3	0.0	0.0	1.1	0.9	5.7	5.0	2.8	2.7
Sweetwater	43.1	63.1	5.6	7.8	0.0	0.0	0.8	0.7	0.0	0.0	6.2	8.9	35.1	51.7	11.1	16.8
Carbon	24.7	57.0	3.7	4.0	0.0	0.0	0.0	0.0	0.0	0.0	6.4	11.8	9.6	25.5	14.4	25.2
Albany	1.9	36.8	0.0	0.6	0.0	0.0	0.0	3.3	0.0	0.8	0.8	15.3	1.4	21.0	0.2	9.0
Laramie	0.0	20.2	0.0	0.0	0.0	1.4	0.0	0.3	0.0	0.0	0.0	14.7	0.0	14.5	0.0	0.3
Wyoming Subtotal	**77.9**	**184.3**	**11.6**	**14.8**	**0.0**	**1.4**	**0.9**	**4.6**	**0.0**	**0.8**	**14.5**	**51.6**	**51.8**	**117.7**	**28.5**	**54.0**
Colorado																
Larimer	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Weld	17.5	43.4	0.6	3.6	13.0	23.9	0.0	0.0	0.0	0.0	0.1	3.3	4.1	7.4	0.9	6.2
Morgan	0.0	5.4	0.0	2.0	0.0	6.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	1.5
Logan	0.0	5.8	0.0	2.9	0.0	7.3	0.0	0.5	0.0	0.1	0.0	0.4	0.0	0.1	0.0	2.5
Washington	0.0	10.9	0.0	5.2	0.0	22.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.0	1.1
Yuma	0.0	24.6	0.0	28.4	0.0	23.2	0.0	0.6	0.0	0.2	0.0	3.3	0.0	1.9	0.0	6.4
Colorado Subtotal	**17.5**	**90.2**	**0.6**	**28.4**	**13.0**	**83.1**	**0.0**	**1.1**	**0.0**	**0.3**	**0.1**	**7.0**	**4.1**	**10.7**	**0.9**	**17.7**
Kansas																
Cheyenne	0.0	14.0	0.0	0.7	0.0	26.0	0.0	0.6	0.0	0.0	0.0	0.3	0.0	0.5	0.0	0.5
Rawlins	0.0	5.2	0.0	0.1	0.0	14.2	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.1
Thomas	0.0	2.7	0.0	0.0	0.0	21.6	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sheridan	0.0	7.5	0.0	0.3	0.0	27.4	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.3
Gove	0.0	0.6	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Trego	0.0	8.3	0.0	0.1	0.0	26.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0	3.3	0.0	0.2
Ellis	0.0	4.7	0.0	0.0	0.0	23.0	0.0	0.0	0.0	0.0	0.0	2.1	0.0	3.7	0.0	0.0
Russell	0.0	1.3	0.0	0.0	0.0	4.4	0.0	0.0	0.0	0.0	0.0	0.5	0.0	1.0	0.0	0.0
Barton	0.0	1.4	0.0	0.0	0.0	27.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	0.0	0.0
Ellsworth	0.0	0.4	0.0	0.0	0.0	7.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0
Rice	0.0	1.3	0.0	0.0	0.0	27.4	0.0	0.1	0.0	0.2	0.0	0.2	0.0	1.2	0.0	0.0

Table 3.4-1 Mileage Summary by State of Soil Characteristics for the Proposed Overland Pass Pipeline Route[1]

State/County	Highly Erodible Water[2]		Highly Erodible Wind[3]		Prime Farmland[4]		Hydric[5]		Compaction Prone[6]		Stony – Rocky[7]		Shallow-to-Bedrock[8]		Droughty[9]	
	Federal	Other	Federal	Other	Federal	Other	Federal	Other	Federal	Other	Federal	Other	Federal	Other	Federal	Other
McPherson	0.0	0.1	0.0	0.0	0.0	5.3	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Kansas Subtotal	**0.0**	**47.5**	**0.0**	**1.2**	**0.0**	**211.3**	**0.0**	**1.5**	**0.0**	**0.3**	**0.0**	**4.2**	**0.0**	**12.7**	**0.0**	**1.1**
Project Total[10]	**95.4**	**322.0**	**12.2**	**44.4**	**13.0**	**310.3**	**0.9**	**7.2**	**0.0**	**1.4**	**14.6**	**62.8**	**55.9**	**141.1**	**29.4**	**72.8**

[1]Federal lands data based on BLM-provided land layers and USFS jurisdictional boundaries for the FGNRA and PNG.

[2]Includes land in capability subclasses 4E through 8E and soils with slopes greater than or equal to 9 percent.

[3]Includes soils in wind erodibility groups 1 and 2.

[4]Includes land listed by the NRCS as potential prime farmland if adequate protection from flooding and adequate drainage are provided.

[5]As designated by the NRCS.

[6]Includes soils that have clay loam or finer textures in somewhat poor, poor and very poor drainage classes.

[7]Includes soils that have either: 1) a cobbley, stony, bouldery, gravelly, or shaly modifier to the textural class, or 2) have greater than 5 percent (weight basis) of stones larger than 3 inches in the surface layer.

[8]Includes soils that have bedrock within 60 inches of the soil surface.

[9]Includes coarse-textured soils (sandy loams and coarser) that are moderately well to excessively drained.

[10]Slight discrepancies in state and project totals are due to rounding.

Table 3.4-2 Mileage Breakdown of Topsoil Depth and Average Slope Class Along the Proposed Overland Pass Pipeline Route

	Topsoil Depth[1] (inches)										Slope Class[2] (percent)									
	0 – 6		>6 – 12		>12 – 18		>18 – 24		>24		0 – 6		>6 – 12		>12 – 18		>18 – 24		>24	
State/County	Federal[3]	Other	Federal	Other	Federal	Other	Federal	Other	Federal	Other	Federal	Other	Federal	Other	Federal	Other	Federal	Other	Federal	Other
Wyoming																				
Lincoln	7.7	8.0	2.2	3.2	0.6	0.5	0.0	0.0	0.0	0.0	7.3	8.9	0.0	0.0	2.2	2.0	0.7	0.6	0.3	0.3
Sweetwater	41.8	59.0	10.0	11.9	7.1	10.3	0.0	0.0	0.0	0.0	28.5	36.9	4.5	6.0	11.4	16.8	11.8	17.4	2.8	4.0
Carbon	20.7	44.6	8.6	17.6	0.0	0.0	0.0	0.0	0.0	0.0	13.2	22.1	5.4	10.5	5.4	14.5	4.9	13.4	0.3	1.6
Albany	1.7	36.5	0.4	7.5	0.0	5.3	0.0	1.5	0.0	0.0	0.6	25.3	0.1	3.3	0.2	8.4	0.6	7.2	0.5	6.5
Laramie	0.0	9.6	0.0	9.0	0.0	1.5	0.0	0.3	0.0	0.0	0.0	3.9	0.0	2.8	0.0	4.0	0.0	7.9	0.0	1.9
Wyoming Subtotal	**71.8**	**157.7**	**21.2**	**49.2**	**7.7**	**17.6**	**0.0**	**1.8**	**0.0**	**0.0**	**49.6**	**97.1**	**10.0**	**22.6**	**19.2**	**45.7**	**18.0**	**46.5**	**3.9**	**14.3**
Colorado																				
Larimer	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Weld	9.4	20.0	11.8	36.1	1.3	2.2	0.0	0.1	0.0	0.0	17.6	42.2	3.5	9.9	11.0	4.1	0.4	2.2	0.0	0.0
Morgan	0.0	2.6	0.0	4.4	0.0	0.4	0.0	0.0	0.0	0.0	0.0	6.1	0.0	0.7	0.0	0.0	0.0	0.6	0.0	0.0
Logan	0.0	5.3	0.0	4.1	0.0	0.5	0.0	0.0	0.0	0.0	0.0	8.8	0.0	0.3	0.0	0.0	0.0	0.8	0.0	0.0
Washington	0.0	11.7	0.0	17.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	21.5	0.0	3.2	0.0	0.2	0.0	4.2	0.0	0.0
Yuma	0.0	19.9	0.0	22.7	0.0	2.0	0.0	0.0	0.0	0.0	0.0	27.1	0.0	3.2	0.0	4.2	0.0	9.8	0.0	0.3
Colorado Subtotal	**9.4**	**59.5**	**11.8**	**84.3**	**1.3**	**5.5**	**0.0**	**0.1**	**0.0**	**0.0**	**17.6**	**105.7**	**3.5**	**17.3**	**1.0**	**8.5**	**0.4**	**17.6**	**0.0**	**0.3**
Kansas																				
Cheyenne	0.0	10.9	0.0	22.1	0.0	5.5	0.0	0.0	0.0	0.0	0.0	27.0	0.0	1.0	0.0	7.9	0.0	2.3	0.0	0.3
Rawlins	0.0	3.7	0.0	13.5	0.0	1.9	0.0	0.1	0.0	0.0	0.0	14.5	0.0	0.3	0.0	2.6	0.0	1.8	0.0	0.1
Thomas	0.0	2.6	0.0	20.8	0.0	1.2	0.0	0.0	0.0	0.0	0.0	21.8	0.0	0.1	0.0	2.1	0.0	0.4	0.0	0.1
Sheridan	0.0	4.3	0.0	27.2	0.0	3.2	0.0	0.3	0.0	0.0	0.0	27.9	0.0	0.1	0.0	4.5	0.0	2.5	0.0	0.1
Gove	0.0	0.3	0.0	0.6	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.3	0.0	0.2	0.0	0.0
Trego	0.0	1.3	0.0	28.1	0.0	4.7	0.0	1.7	0.0	0.0	0.0	28.4	0.0	1.8	0.0	4.7	0.0	0.8	0.0	0.0
Ellis	0.0	0.0	0.0	25.2	0.0	3.6	0.0	3.5	0.0	0.0	0.0	29.6	0.0	0.9	0.0	1.8	0.0	0.0	0.0	0.0
Russell	0.0	0.0	0.0	4.4	0.0	0.3	0.0	0.5	0.0	0.0	0.0	4.7	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0
Barton	0.0	0.3	0.0	25.1	0.0	1.4	0.0	1.2	0.0	0.0	0.0	27.6	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0
Ellsworth	0.0	0.1	0.0	7.2	0.0	0.4	0.0	0.3	0.0	0.0	0.0	7.9	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Rice	0.0	0.8	0.0	23.6	0.0	2.4	0.0	1.5	0.0	0.0	0.0	27.7	0.0	0.1	0.0	0.4	0.0	0.0	0.0	0.0

Table 3.4-2 Mileage Breakdown of Topsoil Depth and Average Slope Class Along the Proposed Overland Pass Pipeline Route

State/County	Topsoil Depth[1] (inches)										Slope Class[2] (percent)									
	0 – 6		>6 – 12		>12 – 18		>18 – 24		>24		0 – 6		>6 – 12		>12 – 18		>18 – 24		>24	
	Federal[3]	Other	Federal	Other	Federal	Other	Federal	Other	Federal	Other	Federal	Other	Federal	Other	Federal	Other	Federal	Other	Federal	Other
McPherson	0.0	0.4	0.0	4.8	0.0	0.1	0.0	0.1	0.0	0.0	0.0	5.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Kansas Subtotal	**0.0**	**24.7**	**0.0**	**202.4**	**0.0**	**24.9**	**0.0**	**9.2**	**0.0**	**0.0**	**0.0**	**223.0**	**0.0**	**4.3**	**0.0**	**25.3**	**0.0**	**8.1**	**0.0**	**0.6**
Project Total[4]	**81.2**	**241.9**	**33.0**	**335.9**	**9.0**	**48.0**	**0.0**	**11.1**	**0.0**	**0.0**	**67.2**	**425.8**	**13.5**	**44.2**	**20.2**	**79.5**	**18.4**	**72.1**	**3.9**	**15.2**

[1]Topsoil includes A-horizons (layers 1, 11, and 12) listed in the STATSGO database layer table.

[2]Slopes are grouped by the averages of the high and low slope ranges provided in the STATSGO database for each Map Unit Identifier (MUID) component soil series. For example, Tresano series, 3 to 10 percent slopes, is 20 percent of MUID CO010. Its average slope is 6.5 percent. The representative acreage, calculated by multiplying percent composition by the total MUID acreage, is included in the >5 to 8 percent slope class.

[3]Federal lands data based on BLM-provided land layers and USFS jurisdictional boundaries for the FGNRA and PNG.

[4]Slight discrepancies in state and project totals are due to rounding.

throughout this MLRA range from 6,200 to 7,200 feet amsl. The dominant soils are Orthents. They are shallow to very deep and medium to fine textured and have a frigid temperature regime, an aridic moisture regime, and mixed or montmorillonitic mineralogy. Torriorthents (Patent and Garsid series) and Haplargids (Diamondville and Fraddle series) are on piedmont plains, alluvial fans, and pediments. Torrifluvents are on floodplains. Shallow Torriorthents (Blazon and Haterton series) are on rough, broken slopes. Some Torriorthents (Elkol series) and Torrifluvents (Laney series) have a high content of exchangeable sodium (USDA 1978).

Wasatch and Uinta Mountains (MLRA 47). Most of the Wasatch and Uinta Mountains MLRA are federally owned. Elevations throughout this MLRA range from 4,900 to 8,900 feet amsl but may reach as high as 13,451 feet on some peaks. Orthents, Fluvents, Aquolls, and Xerolls are common soils in the valleys, while Ochrepts, Xerolls, Borolls, Boralfs, and Xeralfs are on mountain slopes. These soils have a frigid or cryic soils temperature regime and mixed, montmorillonitic, or carbonatic mineralogy. They formed in mixed parent materials of sedimentary and igneous rocks. Deep, wet soils in the valley are Haplaquolls (Crooked Creek, Canburn, and Kovich series). Well Drained Ustifluvents (Neto, Shupert, and Winetti series), Ustorthents (Podo and Ruko series), Xerorthents (Redcan series), and Calcixerolls (Calita and Lundy series) are in valleys. Palexerolls (Borvant series) are on old alluvial fans and low mountain foot slopes; they have a limecemented hardpan. On mountain slopes are shallow to deep Haploxerolls (Aggasiz, Bradshaw, and Foxol series), Haploborolls (Bryean and Datino series), Argixerolls (Henefer, Smarts, and Wallsburg series), Argiborolls (Barfuss and LaPlatta series), and Palexerolls (Harkers, Goring, and Norcan series). In the high mountain areas are deep Paleborolls (Lucky Star, Elzinga, and Flygare series), Paleboralfs (Fitzgerald series), Cryoborolls (Bickmore, Daybell, and Dateman series), Cryoboralfs (Cliff, Duchesne, and Condie series), Cryochrepts (Scout, Lake Janee, and Marsell series), and Cryorthents (Mirrow Lake series).

Southern Rocky Mountain Foothills (MLRA 49). Approximately 80 percent of Southern Rocky Mountain Foothills MLRA is occupied by farms and ranches, the remaining area is federally owned. Major streams dissect the area and provide irrigation water for narrow belts of cropland in their valleys. Water in the remaining areas is scarce. The physiography is characterized by rugged hills and low mountains occurring in narrow bands along the eastern slopes of the Rocky Mountains; elevations range from approximately 5,600 to 7,900 feet amsl. The soils in this MLRA are described Ustolls, Borolls, and Boralfs. They are mostly deep and have an ustic moisture regime, a mesic or frigid temperature regime, and mixed mineralogy. Deep loamy Argiustolls (Bresser series), Argiborolls (Peyton series), and Eutroboralfs are dominant. They formed mainly in locally transported sediments on the more smoothly sloping sites. Shallow Haplustolls and Torriorthents are on steep and broken hill slopes.

Sensitive Soils. The majority of Wyoming soils crossed by the proposed pipeline route would be susceptible to water and wind erosion. In Wyoming, 1.4 miles of prime farmland would be crossed, all of which is on private land. There are 18.2 miles of soils on slopes greater than 30 percent, approximately 4 miles of which are on federal land. Droughty soils are found on approximately 82.5 miles, approximately one-third of these are on federal land.

Localized areas in Wyoming contain hydric or compaction prone soils. Stony/rocky soils and shallow bedrock commonly occur along the proposed pipeline route in Wyoming.

Colorado

The proposed pipeline route in Colorado would cross three MLRAs: the Southern Rocky Mountain Foothills (MLRA 49), the Central High Plains (MLRA 67), and the Central High Tableland (MLRA 72). MLRA 49 (Southern Rocky Mountain Foothills) is described previously in Wyoming soils section.

Central High Plains (MLRA 67). Most of the Central High Plains MLRA is made up of farms and ranches utilized for cattle and sheep grazing. Larger rivers and local wells provide water for irrigation across an extensive acreage. Irrigated areas are used for production of agricultural crops such as corn, alfalfa, sugar beets, and vegetables. A small portion of this MLRA is dry-farmed of wheat and other grains. The physiography of the area is characterized as undulating to rolling plains which are moderately dissected by streams, with steep slopes bordering the valleys of larger streams. Elevations range from approximately 3,600 to 5,900 feet amsl, increasing east to west. The soils are Ustolls and Argids that are deep and medium textured to fine textured with mixed or montmorillonitic mineralogy. They have an aridic moisture regime that is borderline to ustic and a mesic temperature regime. The nearly level to gently sloping, fine Paleustolls (Weld and Platner series) and loamy Haplargids (Fort Collins and Vona series) on uplands formed in eolian and alluvial materials under a cover of grass. Torriorthents, Haplustolls, and Argiustolls are the major included soils.

Central High Tableland (MLRA 72). The majority of the Central High Tableland MLRA is used for farming and ranches with 60 percent or more in cropland used mainly for dry-farming of winter wheat and other small grains. Good-quality groundwater is used for irrigation in uplands where crops such as corn, grain sorghum, and sugar beets are grown extensively. The remainder of the area is made up of hilly and steep slopes bordering drainageways; these areas are primarily used for grazing of native grasses and shrubs. The physiography of the area is characterized as smooth loess-mantled tableland with gently rolling to nearly level slopes; slope grade increases along the borders of major valleys. Broad level floodplains and terraces are found along the Arkansas and Platte rivers and their larger tributaries. Elevations range from 2,600 to 3,900 feet amsl, increasing from east to west. The soils in this MLRA are mostly Ustolls (USDA 1978). They are well drained and medium to moderately fine textured. They have a mesic temperature regime, an ustic moisture regime, and mixed or montmorillonitic mineralogy. On loess-mantled uplands, well drained Argiustolls (Keith, Kuma, Rago, and Richfield series) are in nearly level and gently sloping areas, Haplustolls (Ulysses series) in gently sloping and moderately sloping areas, and Torriorthents (Colby series) in steeper areas. Torriorthents (Canyon series) and Ustorthents (Canlon series) are shallow over caliche and are on the steeper and more broken slopes. Torripsamments (Valent series), on hummocky and duned eolian sands, are associated with Argiustolls (Haxtun series) and Haplustolls (Anselmo series). Haplustolls (Bridgeport, McCook, and Duroc series) are on floodplains and terraces.

Sensitive Soils. The majority of Colorado soils crossed by the proposed pipeline route are susceptible to erosion by water and wind. Approximately 56 percent of the proposed pipeline route crosses prime farmland in Colorado. Most of the soils crossed in Colorado have thin topsoil horizons, so a decline in soil productivity is a concern with loss of topsoil horizons.

MLRA 67 and MLRA 72 have compaction prone soils that would be within the disturbance corridor. Localized areas of hydric and droughty would be crossed. Less than 9 percent of the proposed pipeline route in Colorado would cross stony/rocky soils or shallow bedrock.

Kansas

The proposed pipeline route in Kansas would cross three MLRAs: the Central High Tableland (MLRA 72), the Rolling Plains and Breaks (MLRA 73), and the Central Loess Plains (MLRA 75). MLRA 72 (Central High Tableland) is described in Colorado soils section.

Rolling Plains and Breaks (MLRA 73). Most of the Rolling Plains and Breaks MLRA is used for farming. Approximately 60 percent is used for dry-farming of winter wheat and grain sorghum. Narrow bands of bottom land and terraces along major rivers, and their tributaries, are irrigated for agricultural production; small grains, corn, hay, and alfalfa are the principal crops in these areas. In the north, irrigation water is obtained from deep wells which capture abundant supplies of groundwater. Groundwater is less available in the south where shale and limestone are near the surface. The remaining areas are covered in native grasses and primarily used for livestock grazing. The physiography of the area is characterized as heavily dissected plains with broad undulating to rolling ridge tops. Valleys are hilly to steep and are generally narrow, but the Republican River and its larger tributaries exhibit broad floodplains and terraces. Elevations range from 1,600 to 3,000 feet amsl, increasing from east to west. Soils in this MLRA are Ustolls (USDA 1978). They are deep, well drained, and medium to moderately fine textured. These soils have a mesic temperature regime, and ustic moisture regime, and mixed and montmorillonitic mineralogy. The nearly level to moderately sloping Argiustolls (Harney and Holdrege series) are on loess-mantled uplands. Haplustolls (Uly series) and Ustorthents (Coly series) are on adjacent steeper slopes. Gently sloping and moderately sloping Haplustolls (Wakeen series) and Pellusterts

(Bogue seires) are moderately deep over shale on the more strongly dissected uplands. Haplustolls (Hord, McCook, and Roxbury series) and Ustifluvents (Hobbs and Munjor series) are on floodplains and terraces.

Central Loess Plains (MLRA 75). The majority of the Central Loess Plains MLRA is used for farming. Seventy-five percent of the area is dedicated to agricultural production of winter wheat, grain sorghum, hay, corn, and other small grains. The remaining 25 percent of the area is rangeland and pastureland used for beef cattle grazing. In most areas, groundwater is readily available, but the quality varies based on the nature of the underlying soils. In areas where clay and shale are near the surface, groundwater is scarce. The physiography of the area is characterized as nearly level to gently rolling plains dissected by narrow gently sloped stream valleys. Elevation ranges from 1,600 to 2,000 feet amsl, increasing from east to west. Most of the soils in this MLRA are deep silty Ustolls (USDA 1978) that formed in loess. They have a mesic temperature regime, an ustic moisture regime, and mixed mineralogy. Argiustolls (Hastings, Geary, Holder, Holdrege, and Crete series in the north and Irwin, Ladysmith, and Geary series in the south) are dominant soils on uplands. Agiustolls (Hall series) are on stream terraces of major streams or rivers. Argiaquolls (Butler series), Argialbolls (Fillmore series), and Pellusterts (Goessel series) are associated soils in level areas and in depressions. Strongly sloping to steep Ustorthents (Coly series) formed in loess. Ustifluvents (Hobbs series) are on floodplains, and Haplustolls (Hord series) are on stream terraces. Shallow, strongly sloping to steep Haplustolls (Kipson series) formed in material weathered from shale.

Sensitive Soils. Approximately 18 percent of the soils crossed in Kansas are susceptible to water and/or wind erosion. Hydric soils, droughty soils, stony/rocky soils, and shallow bedrock occur in small localized areas along the proposed pipeline route. Approximately 1.5 miles of hydric soils would be crossed in Kansas. Areas of compaction prone soils would be crossed on land that is not federally managed. Approximately 4.2 miles of stony/rocky soils, 12.7 miles of shallow bedrock, and 1.1 miles of droughty soils would be crossed in Kansas.

3.4.2 Southern Energy Corridor – Copper Ridge Bypass Alternative

Characteristics of the soils associated with the Southern Energy Corridor – Copper Ridge Bypass Alternative route and the corresponding segment of the proposed pipeline route have been provided in **Tables 3.4-3** and **3.4-4**. The alternative route would cross fewer miles of prime farmland relative to the corresponding segment of the proposed pipeline route. However, the alternative route would cross more miles of soils susceptible to erosion caused by wind and water, hydric soils, stony-rocky soils, shallow depth to bedrock, and droughty soils. Soils with topsoil depths of 0 to 6 inches and greater than 6 inches to 12 inches would be comparable between the alternative and corresponding segment of the proposed pipeline route. However, the alternative route would traverse approximately 6.5 miles of soils with topsoil depths greater than 12 inches compared with the corresponding segment of the proposed pipeline route, which would not cross soils with topsoil depths of greater than 12 inches. In addition, the alternative route would traverse more miles of steeper slopes than the corresponding segment of the proposed pipeline route.

Sensitive Soils. The majority of soils crossed by the alternative route are on moderately to steeply sloping ground and would be susceptible to water and wind erosion. Localized areas along the alternative route contain hydric soils. Shallow bedrock, stony/rocky, and droughty soils commonly occur along the alternative route.

Table 3.4-3 Mileage Summary of Soil Characteristics for the Alternative and Corresponding Segment of the Proposed Pipeline Route

	Highly Erodible Water[1]	Highly Erodible Wind[2]	Prime Farmland[3]	Hydric[4]	Compaction Prone[5]	Stony-Rocky[6]	Shallow-to-Bedrock[7]	Droughty[8]
Proposed Action Segment	24.9	0.2	0.2	0.0	0.0	2.7	20.1	24.7
Southern Energy Corridor – Copper Ridge Bypass Alternative	30.8	1.5	0.0	0.2	0.0	3.1	24.6	30.6

[1]Includes land in capability subclasses 4E through 8E and soils with slopes greater than or equal to 9 percent.

[2]Includes soils in wind erodibility groups 1 and 2.

[3]Includes land listed by the NRCS as potential prime farmland if adequate protection from flooding and adequate drainage are provided.

[4]As designated by the NRCS.

[5]Includes soils that have clay loam or finer textures in somewhat poor, poor, and very poor drainage classes.

[6]Includes soils that have either: 1) a cobbley, stony, bouldery, gravelly, or shaly modifier to the textural class or 2) have >5 percent (weight basis) of stones larger than 3 inches in the surface layer.

[7]Includes soils that have bedrock within 60 inches of the soil surface.

[8]Includes coarse-textured soils (sandy loams and coarser) that are moderately well to excessively drained.

Table 3.4-4 Mileage Summary of Topsoil Depth and Average Slope Class for the Alternative and Corresponding Segment of the Proposed Pipeline Route

	Topsoil[1] (inches)					Slope[2] (percent)				
	0-6	>6-12	>12-18	>18-24	>24	0-5	>5-8	>8-15	>15-30	>30
Proposed Action Segment	17.8	7.0	0.0	0.0	0.0	22.7	0.0	2.0	0.00	0.0
Southern Energy Corridor – Copper Ridge Bypass Alternative	22.7	1.6	4.9	1.7	0.0	8.9	3.1	14.1	2.5	2.2

[1]Topsoil includes A horizons (layers 1, 11, and 12) listed in the STATSGO database layer.

[2]Slopes are grouped by the averages of the high and low slope ranges provided in the STATSGO database for each MUID component soil series.

3.5 Water Resources

3.5.1 Proposed Action

3.5.1.1 Surface Water

Surface water resources along the proposed pipeline route are partitioned into three watershed regions and 28 sub-basins (Seaber et al. 1994), as presented in **Table 3.5-1** and depicted in **Figure 3.5-1**.

Surface Water Quality

The CWA, Section 303(d), requires each state to review, establish, and revise water quality standards for all surface waters within the state. To comply with this requirement, each state crossed by the proposed pipeline route has developed its own beneficial use classification system to describe state-designated use(s). Regulatory programs for water quality standards include default narrative standards, non-degradation provisions, and associated minimum water quality requirements for the designated uses of listed surface waterbodies within the state.

The proposed pipeline route would cross 97 perennial waterbodies, 789 intermittent waterbodies, and 13 playas/ponds. Based on consultation with each state's USACE office, no waterbodies crossed by the proposed pipeline are designated as Section 10 navigable waters under the Rivers and Harbor Act, as defined by Title 33 CFR, Section 328. The Flaming Gorge Reservoir (Green River) is navigable from the headwaters of the reservoir (just south of the confluence of Bitter Creek and the Green River) to the Wyoming-Utah state line (NRG 2006).

A complete list of waterbody crossings, their state use classifications, and Section 303(d) impairment status where applicable is provided in **Appendix F**. Waterbody crossings of note have been summarized into sub-lists below for clarification. **Table 3.5-2** lists all major and sensitive waterbody crossings along the proposed pipeline route, which are defined as those with widths greater than 100 feet and streams classified by the state as high quality aquatic resources. **Table 3.5-3** provides a list of all impaired waterbody crossings, which include streams identified on the national Section 303(d) list as impaired waters for one or more chemical parameters. The complete list of waterbody crossings provided in **Appendix F**, also includes a number of lakes and small ponds, which may be greater than 100 feet wide. The majority of these crossings appear to be playas which are often dry for part of the year.

Wyoming. The State of Wyoming classifies surface waters into six uses and four classes. Surface water uses include agriculture, protection and propagation of fish and wildlife, industry, human consumption, recreation, and scenic value. **Appendix F** indicates surface water classifications in more detail. The four surface water classes include:

Class 1: Waters with the highest natural water quality and/or other qualities with extraordinary value to the people of Wyoming;

Class 2: Waters that are known to support fish or drinking water supplies;

Class 3: Waters that support aquatic life other than fish; and

Class 4: Waters that do not support aquatic life.

As indicated in **Table 3.5-2**, there are a total of seven major or sensitive crossings in Wyoming. Overland Pass proposes to cross all of these using the open cut method. The Hams Fork River, Blacks Fork River, Green River, and Bitter Creek are noted because they are considered sensitive fisheries. For further discussion on these sensitive fisheries, refer to Aquatic Resources in Section 3.7. The proposed Bitter Creek and Green River crossings are on federally managed lands. The Green River is listed as a Class 1 Surface Water by the State of Wyoming which identifies it as an Outstanding National Resource Water (ONRW).

Table 3.5-1 Watersheds Crossed by the Proposed Project

State / Regional Watershed / Sub-basin Cataloging Unit	Overall Area (Sq. Mi.)	General Characteristics	Stream Gage Location: High Flow / Low Flow, cubic feet per second (cfs)[1]	Begin RP	End RP
WYOMING					
Upper Colorado River Basin Watershed					
Blacks Fork	2,700	Mountain uplifts and mesas, valleys with rolling alluvial fans, floodplains, and terraces. Mountain watercourses have moderate gradient with cobble or gravel substrates. Streams originating in the center of the basin are more incised, with lower gradients and finer gravel substrates derived from shales. Small streams are ephemeral or weakly intermittent with sand or platy shale substrates.	Blacks Fork near Little America: 995 (June) / 71 (December)	0.0	47.9
Upper Green River – Slate Creek	1,480		See Green River below	47.9	53.8
Upper Green – Flaming Gorge Reservoir	2,460		Green River near Green River: 4,590 (June) / 744 (December)	53.8	62.0
Bitter Creek	2,200		Bitter Creek near Bitter Creek: 15 (April) / 0.87 (January)	62.0	119.1
Great Divide Closed Basin	3,870	Unglaciated basin (little or no external drainage); dispersed playas and sand dunes, floodplains and terraces, and rolling alluvial fans. Streams are ephemeral or weakly intermittent. Many streams are incised and flow onto playas. Substrate commonly is fine textured material or platy shale gravels. Playas are seasonal and have high level of soluble salts.	Separation Creek near Riner: 9.7 (May) / 0.0 (September)	119.1	173.6
Missouri River Basin Watershed					
Upper North Platte River	2,880	Unglaciated plains with hills, rolling alluvial fans, floodplains and terraces. On the northern edge of partially glaciated, low mountain slopes and outwash fans. Streams and rivers originating in the mountains have moderate gradient with cobble or gravel substrates.	North Platte River above Seminoe Reservoir near Sinclair: 4,280 (June) / 317 (January)	173.6	223.4
Medicine Bow River	1,430		Rock Creek at Arlington: 424 (June) / 11 (December)	223.4	243.6
Upper Laramie River	2,180	Unglaciated wide intermontane valley with floodplains, low terraces. Streams and rivers are moderate gradient, riffle/run. Substrate is generally cobble, glacial outwash material consisting of granite, limestone, and quartzite.	Laramie River at Laramie: 524 (June) / 35 (January)	243.6	291.8

Table 3.5-1 Watersheds Crossed by the Proposed Project

State / Regional Watershed / Sub-basin Cataloging Unit	Overall Area (Sq. Mi.)	General Characteristics	Stream Gage Location: High Flow / Low Flow, cubic feet per second (cfs)[1]	Begin RP	End RP
Cache La Poudre River	1,910	Partially glaciated low mountain slopes, hills, ridges, footslopes and outwash fans. Low to high gradient perennial, intermittent, and ephemeral streams. Bedrock and boulder substrates transitioning to coarse to fine gravel and cobble substrates.	No data in Wyoming near proposed ROW	291.8	295.0
Lone Tree Creek – Owl Creek	573	Irregular unglaciated plains of moderate relief. Intermittent streams, and a few large perennial streams that mostly originate in higher relief areas. Silty and sandy substrates. Small, open, depressional wetlands scattered throughout.	Lone Tree Creek near Granite Canyon: 7.1 (May) / 0.62 (December)	295.0	321.1
COLORADO					
Lone Tree Creek – Owl Creek	573	Irregular unglaciated plains of moderate relief. Intermittent streams, and a few large perennial streams which mostly originate in higher relief areas. Silty and sandy substrates. Small, open, depressional wetlands scattered throughout.	Lone Tree Creek at Carr: 0.99 (June) / 0.25 (August)	321.1	337.5
Crow Creek	1,410		Crow Creek near Barnesville: 0.0 (all months)	337.5	368.4
Pawnee Creek	728	Flat to rolling plains. Intermittent streams, with a few large perennial streams. Silty and sandy substrates. Small, open, depressional wetlands scattered throughout.	No data	368.4	386.3
Middle South Platte River – Sterling	2,900	Northwest of the South Platte River are flat to rolling plains, intermittent streams, with a few large perennial streams. Silty and sandy substrates. Small, open, depressional wetlands scattered throughout. Southeast of the South Platte River, the sandhill drainage network is not well established due to a lack of runoff and sand-choked drainages with disappearing subterranean streams.	South Platte River at Balzac: 1,460 (June) / 143 (November)	386.3	429.9
North Fork Republican River	3,290	West: flat to rolling plains, intermittent streams, with a few large perennial streams. Silty and sandy substrates. Small, open, depressional wetlands scattered throughout. East: sandhill drainages that are not well established due to a lack of runoff and sand-choked drainages with disappearing subterranean streams.	North Fork Republican River near Wray: 24 (April) / 19 (September)	429.9	480.6
Arikaree River	1,710	Irregular moderately sloping plains and flat or rolling plains, with intermittent streams, and a few large perennial streams. Silty and sandy substrates. Small, open, depressional wetlands scattered throughout.	Arikaree River above Spring Canyon near Idalia: 4.3 (April) / 0.0 (August)	480.6	492.3

Table 3.5-1 Watersheds Crossed by the Proposed Project

State / Regional Watershed / Sub-basin Cataloging Unit	Overall Area (Sq. Mi.)	General Characteristics	Stream Gage Location: High Flow / Low Flow, cubic feet per second (cfs)[1]	Begin RP	End RP
KANSAS					
Arikaree River	1,710	Irregular moderately sloping plains and flat or rolling plains, with intermittent streams, and a few large perennial streams. Silty and sandy substrates. Small, open, depressional wetlands scattered throughout.	Arikaree River above Spring Canyon near Idalia: 4.3 (April) / 0.0 (August)	492.3	496.0
South Fork Republican River	2,720		South Fork Republican River near Colorado – Kansas state line: 10 (June) / 1.1 (August)	196.0	523.8
Little Beaver Creek	604	Southwest: Flat to rolling plains. Few streams, mostly intermittent. Loess-mantled uplands with alluvial deposits. Sandstone and siltstone with thin loess mantle. Northeast: Sandy undulating plains with small scattered areas of active sand dunes. Few perennial streams.	No data	523.8	534.3
South Fork Beaver Creek	771		No data	534.3	541.6
Upper Sappa Creek	1,020		South Fork Sappa Creek near Achilles: 11 (June) / 0.18 (November)	541.6	560.5
Prairie Dog Creek	1,060	Rolling plains and dissected breaks with broad undulating to rolling ridge tops and hilly to steep valley sides. Tertiary sandstone and loess on uplands with alluvium on floodplains and stream terraces.	No data near proposed ROW	560.5	566.4
Upper North Fork Solomon River	1,350		No data near proposed ROW	566.4	574.7
Upper South Fork Solomon River	1,150		No data near proposed ROW	574.7	590.5
Upper Saline River	1,910		Saline River near Wakeeney: 45 (July) / 4.2 (December)	590.5	621.7
Big Creek	852		Big Creek near Ogallah: 80 (June) / 3.1 (December)	621.7	639.5
				640.2	641.0
				661.0	671.6
Middle Smoky Hill River	1,590	West: Dissected plains with broad undulating ridge tops and steep valley slopes. East: Undulating to hilly dissected plains. Broad belt of low hills formed by mature dissection of sedimentary rock layers, locally mantled with thin loess.	Smoky Hill River at Pfeifer: 188 (June) / 18 (January)	639.5	640.2
				641.0	661.0
				671.6	693.9
Little Arkansas	1,320	Plains and ridgetops locally mantled with loess. Dissected sedimentary rocks form valley slopes. Areas of sandy plains and dunes.	Little Arkansas River near Little River: 25 (June) / 1.5 (December)	733.9	748.9
				749.1	749.4
Lower Smoky Hill	1,980	Undulating to hilly dissected plain locally mantled with thin loess. Broad belt of low hills formed by mature dissection of sedimentary rock layers.	No representative data – proposed ROW on watershed divide.	748.9	749.1

Table 3.5-1 Watersheds Crossed by the Proposed Project

State / Regional Watershed / Sub-basin Cataloging Unit	Overall Area (Sq. Mi.)	General Characteristics	Stream Gage Location: High Flow / Low Flow, cubic feet per second (cfs)[1]	Begin RP	End RP
Arkansas Red-White River Basin Watershed					
Cow	938	Plains and ridgetops locally mantled with loess. Dissected sedimentary rocks form valley slopes. Areas of sandy plains and dunes.	Cow Creek near Claflin: 18 (May) / 1.7 (December)	693.9	733.9
Little Arkansas	1,320		Little Arkansas River near Little River: 25 (June) / 1.5 (December)	744.2	748.9
				749.1	749.4

Sources: USEPA 2006a; USGS 1998; USGS National Water Information System 2007.

[1]Flow values are monthly averages in cubic feet per second for the highest average flow month and lowest average flow month.

Table 3.5-2 Summary of Major and Sensitive Waterbody Crossings Along the Proposed Project

State / County	RP	Waterbody Name	Proposed Crossing Method	Comment [1]
Wyoming				
Lincoln	0.9	Hams Fork River	Open Cut	Sensitive Fishery
Lincoln	18.9	Blacks Fork River	Open Cut	Major Waterbody, Sensitive Fishery
Sweetwater	41.3	Blacks Fork River	Open Cut	Major Waterbody, Sensitive Fishery
Sweetwater	59.3	Green River [2, 3]	Open Cut	Major Waterbody, Sensitive Fishery
Sweetwater	107.2	Bitter Creek [2]	Open Cut	Sensitive Fishery
Carbon	195.5	North Platte River	Open Cut	Major Waterbody
Carbon	228.1	Medicine Bow River	Open Cut	Major Waterbody
Colorado				
Logan	413.2	South Platte River	HDD	Major Waterbody
Yuma	491.7	Arikaree River	Open Cut	Major Waterbody
Kansas				
Cheyenne	510.4	South Fork Republican River	Open Cut	Major Waterbody

[1] Waterbody crossings greater than 100 feet are considered major. Playas/ponds were not included in this list. However, if water greater than 100 feet were present during construction then these would be classified as major waterbodies and treated accordingly.

[2] Crossing on federally managed land.

[3] Classified as an ONRW and Wyoming Class 1 Water.

Table 3.5-3 Summary of Impaired Waterbody Crossings Along the Proposed Project

State / County	RP	Waterbody Name	Intermittent or Perennial	303(d) Impairment
Wyoming				
Lincoln	18.9	Blacks Fork River	P	Fecal Coliform
Carbon	195.5	North Platte River	P	Selenium
Colorado				
Logan	413.2	South Platte River	P	Nitrates, *E. coli*
Kansas				
Rawlins	531.5	Little Beaver Creek	I	Dissolved Oxygen, Fluoride
Rawlins	538.6	Beaver Creek	P	Dissolved Oxygen, Fluoride
Trego	637.4	Big Creek	P	Dissolved Oxygen
Barton	684.3	Landon Creek	I	Selenium
Barton	691.7	Deception Creek	I	Turbidity, Chloride, Sulfate
Barton	699.5	Cow Creek	I	Chloride
Ellsworth	710.9	Calf Creek	I	Chloride
Ellsworth	715.3	Plum Creek	P	Chloride
Rice	720.4	Lost Creek	I	Chloride
Rice	730.0	Owl Creek (2 crossings)	I	Chloride, Zinc
Rice	730.1	Owl Creek	I	Chloride, Zinc
Rice	740.6	Little Arkansas River	P	Atrazine, Copper, Chloride
Rice	742.1	Salt Creek	I	Ammonia, Atrazine, Copper, Chloride, Nitrate, Nitrite
McPherson	745.7	Lone Tree Creek	I	Atrazine, Chloride, Copper

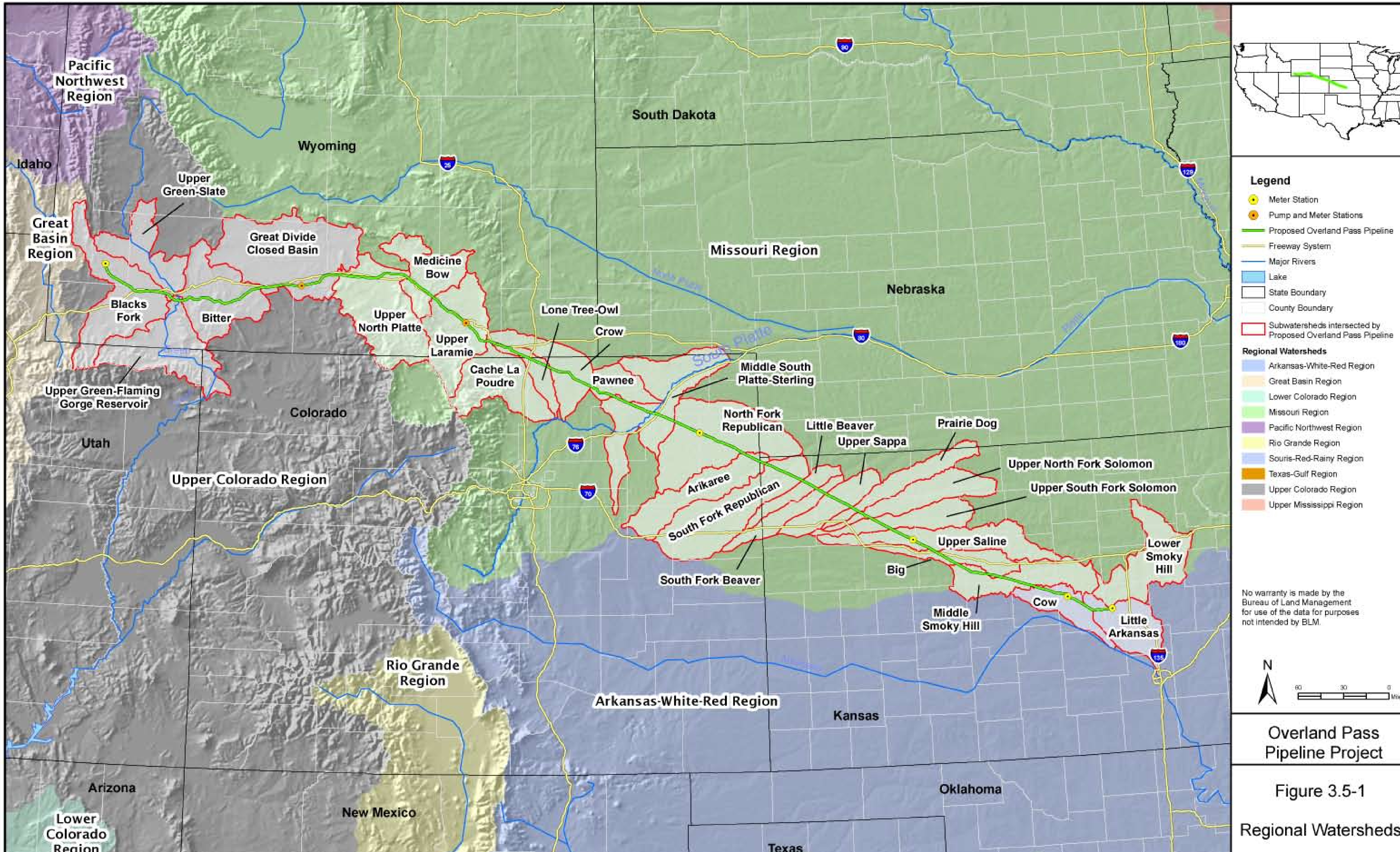


Figure 3.5-1

Regional Watersheds

As indicated in **Table 3.5-3**, two proposed waterbody crossings in Wyoming have been identified on the Section 303(d) list of impaired waters; the Blacks Fork River is listed for fecal coliform and the North Platte River for selenium.

As noted in **Appendix F**, there also are five playa/pond crossings in Wyoming. Frewen Lake and the playa at RP 190.6 in Carbon County are on federally managed land and are greater than 1,000 feet wide. The three remaining proposed playa/pond crossings are approximately 250 feet wide. All five proposed playa/pond crossings in Wyoming are classified as 3B by the state, which in Wyoming includes tributary waters and adjacent wetlands not known to support fish populations or drinking water supplies.

Colorado. When setting water quality standards, the State of Colorado first designates waterbodies by use (aquatic life, water supply, recreation, or agriculture), and then also adopts numeric or narrative quality standards to protect those classified uses. These beneficial uses are identified in **Appendix F**. The state classified uses for surface water are:

- Aquatic Life Cold, Class 1 or 2;
- Aquatic Life Warm, Class 1 or 2;
- Recreation Class 1 or 2;
- Domestic Water Supply;
- Agriculture; and
- Wetland.

The two major stream crossings proposed in Colorado are on the South Platte River and the Arikaree River (**Table 3.5-2**). There are no sensitive waterbody crossings proposed. Overland Pass proposes to cross the South Platte River using the HDD method, while the Arikaree River would be crossed using the open cut method.

Only one 303(d) listed impaired waterbody crossing is proposed to be crossed by the proposed pipeline route (**Table 3.5-3**). The South Platte River is Section 303(d) listed as impaired for nitrates and *E. coli*.

The project proposes to cross seven unnamed playas/ponds in Colorado (**Appendix F**). Four of the crossings are less than 250 feet wide, one is less than 100 feet wide, and one is of unknown width. The playa at RP 376.4 is on federally managed land.

Kansas. The State of Kansas classifies surface waters into four classes and six designated uses within each of these four classes. The four surface water classifications are defined structurally as stream segments, lakes, wetlands, and ponds. The six designated uses within each of these classifications include agriculture, aquatic life, domestic water supply, groundwater recharge, industrial, and recreation, as identified for the proposed waterbody crossings in **Appendix F**.

The South Fork Republican River is the only major stream crossing proposed in Kansas (**Table 3.5-2**). Overland proposes to cross this river using the open cut method.

Fifteen proposed crossings on 13 streams (Owl Creek is to be crossed 3 times) have been identified as Section 303(d) impaired waterbodies for various chemical parameters as specified in **Table 3.5-3**. All stream crossings in Kansas are proposed to be crossed using the open cut method.

Only one small playa at RP 527.7 is proposed to be crossed in Kansas. The proposed crossing is less than 100 feet wide (**Appendix F**).

Public Water Supplies

Waterbodies that serve as public water supply intakes are located within several miles downstream of proposed pipeline crossings and are identified in **Table 3.5-4**. Three downstream water supply intakes are located in Carbon County, Wyoming. There are no surface water intakes within 10 miles of the project in Colorado. Two surface water intakes, one in Ellis County and one in Russell County, are both owned by the City of Russell, Kansas.

Table 3.5-4 Surface Water Intakes Within 10 Miles Downstream of Proposed Crossings

State / County	RP	Distance (miles) / Direction from Construction	Hydrologic Connections	Downstream Feature
Wyoming				
Carbon	190.9	4.8 / North	North Platte River crossing	Intake for City of Rawlins
Carbon	195.5	0.9 / North	North Platte River crossing	Intake for WY DOT Ft. Steele Rest Area
Carbon	240.2	0.9 / Northeast	Rock Creek crossing	Water Intake for City of Rock River
Colorado				
There are no surface water intakes within 10 miles of proposed stream crossings in Colorado.				
Kansas				
Ellis	670.4	2.4 / Southwest	Tributary crossing to Smoky Hill River	Intakes for City of Russell
Russell	679.2	7.8 / Northeast	Smoky Hill River crossing to Big Creek	

Source: NRG 2006.

Sediment Quality

The USEPA has established a database of National Sediment Quality Survey sampling points to monitor sediment quality and identify areas that contain contaminated sediments. A Tier 1 site is one where sediment quality is such that associated adverse effects on aquatic life or human health are probable. A Tier 2 site is one where sediment quality is such that associated adverse effects on aquatic life or human health are possible (USEPA 2004). Given that sediment is transported as a natural result of surface flow dynamics, the possibility exists that sediment quality upstream or downstream of Tier 1 or Tier 2 sampling points may have adverse effects on aquatic life or human health. No Tier 1 or Tier 2 sampling points were found to be located within 10 stream- or river-miles of the proposed ROW (USEPA 2004a). Although the USEPA sediment survey is of limited coverage, it appears unlikely that contaminated sediments occur along the proposed ROW.

3.5.1.2 Groundwater

Regional Aquifers

Groundwater resources in the analysis area occur in three major regional aquifer systems. From west to east, these include (Miller and Appel 1997; Robson and Banta 1995; Whitehead 1996):

1. The Colorado Plateaus aquifer system;
2. The High Plains aquifer system; and
3. The Great Plains aquifer system (mapped as Lower Cretaceous aquifers and other rocks).

The primary regional aquifer systems along the pipeline route are described in **Table 3.5-5** and depicted in **Figure 3.5-2**. Within the project area, the Colorado Plateaus aquifer system is mainly composed of Tertiary- and Cretaceous-aged consolidated sedimentary rocks within the Wyoming Basins physiographic province (Thornbury 1965; Whitehead 1996). The depth to water and the quality of water in this region vary considerably. The Colorado Plateaus aquifer system is generally separated from the High Plains system by the Southern Rocky Mountains uplift, smaller basins and valleys, and exposures of Sherman Granite. Primary aquifer zones in the basins and valleys of the Southern Rocky Mountains consist of consolidated sedimentary rocks of Lower Tertiary and Upper Cretaceous age. The Sherman Granite extends from approximately project RP 291.5 to RP 307.5 and provides relatively little water to wells.

To the east, the High Plains aquifer system is composed of Tertiary-aged consolidated sedimentary rocks, of which the Ogallala Formation is a major waterbearing unit. Groundwater of good quality is extensively pumped from this system, primarily for irrigation use. The High Plains aquifer system is separated from the Great Plains aquifer system by thick confining units of shale, chalk, and limestones of Upper Cretaceous age that are exposed in north-central Kansas. These formations, labeled as “Other rocks” on **Figure 3.5-2**, generally provide little or no water to wells. The Great Plains aquifer system has limited extent along the proposed pipeline route. It largely occurs within the Plains Border physiographic section, which is a broadly defined area of dissected tablelands in central Kansas (Thornbury 1965). This system is also composed of consolidated sedimentary rocks, generally of Lower Cretaceous age. It occurs in scattered areas along the easternmost portion of the proposed ROW.

In addition to these regional systems of sedimentary bedrock aquifers, unconsolidated surficial deposits of Quaternary streamlain alluvium and eolian sands and silts also provide water to wells in the project area. Alluvial aquifers occur in relatively thin, narrow bands of gravels, sands, and silts along major rivers and streams. Eolian deposits occur in isolated irregular areas, and primarily occur near the South Platte River in northeastern Colorado.

Further details on groundwater resources within each state along the proposed ROW are provided below and in **Table 3.5-5**. The descriptions focus on major near-surface aquifers that would have the primary potential to be affected by the proposed project. In almost all of these water-bearing units, groundwater is primarily held in small fractures (secondary porosity), as opposed to pore spaces between sediment grains that result from deposition (primary porosity). Deeper aquifer zones occur throughout the regions, but are isolated from potential project impacts by thick or relatively impermeable overlying rocks.

Wyoming. Shallow alluvial aquifers are primarily associated with the larger streams and rivers across Wyoming. Examples of waterbodies associated with comparatively extensive alluvial aquifers include the Hams Fork River, Blacks Fork River, Green River, North Platte River, Medicine Bow River, Rock Creek, and the Laramie River. In most other locations along streams, the alluvial deposits are too narrow or are too elevated above the water table to act as significant sources of groundwater.

By far, mining is the overall primary use of groundwater in the counties along the Wyoming portion of the proposed ROW, particularly in Sweetwater County (USGS 2000). Additional uses include domestic and municipal supplies, other industrial supplies, and agricultural uses. Dominant uses vary between specific counties and locales. For example, public water supply in Albany County is the primary use of groundwater (USGS 2000).

Two aquifer protection areas exist in Wyoming along the proposed ROW; the Elk Mountain Sole Source Aquifer (near RP 224 to RP 234), and the Casper Aquifer protection zone (near RP 281). The dominant geologic formation along the proposed ROW through the Elk Mountain area is the Hanna Formation (Lowry et al. 1973). This consists of alternating beds of sandstone, conglomerate, shale, and coal of Paleocene/Eocene age (Bartos et al. 2006).

Table 3.5-5 Aquifer Zones near the Land Surface

State / Regional Aquifer System / Aquifer	Approximate RP Locations	Approximate Depth to Water, feet below ground surface	Range in Dissolved Solids Concentration milligrams per liter (mg/l)[1]	Rock Types	Other Characteristics	References[2]
WYOMING						
Colorado Plateaus						
Laney Member, Green River Formation	0 to 50	Varies widely; in places less than 200	1,000 to 3,500	Marlstone, fine-grained sandstone, siltstone; varying amounts of oil shale and limestone	Underlain by Wilkins Peak-Tipton Shale members, which outcrop from approximately RP 50 to 60	Naftz 1996; Whitehead 1996; USGS-National Water Information System (NWIS) 2006.
Bridger Formation	10 to 40	Generally less than 200	500 to 1,500	Mudstone	Confining unit; overlies the Laney Member in most of the area west of the Green River	Naftz 1996; Whitehead 1996; USGS NWIS 2006.
Wilkins Peak / Tipton Shale members	50 to 60	Varies; likely 500 or more	500 to 2,000	Shale and organic marlstone	Member parts of Green River Formation. Typically a confining unit providing little water to wells	Mason and Miller 2005; Whitehead 1996.
Wasatch Formation	60 to 155	Locally less than 200 along edges of Rock Springs uplift	200 to 3,700	Sandstone and shale	Outcrops around dome-like Rock Springs uplift, and in Great Divide Basin; stratigraphically overlies Fort Union aquifers	Mason and Miller 2005; Whitehead 1996.
Fort Union Formation	Primarily 155 to 165	Locally less than 200, generally 200 to 500	800 to 3,320	Sandstone, shale, and coal	Also outcrops around Rock Springs uplift	Mason and Miller 2005; Whitehead 1996.
Mesa Verde Aquifer (Lance Formation, Fox Hills Sandstone, Lewis Shale, and Mesa Verde Group)	60 to 125, 165 to 200	Locally less than 200 along edges of Rock Springs uplift, locally less than 100 near Rawlins	1,000 to 10,000	Sandstone and shale	Outcrops around dome-like Rock Springs uplift; confined in middle of uplift; stratigraphically underlies Fort Union formation. Also outcrops at Rawlins uplift to east	Mason and Miller 2005; Whitehead 1996; Bartos et al. 2006; Berry 1960.

Table 3.5-5 Aquifer Zones near the Land Surface

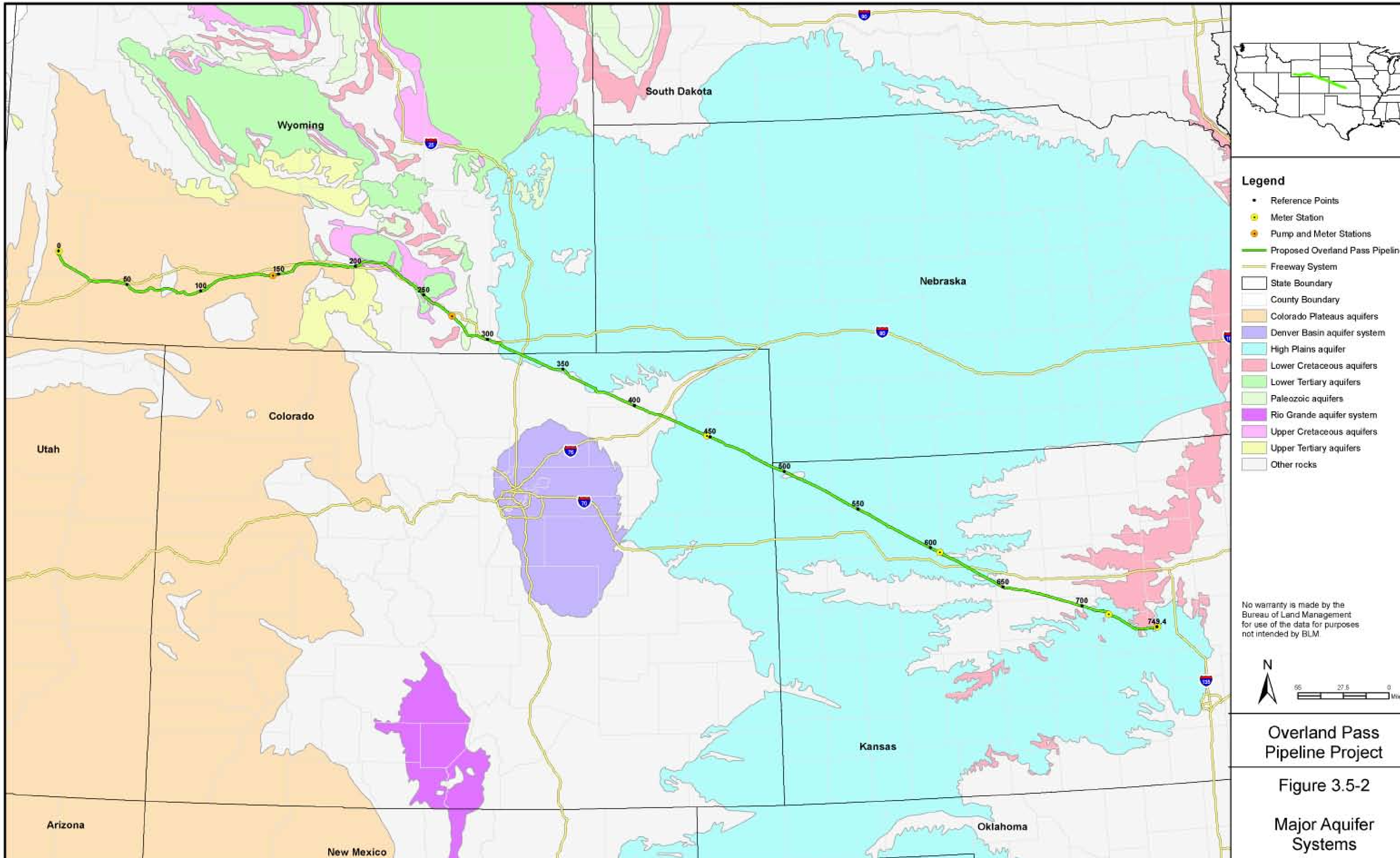
State / Regional Aquifer System / Aquifer	Approximate RP Locations	Approximate Depth to Water, feet below ground surface	Range in Dissolved Solids Concentration milligrams per liter (mg/l)[1]	Rock Types	Other Characteristics	References[2]
Upper Tertiary						
Browns Park/North Park/Arikaree formations	200 to 215	200 or more	100 to 750	Dominantly sandstones, with siltstones and conglomerates	Complex stratigraphy and different naming conventions between references	Lowry et al. 1973; Bartos et al. 2006.
Lower Tertiary / Upper Cretaceous						
Hanna and Ferris formations	215 to 250	Locally less than 50	200 to 4,000	Sandstones	Lower Tertiary intermingled with Upper Cretaceous	Lowry et al. 1973; Bartos et al. 2006.
Medicine Bow, Lewis Shale and Mesa Verde Aquifers	215 to 250	Locally less than 50	200 to 4,000	Sandstones and shales	Upper Cretaceous intermingled with Lower Tertiary	Lowry et al. 1973; Bartos et al. 2006.
Wind River Formation	250 to 260	50 to 100	1,000 to 2,000	Sandstones	Tertiary	Lowry et al. 1973.
Other Rocks						
Quaternary Valley Fills and Alluvium	260 to 275	10 to 20	Less than 1,000	Mixed gravels, sands, and silts	Recent unconsolidated deposits, Laramie Basin	Lowry et al. 1973.
Casper Formation	275 to 290	300 or more	500 or less	Sandstones and limestones	Water depth and quality vary according to lithology and location on uplift. Important water source	City of Laramie 2006.
Sherman Granite	290 to 307				Precambrian age; forms uplift. Supplies little groundwater to wells or springs	Love and Christiansen 1985.
High Plains						
White River and Ogallala formations	307 to 325	100 to 300	Less than 500	Conglomerate, sandstone, claystone	Miocene-aged formations, Ogallala underlain by the White River, including Brule and Chadron members	Love and Christiansen 1985; Lowry and Crist 1967.
COLORADO						
White River and Laramie formations	325 to 380	200 or more	200 to 400	Sandstone, claystone	Miocene-aged formations, White River includes Brule and Chadron members	Tweto 1979; Lowry and Crist 1967.

Table 3.5-5 Aquifer Zones near the Land Surface

State / Regional Aquifer System / Aquifer	Approximate RP Locations	Approximate Depth to Water, feet below ground surface	Range in Dissolved Solids Concentration milligrams per liter (mg/l)[1]	Rock Types	Other Characteristics	References[2]
Other Rocks						
Eolian sands and Quaternary Alluvium	380 to 430	0 to 200 or more	Less than 500	Unconsolidated sands, silts, and gravels	Platte River alluvium and nearby sandhills	Tweto 1979.
High Plains						
Ogallala Formation	430 to 490	Mostly 100 to 300, but 0 to 50 near CO/KS line	Less than 500	Conglomerate, sandstone, claystone	Irrigation pumping has modified the depth to water in many areas. Extensive aquifer	Robson and Banta 1995; McGuire 2005.
KANSAS						
High Plains						
Ogallala Formation	490 to 650	100 to 300	Less than 500	Conglomerate, sandstone, claystone	Irrigation pumping has modified the depth to water in many areas. Extensive aquifer	Robson and Banta 1995; McGuire 2005.
Other Rocks						
Pierre Shale, Niobrara Formation	650 to 700	500 or more	1,000 or more	Shales, marlstones	Generally of Cretaceous age, these rocks supply little water to wells or springs	Latta 1950.
Ogallala Formation	700 to 749	100 to 300	Less than 500	Conglomerate, sandstone, claystone	Irrigation pumping has modified the depth to water in many areas. Extensive aquifer	Robson and Banta 1995; McGuire 2005.
Dakota Formation	740 to 749	300 or more	100 to 800	Sandstones of Cretaceous age	Typically confined by overlying Carlile and Graneros shales, and/or Greenhorn limestone	Latta 1950.

[1]As reported for shallower portions of aquifers. Produced water from deeper zones may have much higher concentrations.

[2]References are reported in the respective EIS section.



Overland Pass Pipeline Project

Figure 3.5-2

Major Aquifer Systems

The Casper Aquifer near Laramie consists of sandstone-limestone bedrock that is recharged from the crest of the Laramie Range (east of town) to the eastern border of the City of Laramie itself. The groundwater flow direction generally follows down the mountain slope from east to west. The Casper Aquifer supplies approximately 50 percent of the water to the City of Laramie and 100 percent to many rural homeowners (City of Laramie 2006; Environmental Advisory Committee [EAC] 2006). The formation is exposed at the ground surface on the west flank of the Laramie Range, and locations of drinking water withdrawal are generally close to the recharge area.

The latter is protected through ordinances approved at both the municipal (City of Laramie, Wyoming) and county levels (Albany County, Wyoming). In addition, areas of shallow groundwater occur primarily in alluvial deposits along streams and rivers as identified previously. Aquifers that are rated highly sensitive to potential contamination generally occur in these areas (Hamerlinck and Arneson 1998; Hall 1998; Nixon et al. 1998). However, the proposed pipeline route would avoid these areas.

The proposed pipeline route would cross the Casper Formation outcrop from approximately RP 287 to RP 291. A short distance westward, the formation is overlain by Quaternary alluvial and colluvial deposits, and the Forelle Limestone or Satanka Shale. East of RP 291, the ROW crosses the underlying Sherman Granite of the Laramie Range (Love and Christiansen 1985).

Colorado. In the counties crossed by the proposed pipeline route, irrigated agriculture use makes up over 90 percent of all groundwater withdrawn along the proposed pipeline route in Colorado (USGS 2000). Domestic and industrial supplies represent other important, but much smaller, uses. The Platte River alluvium is a widely used source of groundwater, most of which interacts with returning irrigation surface flows. Water levels vary from the land surface to approximately 10 feet along the river. Similar shallow alluvial groundwater conditions exist along the Arikaree River and the North Fork of the Republican River.

Kansas. By far, the primary use of groundwater in Kansas along the proposed ROW is for irrigated agriculture. In the counties crossed by the proposed pipeline route, this use makes up over 90 percent of all groundwater withdrawn (USGS 2000). Domestic and industrial supplies represent other important, but much smaller, uses.

Springs

Based on map reviews, no springs were identified within 100 feet of the proposed pipeline route (NRG 2006). Subsequent field surveys did not identify any springs along the proposed ROW. However, USGS maps indicate that springs are in some locales crossed by the proposed pipeline route. Springs and/or seep features are scattered in the general locale of the ROW from RP 205 to RP 209 (east of Walcott, Wyoming), and from RP 282 to RP 286 (southeast of Laramie, Wyoming). The proposed alignment would be located several hundred feet away from mapped springs in these areas.

Water Supply Wells

Overland Pass conducted searches for public water supply wells and wellhead protection areas within 750 feet of the proposed project. Based on consultations with WDEQ, CDPHE, and KDHE, there are no public water wells within 750 feet of the proposed pipeline route in Wyoming, Colorado, and Kansas (Parker 2005; Karst and Colbert 2005; Ervin 2005).

Private water wells within 500 feet of the proposed ROW include 47 private wells in Wyoming, 51 private wells in Colorado, and 108 private wells in Kansas. Five of these are located on federally managed land. The distribution of these wells by county is provided in **Table 3.5-6**. It is currently not known if any of these wells are flowing wells.

Table 3.5-6 Private Water Supply Wells

State	County	Number of Private Water Wells Within 500 feet of the Construction ROW
Wyoming	Lincoln	1
	Sweetwater	5
	Carbon	16
	Albany	24
	Laramie	1
	Wyoming Subtotal	**47**
Colorado	Weld	19
	Logan	9
	Washington	6
	Yuma	20
	Colorado Subtotal	**51**
Kansas	Cheyenne	4
	Rawlins	4
	Thomas	6
	Sheridan	9
	Graham	1
	Trego	3
	Ellis	4
	Barton	3
	Ellsworth	48
	Rice	4
	McPherson	22
	Kansas Subtotal	**108**
PROJECT TOTAL		**206**

Source: Wyoming State Engineer's Office (2005); USGS well information; Colorado Division of Water Resources (no date); KGS (2006b).

Existing Groundwater Contamination

Based on reviews of the National Priorities List (NPL, or federal "Superfund") and the Comprehensive Environmental Response, Compensation, Liability Information System (CERCLIS), the proposed pipeline route does not cross any areas of known groundwater contamination. While it is possible that the proposed project may cross existing sites where groundwater quality has been compromised by other non-project related activities, these have not been identified in regulatory reviews and are not otherwise known (NRG 2006).

Potentially Sensitive Resources

No state groundwater supply management areas occur along the proposed pipeline route in Wyoming. In Colorado, managed groundwater resource areas consist of designated basins. Designated groundwater basins in Colorado include the Upper Crow Creek Basin in northern Weld County, and the Northern High Plains Basin in Washington and Yuma counties. Groundwater supply and resource allocation are managed through the State Engineer and local administrators in these basins.

In Kansas, managed groundwater resource areas consist of management districts. The proposed ROW would intersect the Northwest Kansas Groundwater Management District in Cheyenne, Rawlins, Thomas, and Sheridan counties. Similar to the basin management in Colorado, groundwater supplies and allocations in this district are managed at the state and district levels. In both states, groundwater quality monitoring is conducted by these regional organizations as allowed by time and funding.

In Wyoming, the USEPA has designated the Elk Mountain aquifer as a sole source aquifer. The Elk Mountain aquifer, part of the Cloverly Aquifer, is located in the Pass Creek Basin of south central Wyoming. Typically Pass Creek Basin strata are folded and faulted inward into a series of north plunging, asymmetrical anticlines less than 1 mile in width. The aquifer is confined and averages approximately 90 feet thick. Since the sediments have been extensively folded and faulted, the water-producing zones vary from 2,380 to 2,780 feet below the ground surface (USEPA 1998). Overland Pass contacted Region VII of the USEPA to determine if the proposed pipeline route would cross the Elk Mountain aquifer (USEPA 2005). Based on the designated boundary map of the Elk Mountain aquifer, the sole source aquifer is located approximately 2,500 feet south of the proposed pipeline route at its nearest location at approximately RP 224 (**Figure 3.5-3**).

In addition to the Elk Mountain aquifer, the City of Laramie and the County of Albany have designated an aquifer protection overlay zone, known as the Casper Aquifer Protection Area, to safeguard wells and springs located west of Laramie, Wyoming (**Figure 3.5-4**). The Casper Aquifer is the saturated and permeable part of the Casper Formation. The Casper Formation is overlain by the Satanka Formation. The Satanka Formation consists of shale and gypsum and the bottom 50 feet are fractured and are probably in hydraulic communication with the Casper Formation. The aquifer protection overlay zone is effective within city limits and at all locations where the upper boundary of the Casper Formation is not covered by at least 75 feet of the overlying Satanka Formation. Generally, the Satanka Formation serves as a confining layer above the Casper aquifer. The Casper Aquifer is a sandstone-limestone rock formation that is over 700 feet thick. Carbonate formations are susceptible to dissolution and can thus develop extremely large, interconnected pore spaces. It is this enhanced porosity and permeability that makes these types of aquifers extremely vulnerable to contamination. The recharge area for the City of Laramie is from the Laramie Range crest to the eastern border. The Casper Aquifer is at a 4.5 percent down gradient to the west. Groundwater flow direction is from east to west (City of Laramie 2004; Litle 2006). Some of the prohibited activities within the Casper aquifer Protection Area include the operation of dry cleaners, hazardous waste facilities, and gasoline stations (City of Laramie 2004). The proposed pipeline route would be approximately 1 mile from the southwest edge of the Casper Aquifer Protection Area near RP 280, downgradient of the aquifer protection area.

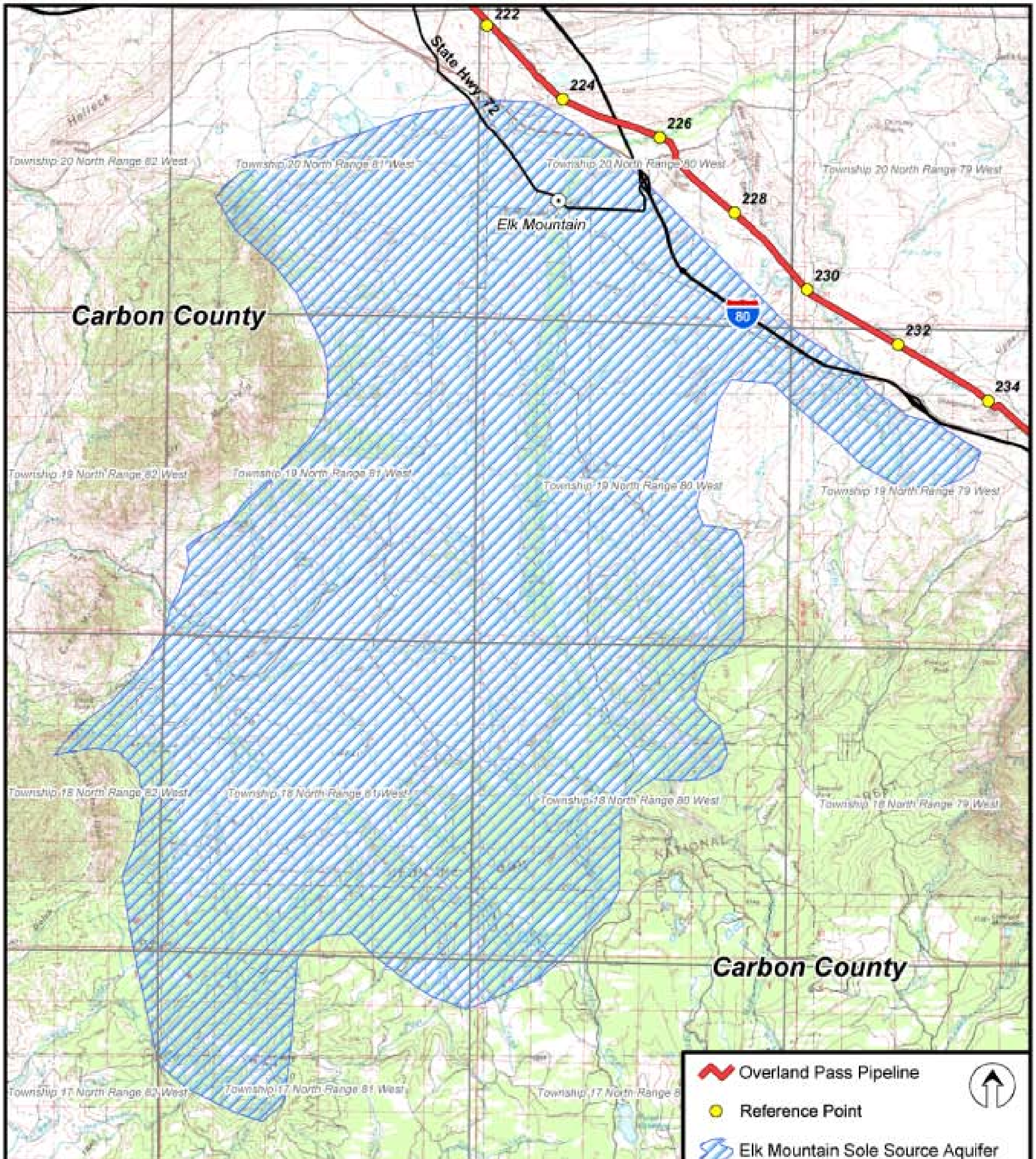
There are currently no designated sole source aquifers in Colorado or Kansas (USEPA 2004b).

3.5.1.3 Floodplains, Wetlands/Riparian Zones

From a geomorphic perspective, floodplains are relatively low, flat areas of land that surround rivers or streams and hold overflows during flood events. Floodplains are often associated with rivers and streams, where they consist of stream deposited sediments forming levels (or "terraces") deposited at different times along the watercourse. Protection of floodplains and related resource values was established by EO 11988 (FR 1977a) and 11990 (FR 1977b).

From a policy perspective, the Federal Emergency Management Agency (FEMA) defines a floodplain as being any land area susceptible to being inundated by waters from any source (FEMA 2006). Local, state, and federal agencies have additional roles and responsibilities under EOs 11988 and 11990 and the FEMA floodplain program, particularly with respect to potential impacts on flooding from proposed projects. Major floodplains crossed by the proposed pipeline route are identified in **Table 3.5-7**.

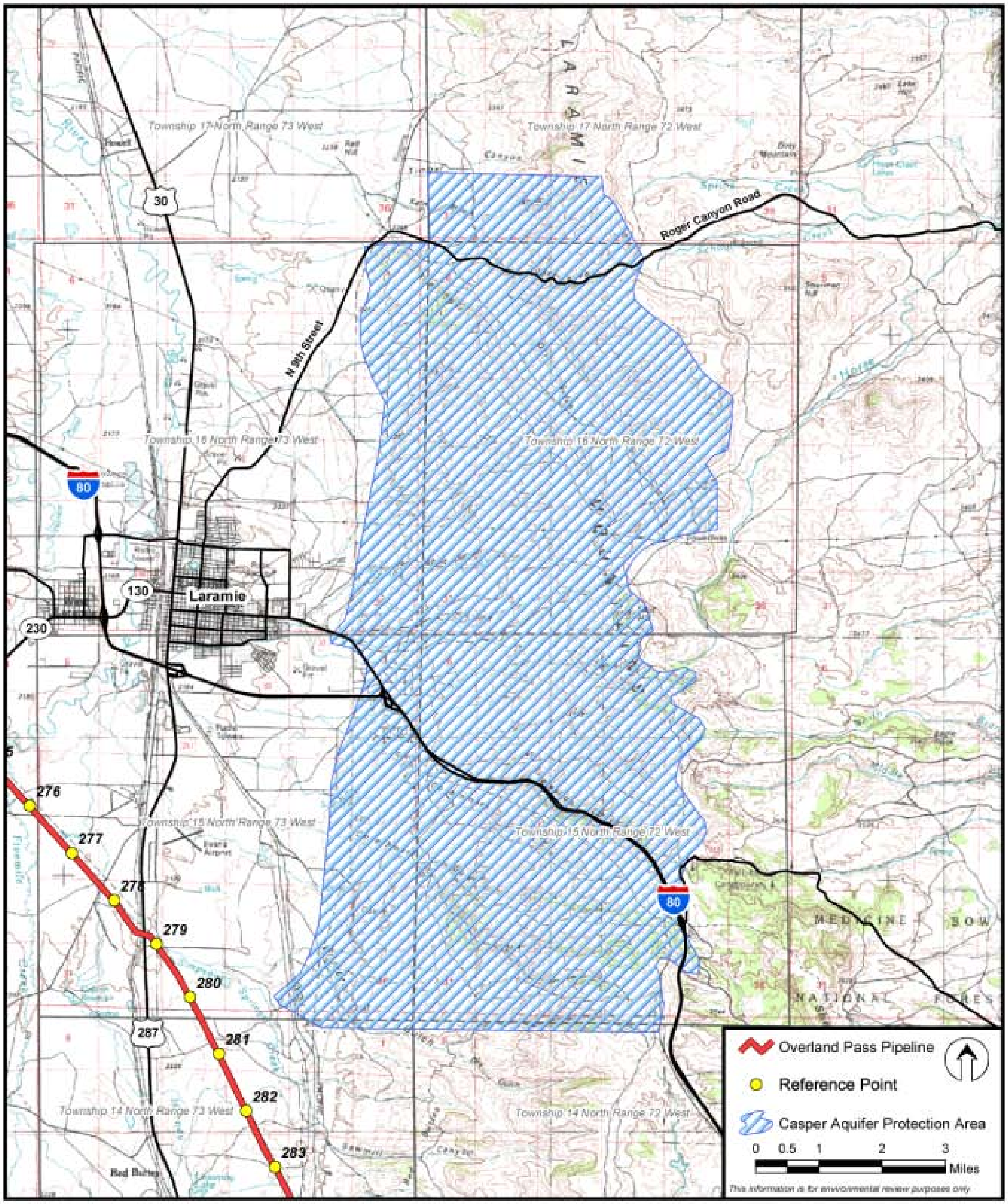
Riparian zones occur along floodplains associated with perennial, ephemeral, and intermittent rivers and creeks and typically support a combination of trees, shrubs, and herbaceous vegetation. Wetlands are commonly associated with riparian areas and landscape depressions that have adequate soil moisture throughout the growing season to support a prevalence of hydrophytic vegetation species. Wetlands are defined areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions (USACE 1987). While wetlands and riparian zones make up a small



Overland Pass Pipeline Project

Figure 3.5-3

Elk Mountain Sole Source Aquifer



Overland Pass Pipeline Project

Figure 3.5-4

Casper Aquifer Protection Area

percentage of Wyoming's, Colorado's, and Kansas' land mass, covering less than 1 percent of the landscape, they are critical to many species in the state and serve as filters for runoff.

Table 3.5-7 Major Floodplains Crossed by the Project

State/RP	Waterbody Name	Proposed Crossing Method
Wyoming		
18.9 and 41.3	Blacks Fork River floodplain	Open Cut
59.3	Green River floodplain[1]	Open Cut
195.5	North Platte River floodplain	Open Cut
228.1	Medicine Bow River floodplain	Open Cut
Colorado		
413.2	South Platte River	HDD
491.7	Arikaree River	Open Cut
Kansas		
510.4	South Fork Republican River	Open Cut

[1]Waterbody crossing occurs within federally managed lands.

Based on field survey data, a total of 163 wetlands would be crossed by the proposed pipeline route. Of this total, eight are located all or partially on federally managed lands. The combined linear crossing distance of the 163 wetlands is approximately 6.5 miles, accounting for approximately 0.9 percent of the total proposed pipeline route. **Table 3.5-8** summarizes wetlands crossed by the proposed pipeline route.

Table 3.5-8 Summary of Wetland Types Crossed by the Overland Pass Pipeline

State	National Wetlands Inventory (NWI) Wetland Classification[1]	Length of Wetland Crossed (miles)
Wyoming		
	PEM	5.7
	PSS	0.3
	PFO	0.1
Wyoming Subtotal[2]		**6.1**
Colorado		
	PEM	0.2
	PSS	0.0
	PFO	0.0
Colorado Subtotal		**0.2**
Kansas		
	PEM	0.2
	PSS	<0.1
	PFO	0.0
Kansas Subtotal		**0.2**
Total		**6.5**

Source: Overland Pass Pipeline Project – 2006 Wetland Survey (WEST 2006d).

Slight discrepancies in total mileage are due to rounding.

[1]Cowardin Wetland Types:

PEM – Palustrine Emergent

PSS – Palustrine Scrub-Shrub

PFO – Palustrine Forested

[2]Includes <0.1 mile of wetlands (PEM and PSS) on federally owned land.

Palustrine systems include all nontidal wetlands dominated by trees, shrubs, persistent emergents, emergent mosses or lichens, and all such wetlands that occur in tidal areas where salinity due to ocean-derived salts is below 0.5 percent (Cowardin 1979). Common species that occur in PSS and PEM habitats include narrowleaf cottonwood, plains cottonwood, aspen, green ash, various species of willow, thinleaf alder, water birch, wild rose, red-osier dogwood, beaked sedge, Nebraska sedge, Baltic rush, inland saltgrass, alkali sacaton, and temporarily store creeping bentgrass.

Riverine and lacustrine systems typically are considered open water habitats. Riverine systems include all wetlands and deepwater habitats contained within a channel, with the exception of wetlands dominated by trees, shrubs, persistent emergents, emergent mosses, or lichens. In the case of braided stream channels, riverine systems are bound by the banks forming the outer limits of the depression within which the braiding occurs. As such, riverine habitat may include non-persistent emergent wetlands that are subject to periodic scouring. Lacustrine systems include wetlands and deepwater habitats situated in a topographic depression or a dammed river channel, lack trees, shrubs, persistent emergents, emergent mosses or lichens with greater than 30 percent aerial coverage, and total an area greater than 20 acres.

In addition to wetlands traversed by the proposed pipeline route, the PNG has identified multiple playas along the proposed pipeline route in Colorado. Playas are shallow, circular-shaped, depressional seasonal wetlands that are primarily filled by rainfall, although some playas found in cropland settings may also receive water from irrigation runoff. Compared to other wetlands, playas undergo frequent, unpredictable wet and dry cycles. The resulting wet-dry cycle of playas produces a highly diverse plant community. These plants produce a tremendous crop of nutritious seeds that are favored by waterfowl and other seed eating birds that migrate and winter in the region (Playa Lakes Joint Venture [PLJV] 2006).

3.5.2 Southern Energy Corridor – Copper Ridge Bypass Alternative

3.5.2.1 Surface Water

Between RP 62.3 and RP 87.1 in Sweetwater County, Wyoming, the Proposed Action would cross a total of 48 streams (46 intermittent, 2 perennial), while the Southern Energy Corridor – Copper Ridge Bypass Alternative would cross a total of 51 surface streams (47 intermittent, 4 perennial). No playas/ponds are crossed by either the Proposed Action through this section nor by the Southern Energy Corridor – Copper Ridge Bypass Alternative.

No major and sensitive waterbody crossings or Section 303(d) listed impaired waterbody crossings would be avoided or added by routing the pipeline along the Southern Energy Corridor – Copper Ridge Bypass Alternative. A complete list of waterbody crossings for the Southern Energy Corridor – Copper Ridge Bypass Alternative is provided in **Appendix F**, **Table F-2**.

There would be no difference in the public water supplies crossed by the Southern Energy Corridor – Copper Ridge Bypass Alternative.

3.5.2.2 Groundwater

Groundwater resources along this alternative would be the same as described for the Proposed Acton.

3.5.2.3 Floodplains, Wetlands/Riparian Zones

No additional floodplains would be crossed by the Southern Energy Corridor – Copper Ridge Bypass Alternative, thus floodplain resource concerns would be the same as those described for the Proposed Action. Between RP 62.3 and RP 87.1, the Proposed Action would cross 4 wetlands (2 PEM, 2 PSS), while the Southern Energy Corridor – Copper Ridge Bypass Alternative would cross one wetland (PEM) near State Highway 430.

3.6 Vegetation

3.6.1 Proposed Action

3.6.1.1 Vegetation Communities

The proposed pipeline route would cross five general vegetation types: grassland, agricultural land, shrubland, forest land, and wetlands. Vegetation types (**Figure 3.6-1**) were determined by Overland Pass through review of aerial photography, aerial flyover ground-truthing surveys, and review of high-resolution aerial photography (WEST 2006a). **Table 3.6-1** summarizes the miles of vegetation types crossed by the proposed pipeline route.

Table 3.6-1 Miles of Vegetation Crossed by the Proposed Pipeline Route

Vegetation Type	Miles of Vegetation Crossed[1]
Grassland	436.8
Agricultural Land	231.7
Shrubland	72.2
Forest Land	5.9
Wetlands	6.5
Total	**753.1**

[1]Does not include developed, commercial land, open water, or barren areas that do not display vegetation characteristics. Therefore, total miles are less than total length of the project.

The most common vegetation types crossed by the proposed pipeline route are grassland and agricultural land. Open water and waterbodies (including dry washes), commercial land, and areas with bare rock account for less than 1 percent of the disturbance along the proposed pipeline route and do not display vegetation characteristics; consequently, they are not discussed in this section of the EIS. **Table 3.6-2** provides a description of the vegetation types, sub-communities, and species commonly associated with these vegetation types along the proposed project route.

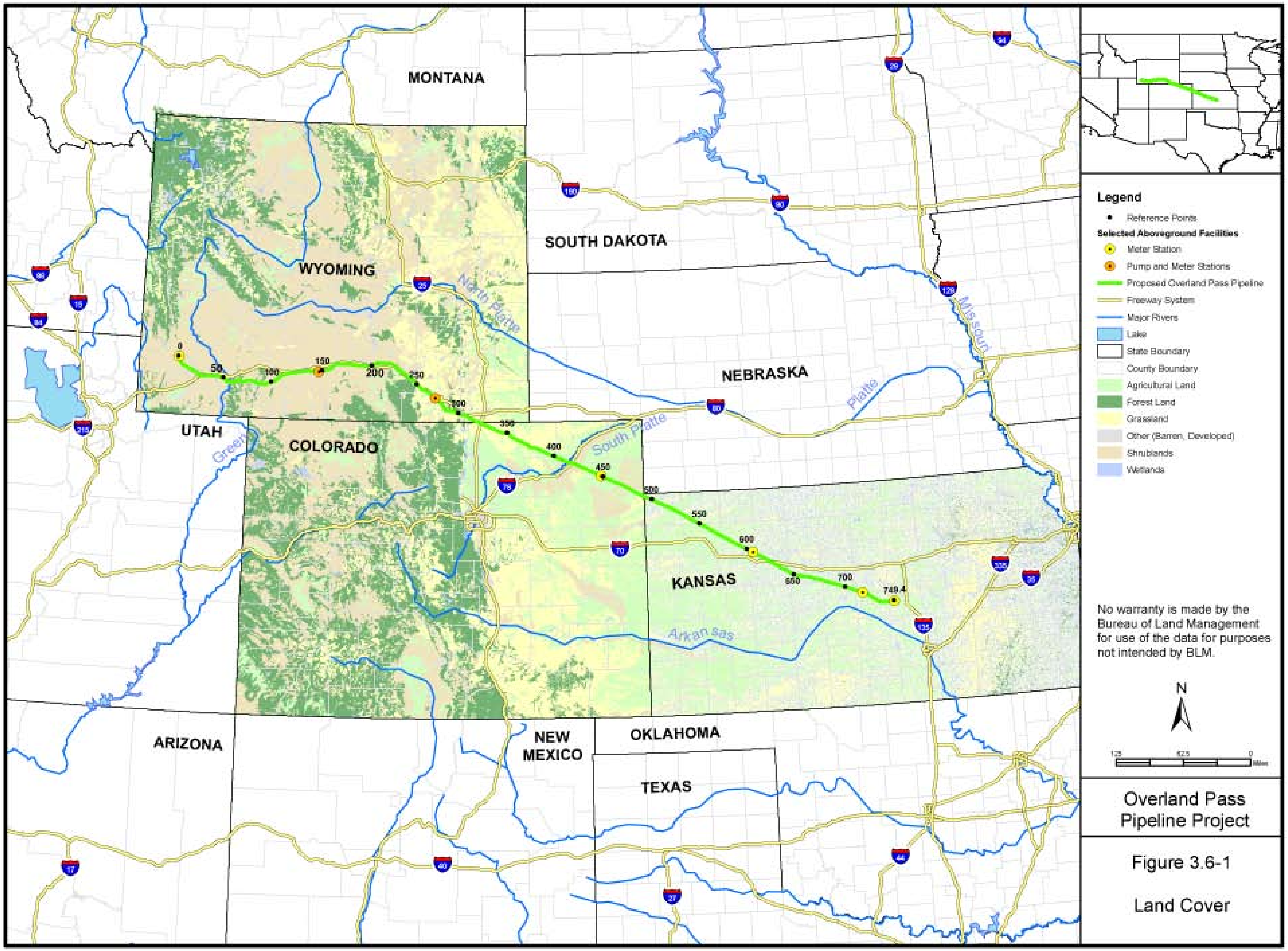
Grassland

Grassland occurs along approximately 436.8 miles (57 percent) of the proposed pipeline route, with sagebrush steppe being the dominant sub-community. Sagebrush steppe is a semi-closed steppe characterized by an overstory of sagebrush and understory of grasses, forbs, and smaller shrubs. Grass species comprise more than 50 percent of the species composition in this community; big sagebrush is the dominant shrub component throughout. The mixed-grass prairie sub-community occurs throughout most of eastern Wyoming and typically supports a high diversity of grasses, including short-, mid-, and tall-grass species. It is distinguished from the short-grass prairie sub-community by having a much higher floristic diversity and an absence of buffalo grass. The short-grass prairie is dominated by bunch grasses less than 20 inches tall. Buffalo grass is considered the indicator species of short-grass prairie.

Agricultural Land

Agricultural land occurs along approximately 231.7 miles (30 percent) of the proposed pipeline route. This community is primarily comprised of irrigated hay, small grain, corn, and alfalfa fields as well as pasture for livestock grazing.

Pasture and hayfields would typically regenerate quickly after cleanup and reseeding of the construction ROW, typically within 2 years. Overland Pass would reseed pasture and hayfields with seed mixes as requested by the landowner to restore the area to preconstruction conditions. Overland Pass would not reseed cultivated agricultural areas unless requested by the landowner.



Overland Pass Pipeline Project

Figure 3.6-1

Land Cover

Table 3.6-2 Vegetation Types and Sub-Communities that Occur Along the Proposed Pipeline Route

Vegetation Type	Sub-Community	Common Species
Grassland	Sagebrush steppe Mixed-grass prairie Short-grass prairie Planted grassland	Indian ricegrass, needle and thread grass, western wheatgrass, bluebunch wheatgrass, Sandberg bluegrass, bottlebrush squirreltail, basin big sagebrush, Wyoming big sagebrush, blue grama, fringed sagewort, buffalograss, western wheatgrass, pricklypear cactus, yucca, prairie coneflower, scarlet globemallow, broom snakeweed, little bluestem, sideoats grama, big bluestem, switchgrass, and smooth brome.
Agricultural Land	Agriculture (hay/pasture land) Disturbed	Alfalfa, meadow barley, smooth brome, timothy, orchardgrass, Kentucky bluegrass, blue mustard, clasping pepperweed, perennial pepperweed, field pennycress, shepherd's-purse, common cocklebur, sowthistle, horseweed, Canada thistle, showy milkweed, common teasel, Russian thistle, and kochia.
Shrubland	Desert scrub Salt desert scrub Desert shrubland Greasewood Mountain Mahogany Fourwing saltbush Sand sagebrush	Gardner's saltbush (2 varieties), shadscale, rubber rabbitbrush, greasewood, basin big sagebrush, Wyoming big sagebrush, winterfat, Indian ricegrass, needle and thread grass, saltgrass, alkali sacaton, mountain mahogany, bluebunch wheatgrass, prairie junegrass, blue grama, fourwing saltbush, sand sagebrush, yucca, skunkbrush, sand bluestem, sand dropseed, prairie reedgrass, and sideoats grama.
Forest Land	Juniper woodland Aspen woodland Pine woodland Planted trees	Utah juniper, Rocky Mountain juniper, big sagebrush, mountain mahogany, rabbitbrush, broom snakeweed, Sandberg bluegrass, needlegrasses, Indian ricegrass, western wheatgrass, aspen, wild rose, gooseberry, ponderosa pine, limber pine, other native and non-native deciduous and coniferous trees.
Wetlands	PEM PSS PFO	Baltic rush, inland saltgrass, alkali sacaton, beaked sedge, Nebraska sedge, creeping bentgrass, willow species, thinleaf alder, water birch, wild rose, red-osier dogwood, narrowleaf cottonwood, plains cottonwood, aspen, and green ash.

Shrubland

Shrubland accounts for approximately 72.2 miles (10 percent) of vegetation cover that would be crossed by the proposed pipeline route. This community designation includes sagebrush, salt desert shrub/greasewood, and foothills shrub-scrub sub-communities. Sagebrush is the most widespread shrubland sub-community. This vegetation type is characterized by an overstory of big sagebrush and an understory of grasses, forbs, and smaller shrubs. Salt desert shrub/greasewood occurs as a mosaic within sagebrush communities, frequently on the fringes of playas, desert lakes, ponds, rivers, and streams. Foothills shrub-scrub communities consist of both mountain mahogany and scrub oak sub-communities. Mountain mahogany primarily occurs within northern mixed prairie and short-grass prairie habitats. This deciduous shrub forms dense thickets with sparse understory vegetation. It typically occurs on rocky or shallow soils and is often associated with a limestone, sandstone, or shale substrate. In oak scrub, Gambel oak is the dominant shrub, comprising more than a quarter of the total vegetation cover. This subcommunity does not occur on the eastern slope of the Rocky Mountains, but extends from Colorado into Wyoming on the western slope of the Rocky Mountains.

Forest Land

Forest lands occur along approximately 5.9 miles (less than 1 percent) of the proposed pipeline route. Forest land sub-communities include pinyon-juniper woodland, ponderosa pine woodland, and riparian woodland. Along the proposed pipeline route, the dominant community is pinyon-juniper woodland. Colorado pinyon pine and Utah juniper dominate the pinyon-juniper woodland plant community. Ponderosa pine woodland is commonly found on lower mountain foothills and slopes. Riparian woodlands occur along many perennial waterbodies and are characterized by cottonwood trees and a variety of riparian shrubs.

Riparian woodland communities crossed by the proposed pipeline route are associated with the North Platte River, Medicine Bow River (2), a tributary to Foote Creek, and Rock Creek (2) crossings.

Wetlands

Wetlands occur along 6.5 miles (less than 1 percent) of the proposed pipeline route. Wetlands crossed by the proposed pipeline route are discussed in Section 3.5.1.3.

3.6.1.2 Noxious Weeds and Invasive Plant Species

The prevention of the spread or introduction of noxious weeds and invasive plant species is a high priority to federal, state, and county agencies. Ground disturbance from construction may make vegetation communities more susceptible to infestations of noxious weeds or invasive plants. These species are most prevalent in areas of surface disturbance, such as agricultural areas, roadsides, existing utility ROWs, and wildlife concentration areas.

Legally, a noxious weed is any plant officially designated by a federal, state, or county government as injurious to public health, agriculture, recreation, wildlife, or property (Sheley et al. 1999). Under the Federal Plant Protection Act of 2000 (formerly the Noxious Weed Act of 1974 [7 USC SS 2801-2814]), a noxious weed is defined as “any plant or plant product that can directly or indirectly injure or cause damage to crops, livestock, poultry, or other interests of agriculture, irrigation, navigation, the natural resources of the U.S., the public health, or the environment.” Noxious weeds are opportunistic plant species that readily flourish in disturbed areas, thereby preventing native plant species from establishing successive communities. Wyoming, Colorado, and Kansas each maintain official state lists of weed species that are designated noxious species (Wyoming Weed and Pest Council 2006; State of Colorado 2006; Kansas Department of Agriculture [KDA] 2006). **Table 3.6-3** provides a summary of the noxious weed species regulated in Wyoming, Colorado, and Kansas.

Table 3.6-3 Noxious Weeds[1] that Potentially Occur Along the Proposed Pipeline Route

Common Name	Scientific Name	Wyoming	Colorado	Kansas
Absinth wormwood	*Artemisia absinthium*		X	
African rue	*Peganum harmala*		X	
Bull thistle	*Cirsium vulgare*			X
Bur ragweed	*Ambrosia grayii*			X
Camelthorn	*Alhagi pseudalhagi*		X	
Canada thistle	*Cirsium arvense*	X	X	X
Chinese clematis	*Clematis orientalis*		X	
Common burdock	*Arctium minus*	X		
Common crupina	*Crupina vulgaris*		X	
Common tansy	*Tanacetum vulgare*	X		
Cypress spurge	*Euphorbia cyparissias*		X	
Dalmation toadflax	*Linaria dalmatica*	X	X	
Diffuse knapweed	*Centaurea maculosa*	X	X	
Dyer’s woad	*Isatis tinctoria*	X	X	
Field bindweed	*Convolvulus arvensis*	X		X
Giant salvinia	*Salvinia molesta*		X	

Table 3.6-3 Noxious Weeds[1] that Potentially Occur Along the Proposed Pipeline Route

Common Name	Scientific Name	Wyoming	Colorado	Kansas
Hoary cress (whitetop)	*Cardaria draba*	X		X
Houndstongue	*Cynoglossum officinale*	X		
Hydrilla	*Hydrilla verticillata*		X	
Johnsongrass	*Sorghum halapense*			X
Kudzu	*Peuraria lobata*			X
Leafy spurge	*Euphorbia esula* L.	X	X	X
Meadow knapweed	*Centaurea pratensis*		X	
Mediterranean sage	*Salvia aethiopos*		X	
Medusa head	*Taeniatherum caput-medusae*		X	
Musk thistle	*Carduus nutans*	X	X	X
Myrtle spurge	*Euphorbia myrsinites*		X	
Oxeye daisy	*Chrysanthemum leucanthemum*	X		
Perennial pepperweed	*Lepidium latifolium*	X	X	
Perennial sowthistle	*Sonchus arvensis*	X		
Pignut	*Hoffmannseggia densiflora*			X
Plumeless thistle	*Carduus acanthoides*	X	X	
Purple loosestrife	*Lythrum salicaria*	X	X	
Quackgrass	*Agropyron repens*	X		X
Rush skeletonweed	*Chondrilla juncea*		X	
Russian knapweed	*Centaurea repens* L.	X	X	X
Salt cedar	*Tamarix* spp.	X	X	
Scotch thistle	*Onopordum acanthium*	X	X	
Sericia lespedeza	*Lespedeza cuneata*		X	
Skeletonleaf bursage	*Franseria discolor*	X		
Spotted knapweed	*Centaurea maculosa*	X	X	
Squarerose knapweed	*Centaurea virgata*		X	
St. Johnswort	*Hypericum perforatum*	X		
Tansy ragwort	*Senecio jacobaea*		X	
Yellow star thistle	*Centaurea solstitialis* L.		X	
Yellow toadflax	*Linaria vulgaris*	X	X	

[1]Noxious weeds obtained from Wyoming's noxious weed list (Wyoming Weed and Pest Council 2006); Colorado's State A list, State B list (as identified through consultations with county weed coordinators) (State of Colorado 2006); and Kansas' noxious weed list (KDA 2006).

The more general term "invasive species" refers to a species that is non-native to the ecosystem under consideration and whose introduction causes or is likely to cause economic or environmental harm or harm to human health. Invasive plants not only include noxious weeds, but also other plants that are not native to this country. The BLM considers plants invasive if they have been introduced into an environment where they did not evolve. As a result, they usually have no natural enemies to limit their reproduction and spread (Westbrooks 1998).

Under EO 13112 (FR 1999) federal agencies shall not authorize, fund, or carry out actions likely to cause or promote the introduction or spread of invasive species in the U.S. or elsewhere unless it has been determined that the benefits of such actions outweigh the potential harm caused by invasive species and that all feasible and prudent measures to minimize the risk of harm would be taken in conjunction with the actions.

3.6.2 Southern Energy Corridor – Copper Ridge Bypass

There are no substantive differences between the affected vegetation communities that occur within the Southern Energy Corridor – Copper Ridge Bypass Alternative in comparison to the Proposed Action.

3.7 Wildlife, Aquatic Resources, and Special Status Species

3.7.1 Proposed Action

3.7.1.1 Wildlife

Wildlife habitats along the proposed pipeline route consists primarily of five major vegetative communities: grassland, shrubland, agricultural land, forest land, and wetlands. Each of these communities provides nesting, cover, and foraging habitat for a variety of wildlife. This section focuses on species of high economic and/or economic recreational importance and those that are considered sensitive to human disturbance. Baseline descriptions of both resident and migratory wildlife include species that have either been documented in the project area or those that may occur in the project region based on habitat associations. Common species associated with each of the vegetation communities that would be affected by the proposed project are listed in **Table 3.7-1**.

Table 3.7-1 Common Wildlife Species in the Project

Vegetative Community/ Habitat Type	Common Species
Grassland	Pronghorn antelope, coyote, swift fox, badger, white-tailed jackrabbit, thirteen-lined ground squirrel, spotted ground squirrel, black-tailed prairie dog, plains pocket gopher, plains pocket mouse, silky pocket mouse, plains harvest mouse, mourning dove, northern harrier, prairie falcon, ferruginous hawk, Swainson's hawk, common nighthawk, horned lark, rock wren, vesper sparrow, lark bunting, western meadowlark, loggerhead shrike, short-horned lizard, western skink, wandering garter snake, prairie rattlesnake, striped whipsnake, racer
Shrubland	Mule deer, elk, pronghorn antelope, coyote, Nuttall's cottontail, deer mouse, Wyoming ground squirrel, white-tailed prairie dog, sagebrush vole, northern harrier, American kestrel, Swainson's hawk, sage grouse, Say's phoebe, horned lark, black-billed magpie, sage thrasher, green-tailed towhee, vesper sparrow, Brewer's sparrow, sage sparrow, Great Basin spadefoot toad, sagebrush lizard, northern plateau lizard, short-horned lizard, western skink, striped whipsnake, racer
Agricultural Land	Mule deer, white-tailed deer, swift fox, black-tailed jackrabbit, raccoon, thirteen-lined ground squirrel, spotted ground squirrel, plains pocket gopher, plains harvest mouse, deer mouse, short-eared owl, ring-necked pheasant, common crow, horned lark, plains garter snake, common garter snake, prairie lizard, Great Plains rat snake, box turtle, horned lizard
Forest Land	Elk, mule deer, bobcat, porcupine, desert cottontail, desert woodrat, desert shrew, least chipmunk, pinion mouse, little brown bat, red-tailed hawk, American kestrel, great-horned owl, long-eared owl, mourning dove, common poorwill, black-chinned hummingbird, northern flicker, ash-throated flycatcher, gray flycatcher, Say's phoebe, pinyon jay, gray vireo, house finch, pine siskin, chipping sparrow, black-throated gray warbler, juniper titmouse, sagebrush lizard, northern plateau lizard, short-horned lizard, western skink, Great Basin gopher snake, striped whipsnake, racer, kingsnake, wandering garter snake
Wetlands	Beaver, muskrat, mink, red fox, desert cottontail, pocket gopher, Great Basin pocket mouse, western harvest mouse, meadow vole, western jumping mouse, rusty red fox squirrel, eastern woodrat, northern harrier, black-chinned hummingbird, violet-green swallow, black-billed magpie, robin, western tanager, yellow warbler, common yellowthroat, Brewer's blackbird, house finch, Savannah sparrow, chipping sparrow, Canada goose, wood duck, canvasback, gadwall, common goldeneye, Woodhouse's toad, boreal chorus frog, northern leopard frog, sagebrush lizard, western skink, striped whipsnake, racer, smooth green snake, wandering garter snake

Source: NRG 2006

Approximately 130 miles of new greenfield ROW of which 72 miles are forest and shrubland habitat would occur along the proposed pipeline route. These two habitat types require more than 5 years for restoration, and often decades. New greenfield ROW construction occurs in areas not co-located with existing pipeline, utility, or road ROW.

Game Species

The primary big game species that occur within the project area are elk, mule deer, and pronghorn antelope (pronghorn). Elk inhabit semi-open forests or forest edges adjacent to parks, meadows, and alpine tundra, as well as sagebrush steppe areas. Mule deer occur in the greatest densities in shrublands on rough, broken terrain, which provide abundant browse and cover. Pronghorn inhabit grasslands and semidesert shrublands on rolling topography that afford good visibility.

Other less prominent big game species that occur in the project area are white-tailed deer, black bear, and mountain lion. Occurrence of white-tailed deer would be limited to Kansas and Colorado and concentrated along riparian corridors. Black bear and mountain lion may travel infrequently through the project area, primarily in the forest vegetative community. This community represents a small component of the proposed project. Small game species that occur along the proposed pipeline route include upland game birds, waterfowl, furbearers, and small mammals.

Wyoming. Big game species, including mule deer, elk, and pronghorn are scattered in the vicinity of the proposed pipeline route in Wyoming. The proposed pipeline route would cross habitat ranges designated as crucial for maintenance of game populations. In Wyoming, designated big game ranges, including summer, yearlong, winter, and crucial winter ranges would be crossed (WDGF 2005a). Approximately 14.4 miles of crucial winter range for two game species that would be crossed by the proposed pipeline route. Approximately 8.5 miles of pronghorn, 4.2 miles of mule deer, and 1.4 miles of elk crucial winter habitat would be crossed by new greenfield ROW. Crucial winter habitat timing restrictions in Wyoming occur between November 15 and April 30. Crucial winter habitat with timing restrictions for mule deer, pronghorn, and elk are identified in **Table 3.7-2**.

Table 3.7-2 Big Game Crucial Winter Habitat with Timing Restrictions Affected by the Project[1]

State / Range Type	Locations (RP)	Approximate Total Length Crossed (miles)	
		Federal Lands	Non-Federal Lands
Wyoming			
Mule Deer Crucial Winter Habitat	88.8 to 91.1	6.9	23.8
	182.1 to 188.6		
	193.8 to 194.0		
	194.2 to 195.1		
	195.6 to 199.8		
	204.6 to 210.3		
	224.3 to 234.0		
	254.6 to 255.4		
Pronghorn Crucial Winter Habitat	14.6 to 21.2	16.3	46.2
	23.9 to 27.7		
	31.1 to 47.0		
	96.4 to 102.7		
	195.5 to 204.3		
	223.2 to 226.2		
	243.6 to 261.7		
Elk Crucial Winter Habitat	243.6 to 252.1	0.0	8.5
Colorado			
Pronghorn Crucial Winter Habitat	321.1 to 339.0	2.1	17.5
	358.5 to 360.2		

[1]Crucial big game ranges identified by WGFD and CDOW.

In Wyoming, sage grouse are considered the most sensitive small game species along the proposed pipeline route and are discussed further in Section 3.7.1.3 and in the Biological Report (BR)/Biological Evaluation (BE) associated with this project.

Colorado. In Colorado, big game species, including mule deer, white-tailed deer, elk, and pronghorn are scattered in the vicinity of the proposed pipeline route. The proposed pipeline route would cross habitat ranges designated as crucial for maintenance of big game populations. Crucial winter habitat timing restrictions for Colorado occur between December 1 and April 30. Approximately 20 miles of pronghorn crucial winter habitat, including approximately 1 mile of new greenfield ROW construction, would be crossed in Colorado (CDOW 2005) (**Table 3.7-2**).

Kansas. Big game species, including mule deer, white-tailed deer, and pronghorn are scattered across Kansas; however, there are no designated big game ranges in the state (KDWP 2005) and no crucial winter habitat would be crossed. In Kansas, the lesser prairie chicken is considered the most sensitive small game species along the proposed pipeline route. This species has limited potential for occurrence in the vicinity of the proposed pipeline route which is discussed further in the BA associated with this project.

Nongame Species

A diversity of nongame species (e.g., small mammals, raptors, passerines, amphibians, and reptiles) occupy a variety of trophic levels and habitat types along the proposed pipeline route. Nongame mammal species include a variety of small mammals such as shrews, bats, squirrels, prairie dogs, rabbits, woodrats, and mice. These small mammals provide a substantial prey base for predators including mammals (e.g., coyote, badger, skunk), raptors (e.g., eagles, buteos, accipiters, owls), and reptile species in the project area. Common reptiles along the proposed pipeline route include northern sagebrush lizard, eastern short-horned lizard, garter snake, and prairie rattlesnake. Common amphibians included plains spadefoot, boreal chorus frog, leopard frog, and tiger salamander (Baxter and Stone 1980; Hammerson 1999).

Migratory Birds

A neotropical migratory bird is a bird that breeds in Canada and the United States during summer and over winters in Mexico, Central America, South America or the Caribbean islands. According to a more strict definition used by some scientists, neotropical migratory birds are Western Hemisphere species in which the majority of individuals breeds north of the Tropic of Cancer and winters south of that same latitude (Smithsonian National Zoological Park 2007). Represenative migratory bird species with potential to occur along the proposed pipeline route, as provided by the USFWS, are listed by habitat association in **Table 3.7-1** and in the raptor section below.

A Memorandum of Understanding (MOU) among the USFS, BLM, and USFWS was drafted pursuant to EO 13186 in order to promote conservation of migrating birds and minimize the potential adverse effects of take to these birds. Specific measures to protect migratory bird species and their habitats have not been identified within the draft MOU document; but instead, provide guidance to agencies to promote best management practices for the conservation of migratory birds.

Raptors

Raptor species that could potentially occur as residents or migrants within the project region include eagles (bald eagle and golden eagle), buteos (e.g., red-tailed hawk, Swainson's hawk, ferruginous hawk), falcons (e.g., peregrine falcon, prairie falcon, American kestrel), accipiters (e.g., Cooper's hawk and sharp-shinned hawk), owls (e.g., great-horned owl, burrowing owl, long-eared owl, short-eared owl), northern harrier, and turkey vulture. Refer to **Table 3.7-1** for common raptor species along the proposed project route.

Wyoming. Raptor breeding habitat was identified in Wyoming for golden eagle, ferruginous hawk, peregrine falcon, red-tailed hawk, prairie falcon, northern harrier, Swainson's hawk, burrowing owl, and great horned owl in the vicinity of the proposed pipeline route (WGFD 2005a).

Colorado. In Colorado, raptor breeding habitat was identified for golden eagle, bald eagle, ferruginous hawk, red-tailed hawk, prairie falcon, northern harrier, Swainson's hawk, burrowing owl, and great horned owl in the vicinity of the proposed pipeline route (CDOW 2006; CNHP 2006).

Kansas. In Kansas, raptor breeding habitat was identified for golden eagle, ferruginous hawk, red-tailed hawk, Swainson's hawk, short-eared owl, and great horned owl in the vicinity of the proposed pipeline route (KDWP 2006; WEST 2006c).

Management Indicator Species

Management Indicator Species (MIS) are defined as a wildlife species whose population will indicate the health of the ecosystem in which it lives and, consequently, the effects of forest management activities to that ecosystem. MIS species are selected for this project by the USFS for areas in the vicinity of the proposed pipeline route in the PNG and FGNRA. The FGNRA occurs within the ANF and does not have a list of MIS species established specifically for the FGNRA. Some of the species identified for the entire forest are not analyzed in this document because their habitats do not occur within the vicinity of the proposed pipeline route. These species include white-tailed ptarmigan, northern goshawk, Lincoln sparrow, song sparrow, warbling vireo, and red napped sapsucker. MIS species that would occur along the proposed pipeline route are listed in **Table 3.7-3**. MIS species are discussed in detail in the BR associated with this project.

Table 3.7-3 Management Indicator Species for the Project

Habitat Type	MIS Species
Sagebrush	Sage grouse
Cliffs and rock outcrops	Golden eagle
Shortgrass prairie	Mountain plover
	Ferruginous hawk
Midgrass prairie	Ferruginous hawk
	Lark bunting
Prairie dog towns	Black-tailed prairie dog
	Western burrowing owl
Prairie woodlands	Mule deer
Various economic habitats	Mule deer
	Elk

3.7.1.2 Aquatic Resources

Aquatic resources are amphibian, fish, and invertebrate communities and their habitat, which includes wetlands, perennial streams, and pond/lake environments. The description of aquatic communities focuses on important fisheries, which include species with recreational value or threatened, endangered, or special status. No commercial fisheries occur in any waterbodies crossed by the proposed pipeline route. Special status aquatic species are discussed in Section 3.7.1.3. The study area for aquatic resources includes aquatic habitat (perennial streams, rivers, wetlands, and playas/ponds) crossed by the proposed pipeline route. Other waterbodies are included if they are located within approximately 0.25 mile downstream of the proposed pipeline crossings and support recreationally important game fish or special status fish species.

Invertebrate communities that occur in waterbodies crossed by the proposed pipeline route include a mixture of worms, immature and adult insect groups, snails, and numerous other groups. The composition and abundance of the invertebrate community can vary depending on the physical characteristics of the waterbody, flow, substrate, presence of submersed vegetation, and other factors. Invertebrates serve important roles in the aquatic environment through their food web dynamics. They also represent important food sources for fish and are used as indicators of water quality conditions (Barbour et al. 1997). It is assumed that invertebrates are present in all perennial streams and playas/ponds located within the proposed pipeline corridors.

Waterbodies crossed by the proposed pipeline route also provide habitat for amphibians (salamanders, toads, and frogs) and aquatic reptiles (turtles). Many of the toad species such as plains spadefoot toad, Great Basin spadefoot toad, and salamanders occur in terrestrial habitats throughout most of the year, but move to aquatic habitats for breeding in the spring or early summer. The types of habitats that are used for breeding include perennial streams, reservoirs, ponds, wetlands, or seasonal flooded areas. Salamander and toad species overwinter in burrows and other moist areas in terrestrial habitat. Other toad species (e.g., boreal toad and Woodhouse's toad) and most frog species are associated with permanent wet areas including streams, ponds, and wetlands (Cerovski et al. 2004; Livo et al. 2000). Breeding typically occurs in the spring or early summer for frogs and aquatic reptile species. Most frog species overwinter in the bottom substrate of their occupied aquatic habitats. The following discussion for each state identifies amphibian and aquatic reptile species that could occur within the proposed pipeline route. The potential occurrence of special status amphibian species is discussed in Section 3.7.1.3.

Two MIS (Colorado River cutthroat trout and macroinvertabrates) were considered for analysis within the FGNRA. Colorado River cutthroat trout was eliminated from detailed analysis because this species does not occur in the Green River. Macroinvertebrates were included in the analysis for all waterbodies.

The following information describes fish species occurrence, fishery classifications, habitat quality, and characteristics of fishery management in each of the states traversed by the proposed pipeline route.

Wyoming

Fish. In total, the proposed pipeline route would cross 70 perennial streams in Wyoming, some of which are crossed multiple times. Of these perennial crossings, 21 streams are classified as supporting recreationally important fisheries (i.e., game fish) by WDEQ (2001) (**Table 3.7-4**). For clarification, the game fish species listed in **Table 3.7-4** are based on results of agency surveys conducted at the closest locations to the proposed stream crossings. Except for the Blacks Fork River, which only contains warmwater game fish species, these streams support coldwater game fish species. The game fish species include trout (brook, brown, rainbow, and cutthroat), kokanee salmon, walleye, smallmouth bass, and channel catfish. These streams support one to six game fish species, with the highest number occurring in the Green River. The North Platte River is considered a premium trout fishery by the WGFD. Other high quality trout waters (defined as representing statewide or regional importance) crossed by the proposed pipeline route include the Green River, Medicine Bow River, Tenmile Creek, Little Laramie River, and the Laramie River. Game fish are stocked in the Green River, North Platte River, Medicine Bow River, Wagonhound Creek, Foote Creek tributaries, Rock Creek, and the Laramie River. Other perennial streams crossed by the proposed pipeline route with nongame fisheries include Little Bitter Creek, Bitter Creek, Lone Tree Creek, and Sand Creek. In addition, five playas/ponds would be crossed by the proposed pipeline route. None are known to contain game fish species. General spawning periods for game fish species that occur in waters crossed by the proposed pipeline route are shown in **Table 3.7-5**.

Numerous streams have tested positive for whirling disease in Wyoming. Major rivers on the proposed pipeline route which have tested positive include the Green, North Platte, Medicine Bow, Little Laramie, and Laramie rivers (Money 2006). Whirling disease also has been detected in numerous small streams in eastern Wyoming.

Table 3.7-4 Game Fish Occurrence and Fishery Classifications for Waterbodies Crossed by the Project

Waterbody		Number of Crossings	Fishery Classification[1]	Brook Trout	Brown Trout	Cutthroat Trout (Snake River)	Kokanee Salmon	Walleye	Rainbow Trout	Smallmouth bass	Largemouth Bass	White Crappie	Black Crappie	Bluegill	Sunfish Species	Channel Catfish	Flathead Catfish	Black Bullhead	Yellow Bullhead	White bass	Freshwater drum
Wyoming																					
Hams Fork River	Lincoln	1	2AB		X																
Blacks Fork River	Lincoln	2	2AB																		
Green River **County**	Sweetwater	1	1		X	X	XS[2]		XS							X					
North Platte River	Carbon	1	2AB		X			X X	XS X						X	XS					
Medicine Bow River	Carbon	1	2AB		XS			X	XS												
Bear Creek	Carbon	1	2AB	X	X																
Wagonhound Creek	Carbon	1	2AB	XS	X																
Tributary to Upper Foote Creek	Carbon	4	2AB	XS																	
Foote Creek	Carbon	3	2AB	XS					X												
Rock Creek	Carbon	4	2AB	X					XS												
Onemile Creek	Carbon	2	2AB	X					X												
Threemile Creek	Carbon	2	2AB	X	X																
Dutton Creek	Carbon	3	2AB	X																	
Cooper Creek	Albany	3	2AB	X																	
Fourmile Creek	Albany	1	2AB	X																	
Sevenmile Creek	Albany	1	2AB	X																	
Little Laramie River	Albany	1	2AB		X																
Browns Creek	Albany	1	2AB	X	X																
Laramie River	Albany	1	2AB		X				XS												
Dale Creek	Albany	1	2AB	X																	
Lone Tree Creek	Albany	1	2AB	X																	
Colorado																					
South Platte River	Logan	1	WW2												X	X					
Chief Creek	Yuma	1	CW1		X						X			X	X		X		X		

Table 3.7-4 Game Fish Occurrence and Fishery Classifications for Waterbodies Crossed by the Project

Waterbody		Number of Crossings	Fishery Classification[1]	Brook Trout	Brown Trout	Cutthroat Trout (Snake River)	Kokanee Salmon	Walleye	Rainbow Trout	Smallmouth bass	Largemouth Bass	White Crappie	Black Crappie	Bluegill	Sunfish Species	Channel Catfish	Flathead Catfish	Black Bullhead	Yellow Bullhead	White bass	Freshwater drum
North Fork Republican River	Yuma		CW1		X				X						X				X		
Aikaree River	Yuma[4]	1	WW1												X						
Kansas	**County**																				
South Fork Republican River	Cheyenne		S											X	X	X	X	X			
Beaver Creek	Rawlins [1]	1	E							X	X				X						
Saline River	Graham	3	E								X				X	X	X	X	X		X
Plum Creek	Trego	1	E									X			X	X	X				
Big Creek	Trego	1	E								X	X			X	X	X	X			
Smokey Hill River	Ellis	1	E								X	X	X	X	X	X	X	X	X	X	X
Plum Creek	Rice	6	E								X	X			X	X					
Cow Creek	Rice	1	E								X	X			X	X					
Little Arkansas River	Rice	1	E								X	X			X	X	X				

X

X

[1]Fishery classifications:

Wyoming Class 1 (Outstanding Waters); Class 2 (Fisheries and Drinking Waters); AB = support game fish.

Colorado - CW (Coldwater) and WW (Warmwater) Class 1 or 2. Class 1 defined as waters currently capable of sustaining a wide variety of coldwater or warmwater biota including special status species, or could support species if water quality conditions were corrected. Class 2 defined as waters that are not capable of sustaining a wide variety of coldwater or warmwater biota including special status species due to physical, habitat, water flows or levels, or uncorrectable water quality conditions.

Kansas – S = special aquatic life use; E = expected aquatic life use.

[2]"S" denotes stocked species by WGFD.

Sources of fish occurrence: WGFD 2005b, 2006; Keith 2006; Snigg 2006; CDOW 2006; Swigle 2006a,b; Scoyoc 2006; KDWP 2006.

Table 3.7-5 Game Fish Spawning Periods and Habitat

Species or Group	J	F	M	A	M	J	J	A	S	O	N	D	Spawning Habitat[2]
	Months[1]												
Brook trout									■	■			Stream spawners that use gravel substrates and spring upwelling areas.
Brown trout									■	■			Stream spawners that use tributary streams with gravel substrates in riffle-run areas.
Cutthroat trout				■	■								Stream spawners that use tributary streams with gravel substrates in riffle areas.
Rainbow trout			■	■	■								Stream spawners that use gravel substrates at head of riffle or downstream portion of pool.
Kokanee salmon									■	■	■		Generally select gravel beds in tributary streams or shorelines in lakes/reservoirs.
Walleye				■	■								Spawn in lakes and streams in shallow water over rock substrates.
Bullheads (Black and Yellow)						■	■						Usually spawn in weedy or muddy shallow areas by building nests.
Channel catfish					■	■	■						Prefers areas with structure such as rock ledges, undercut banks, logs, or other structure where it builds nests.
Flathead Catfish					■	■							Nest builders with habitat similar to channel catfish.
Freshwater drum					■	■							Buoyant eggs drift in river currents during development.
Largemouth bass					■	■	■						Shallow areas over clean gravel and sand bottoms.
Smallmouth bass				■	■	■	■						Builds nests in shallow areas over boulder, cobble, or gravel substrates.
Crappies					■	■							Eggs deposited in depressions on bottom in cove or embayments.
Sunfishes					■	■	■	■					Nest builders in diverse substrates and shallow depths.
White bass				■	■	■							Egg masses deposited over sand bars, submerged vegetation, or other instream debris.

[1]Spawning periods are approximate and could occur in only a portion of a particular month.

[2]Sources: Baxter and Simon 1970; Eddy and Underhill 1974; Hickman and Raleigh 1982; Raleigh et al. 1984; Raleigh et al. 1986; and Raleigh 1982.

Amphibians and Turtles. Species that potentially occur in the proposed pipeline route include tiger salamander, plains spadefoot toad, Great Basin spadefoot toad, boreal toad, Woodhouse's toad, bullfrog, northern leopard frog, western spiny softshell, ornate box turtle, western painted turtle, and snapping turtle (Cerovski et al. 2004). All of these species potentially use flooded areas, wetlands, streams, and playas/ponds in the spring and early summer for breeding. Most of the frog and turtle species are associated with aquatic habitats throughout the year. Aquatic habitats in the portion of the state crossed by the proposed pipeline route usually support four or five amphibian species (Merrill et al. 1996). The highest number of species usually occurs in aquatic habitats near Laramie (up to seven species).

Colorado

Fish. The Colorado portion of the proposed pipeline route would cross 10 perennial streams in Colorado, of which four support game fish populations (South Platte River, Chief Creek, North Fork Republican River, and the Aikaree River). The North Fork Republican River and Chief Creek are classified as coldwater fisheries as indicated by the presence of one or two trout species (**Table 3.7-4**). One or two warmwater species also occur in these two streams. The other perennial streams are considered warmwater fisheries with just one or two game species (green sunfish, black bullhead, or yellow bullhead). Five additional streams (Lone Tree Creek, South Pawnee Creek, North Sterling Creek, South Platte Ditch, and Sand Hill Creek) also are classified as warmwater nongame fisheries. Three of these streams (Chief Creek, North Fork Republican River, and Aikaree River) are considered Class 1 waters, defined as waters currently capable of sustaining a wide variety of coldwater or warmwater biota including special status species, or waters capable of supporting species if water quality conditions were corrected. Seven relatively small unnamed playas/ponds also would be crossed by the proposed pipeline route. Game fish species are not known to occur in these sites.

Whirling disease is widespread throughout Colorado drainages. Of the streams that would be crossed by the proposed pipeline route in Colorado, Chief Creek and the North Fork of the Republican River are the only waterbodies with no detection of whirling disease (Walker 2006).

Amphibians and Turtles. Aquatic habitats in the Colorado portion of the project study area could support tiger salamander, Great Plains toad, plains spadefoot, Woodhouse's toad, western chorus frog, bullfrog, plains leopard frog, northern leopard frog, and northern cricket frog (Livo et al. 2000). Turtle species could include the same species listed for Wyoming plus yellow mud turtle. The types of habitats and breeding periods are described in the Wyoming section.

<u>Kansas</u>

Fish. The proposed pipeline route would cross 17 perennial streams in Kansas, nine of which contain game fish species (**Table 3.7-4**). All of these streams are considered warmwater fisheries, with the number of game fish species ranging from 2 to 10 species. The most diverse game fish community occurs in Smokey Hill River and the Saline River, with 10 and 7 species, respectively. The major fish groups represented in these streams include sunfishes (bluegill, green sunfish, largemouth bass, and white crappie), catfishes (black bullhead, channel catfish, and flathead catfish), and drums (freshwater drum). One waterbody (South Fork Republican River) has been classified as "special aquatic life use water" by the KDHE, which is known to contain habitat or indigenous biota not commonly found in Kansas or representative populations of threatened and endangered species. Species associated with this stream are discussed in Section 3.7.1.3. The other streams are classified as "expected aquatic life use." One unnamed playa also would be crossed by the pipeline route, but it is not known to contain game fish species.

Disease or nuisance organism concerns in Kansas are limited to the presence of zebra mussels. Whirling disease is not known to occur in the state (Johnson 2006).

Amphibians and Turtles. In Kansas, wetlands, ditches, streams, and playas crossed by the proposed pipeline route also could contain amphibians and turtles. Potential amphibian species include Great Plains toad, Woodhouse's toad, northern cricket frog, spotted chorus frog, boreal chorus frog, Great Plains narrowmouth toad, plains leopard frog, bullfrog, and plains spadefoot (Taggert 2006). The same turtle species listed for Colorado plus northern painted turtle, eastern box turtle, slider, and smooth softshell.

3.7.1.3 Special Status Species

Special status species are those species for which state or federal agencies afford an additional level of protection by law, regulation, or policy. Included in this category are federally listed and federally proposed species that are protected under the ESA or are considered as candidates for such listing by the USFWS, and those species that are state-listed as threatened or endangered.

Also included in this category are species with designated categories that the BLM, USFS, Wyoming, Colorado, and Kansas have determined to be rare or vulnerable. The BLM and USFS designate these species as "sensitive." Colorado designates these species as "species of concern," Kansas as "species in need of conservation," and Wyoming as "critically imperiled" (NSS1) or "imperiled" (NSS2).

In accordance with Section 7 of the ESA, the BLM as the lead federal agency in consultation with the USFWS, would ensure that any action authorized, funded, or carried out by the applicant does not jeopardize the existence of a federally listed threatened or endangered species, or result in the adverse modification of the designated Critical Habitat of a federally listed species. In addition, as stated in Special Status Species Management Policy 6840 (Policy 6840) (Rel. 6-121), it is BLM policy "to conserve listed species and the ecosystems on which they depend, and to ensure that actions requiring authorization or approval by the BLM are consistent with the conservation needs of special status species and do not contribute to the need to list any special status species, either under the provisions of the ESA, or other provisions" identified in Policy 6840.

A total of 150 special status species were identified as potentially occurring within the project area (USFWS 2005; BLM 2002a, 2006a,b; WDGF 2005c,d; WYNDD 2005; KDWP 2005; CDOW 2006). These species, their associated habitats, and their potential for occurrence along the proposed pipeline route are summarized in **Appendix G**, **Table G-1**. Occurrence potential along the proposed pipeline route was evaluated for each species based on its habitat requirements and/or known distribution. Under this analysis 96 special status species were identified as occurring within the immediate vicinity of the proposed pipeline route. These species and their potential for occurrence along the proposed pipeline route are summarized in **Appendix G**, **Table G-2**. A detailed description of these species is located in the BA and in the BR/BE.

Wildlife

Wyoming. Within the Wyoming portion of the proposed pipeline route, six federally listed endangered, threatened, or candidate bird species and two mammal species have been retained for detailed analysis. An additional 24 special status birds, 12 mammals, and 5 reptiles have been retained for detailed analysis. These species are discussed in detail in the BA and in the BR/BE. Approximately 189 miles of sage grouse habitat would be crossed in Wyoming, 48.9 miles of which would be new greenfield ROW construction.

Colorado. Within Colorado, four federally listed endangered, threatened, or candidate bird species and two mammal species have been retained for detailed analysis. One additional bird species listed as threatened by the state of Colorado has been retained. Seventeen special status birds, 10 mammals, and 6 reptiles have been retained for detailed analysis. These species are discussed in detail in the BA and in the BR/BE.

Kansas. Within Kansas, four federally listed endangered, threatened, or candidate bird species and one mammal species have been retained for detailed analysis. Two bird and one mammal species listed as threatened or endangered by the state of Kansas have been retained. An additional 12 special status birds, 4 mammals, and 4 reptiles have been retained for detailed analysis. These species are discussed in detail in the BA and in the BR/BE.

Aquatic Resources

Wyoming. No federal-listed fish species occur at or within several miles downstream of waterbodies crossed by the proposed pipeline route in Wyoming. However, downstream portions of the Green River contain occupied and critical habitat for four federally listed fish species: Colorado pikeminnow, razorback sucker, humpback chub, and bonytail. The upper end of the critical habitat reach for all four species is the confluence between the Green and Yampa rivers. The distance from the proposed Green River pipeline crossing to the confluence with the Yampa River is approximately 75 miles. The Green River downstream of the Yampa River is known to support larvae, juvenile, and adult Colorado pikeminnow and razorback sucker. The occurrence of humpback chub and bonytail is limited to a few individuals in canyon areas (Desolation and Gray Canyons), which are located further downstream of the Yampa River confluence.

The Wyoming portion of the proposed pipeline route also crosses waterbodies that contain habitat for four fish species with Wyoming or BLM sensitive species status. Known or potential occurrence is listed below for each special status fish species. No USFS sensitive or MIS occur in the Green River portion of the Ashley National Forest.

- Flannelmouth sucker – Hams Fork River, Blacks Fork River, Green River, Bitter Creek;
- Bluehead sucker – Hams Fork River, Blacks Fork River, Green River;
- Leatherside chub – Green River; and
- Roundtail chub – Hams Fork Creek, Blacks Fork River, Green River, Bitter Creek.

Colorado. No federal-listed fish species occur at or within several miles downstream of waterbodies crossed by the proposed pipeline route in Colorado. However, downstream portions of the Platte River contain occupied and critical habitat for one federally listed fish species, the pallid sturgeon. This species has been collected in the Lower Platte River, defined as downstream of the mouth of the Elkhorn River. The upper end of occupied habitat for the pallid sturgeon is more than 350 miles downstream of the South Platte River crossing.

Three state-listed and two species of special concern fish species potentially occur in waterbodies crossed by the proposed pipeline route in Colorado, as listed below.

<u>Colorado Listed Species</u>

- Brassy minnow – South Platte, North Fork Republican, and Aikaree rivers;
- Suckermouth minnow – South Platte River, Aikaree River; and
- Plains minnow – South Platte and Republican rivers.

<u>Colorado Species of Special Concern</u>

- Orangethroat darter – Known occurrence in Chief Creek and North Fork Republican River; and
- Stonecat – Potential occurrence in North Fork Republican River.

Kansas. No federal or state-listed fish species occur at or within several miles downstream of waterbodies crossed by the proposed pipeline route in Kansas. One special status fish species, brassy minnow, potentially occurs in the headwaters of the Smokey Hill and Republican rivers, including the South Fork Republican River.

Amphibians and Turtles. Seven amphibians and one turtle species were identified as potentially occurring within the project study area. The amphibians included three toad species (Wyoming toad, Great Basin spadefoot toad, and Western boreal toad) and four frog species (spotted frog, northern leopard frog, northern cricket frog, and plains leopard frog). The special status turtle species is the yellow mud turtle. The special status of species retained for detailed analysis and potential occurrence by state are provided in **Table 3.7-7**. Toad species, such as Great Basin spadefoot, utilize aquatic habitats only during the breeding period and early-life development in the spring and early summer and during development of young. Other toad species are more closely associated with aquatic habitats throughout their life cycle, although adults also utilize terrestrial habitats. Toad species migrate to aquatic areas during breeding. The frog and turtle species utilize aquatic habitats throughout the year. The following discussion describes amphibian and turtle occurrence by state.

Wyoming. Within the Wyoming portion of the proposed pipeline route, five special status amphibians could utilize or occur in aquatic habitats. The relative occurrence potential and locations are listed below, based on information from Cerovski et al. (2004):

- Wyoming toad – Low potential occurrence in the Laramie River drainage;
- Great Basin spadefoot toad – High potential occurrence in sagebrush communities and aquatic habitats during breeding below 6,000 feet in the western and central portion of the proposed pipeline route;

- Spotted frog – Low occurrence in ponds or small streams in the western portion of the proposed pipeline route;
- Boreal toad – Moderate potential occurrence in wet areas at 11 segments (totaling approximately 5.3 miles) between RP 223.8 and RP 308.2 (elevations above approximately 7,500 feet); and
- Northern leopard frog – High potential occurrence in wetlands, ponds, and streams up to elevations of 9,000 feet.

Colorado. Four special status amphibians and one turtle species potentially occur within the Colorado portion of the proposed pipeline route. The relative occurrence potential and locations are listed below, based on information from Livo et al. (2000):

- Northern leopard frog – Low potential occurrence in wetlands, ponds, and streams in Weld, Yuma, Washington, and Morgan counties;
- Plains leopard frog – Low potential occurrence in wetlands, ponds, or streams in Yuma County;
- Northern cricket frog – Low potential occurrence in streams and impoundments in Yuma and Morgan counties; and
- Yellow mud turtle – Moderate potential occurrence wetlands and ponds in Yuma County.

Kansas. No special status amphibians or turtle species occur along the Kansas portion of the proposed pipeline route.

Plants

No unique, sensitive or protected vegetation communities were identified within the project area in Wyoming or Kansas. A complete description of special status plant species, including habitat associations and potential for occurrence along the proposed pipeline route may be found in **Appendix G**, **Tables G-1** and **G-2** and in the BA and in the BR/BE associated with this project.

3.7.2 Southern Energy Corridor – Copper Ridge Bypass Alternative

3.7.2.1 Wildlife

Habitat along the Southern Energy Corridor – Copper Ridge Bypass Alternative has a similar composition to habitat along the Proposed Action route. Big game, small game, and non-game species occurrence along the alternative route would be similar to the Proposed Action. This alternative does cross habitat with more significant vertical relief, therefore, cliff associated species may have greater potential to occur along this alternative. Species documented in the vicinity of the Southern Energy Corridor – Copper Ridge Bypass Alternative include white-tailed prairie dog, brewer’s sparrow, sage sparrow, and sage thrasher. The proposed Southern Energy Corridor – Copper Ridge Bypass Alternative would not occur within lands administered by the USFS, therefore, MIS species are not considered under this alternative.

3.7.2.2 Aquatic Resources

Three perennial streams are crossed by the Southern Energy Corridor – Copper Ridge Bypass Alternative: Little Bitter Creek; unnamed tributary to Little Bitter Creek; and Cedar Creek (two crossings). No game fish species occur in any of these streams.

Perennial streams and wetlands crossed by the Southern Energy Corridor – Copper Ridge Bypass Alternative provide potential habitat for amphibians and turtles. Species that could be present include tiger salamander, plains spadefoot toad, Great Basin spadefoot toad, Woodhouse’s toad, bullfrog, spiny softshell, ornate box turtle, western painted turtle, and snapping turtle (Cerovski et al. 2004).

3.7.2.3 Special Status Species

Perennial streams crossed by the Southern Energy Corridor – Copper Ridge Bypass Alternative do not contain special status fish species. Wildlife special status species occurrence is similar to the Proposed Action, including sage sparrow, sage thrasher, Brewer's sparrow, and northern leopard frog. White-tailed prairie dog may occur in the vicinity of this alternative. Two special status amphibians species, Great Basin spadefoot toad and spotted frog, could potentially occur in wetlands or stream segments crossed by the Southern Energy Corridor – Copper Ridge Bypass Alternative. Examples of special status species with sagebrush steppe and desert scrub association may include greater sage grouse, burrowing owl, mountain plover, ferruginous hawk, sage sparrow, sage thrasher, Brewer's sparrow, loggerhead shrike, Idaho pocket gopher, swift fox, pygmy rabbit, Great Basin spadefoot toad, and midget faded rattlesnake along this alternative. Special status plant species would be similar to those along the Proposed Action route.

3.8 Land Use, Recreation, and Aesthetics

3.8.1 Proposed Action

3.8.1.1 Land Ownership and Use

Land Ownership

Approximately 21 percent (160 miles) of the land crossed by the proposed pipeline route and aboveground facilities is managed or owned by public entities. Of the public land total, the majority is federally managed, while a smaller portion is managed or owned by the states or local municipalities. The federal lands are entirely managed by the BLM or the USFS. The remaining 79 percent (597 miles) of the proposed pipeline route would cross privately owned land. **Table 3.8-1** summarizes public land ownerships that would be crossed by the proposed pipeline route.

Table 3.8-1 Summary of Federal, State, and Locally Owned Land Crossed by the Proposed Pipeline Route

State/Ownership	Approximate Crossing Length (miles)	Percent of Total Length
WYOMING		
Federal	100.8	13
State/Local	25.3	3
Wyoming Subtotal	**126.1**	**17**
COLORADO		
Federal	22.4	3
State/Local	11.7	2
Colorado Subtotal	**34.1**	**4**
Project Total	**160.2**	**21**

Wyoming. Federal lands crossed in Wyoming are managed by the BLM and USFS. State lands that would be crossed in Wyoming are owned or managed by the State of Wyoming (including the Wyoming Highway Commission and the Wyoming Department of Corrections), the WGFD or the Wyoming Office of State Lands. Local government owners/managers consist of municipalities. Public land in Wyoming that would be crossed by the proposed pipeline route generally is managed for wildlife habitat, recreational uses, or leased to private tenants for livestock grazing. One federally managed recreation area would be crossed, the FGNRA, which is under the direction of the USFS.

Colorado. Federal lands crossed in Colorado are managed by the USFS. State lands in Colorado crossed by the proposed pipeline route are owned or managed by the CDOW or the Colorado State Land Board. A total of 34.1 publicly managed miles would be crossed in Colorado. Land owned by the State of Colorado that would be crossed by the proposed pipeline route is managed for wildlife habitat, recreational uses, or leased to private tenants for livestock grazing. A portion of the lands are special interest areas and are discussed in Section 3.7.3.

Kansas. No publicly owned lands are crossed by the proposed pipeline in Kansas.

Existing Land Use

Land types potentially affected by the project were assigned a land use classification based on the principal land characteristic in a given area. Aerial photography, USGS topographic maps, and field reconnaissance were used to identify six general land uses for the project area. These land uses are:

- Rangeland consisting of grasslands, pasture, livestock (e.g., sheep, cattle) grazing areas, and shrublands. Within the proposed pipeline route area, rangeland is typically used for livestock grazing. Grazing is permitted in specific allotments that are primarily managed by the BLM, although some rangeland also is owned or managed by the USFS, State of Wyoming, the State of Colorado, or private landowners. This is the predominant land use type that would be crossed by the proposed pipeline route (514.4 miles; 68 percent).
- Agricultural land consisting of irrigated hay meadows and farmlands where native vegetation is no longer evident, and crop production is apparent. Primary crops are grains and alfalfa, with some crop land dry-farmed and other areas under irrigation, including pivot irrigation (13.5 miles total). Agricultural land may have existing subsurface drainage systems (drain tiles) where hydric soils exist. The proposed pipeline route will affect approximately 72 acres (approximately 1 percent of total area) of hydric soils. Conservation Reserve Program (CRP) lands and disturbed areas containing non-desirable forb species adjacent to agricultural areas also are included in this land use classification. The proposed pipeline route would cross a total of 235.1 miles of agricultural land, or 31 percent of the total proposed pipeline route.
- Open land consists of bare rock, sand, clay, dry wash areas, and non-forested wetlands (2.9 miles; less than 1 percent).
- Forest land consists of mainly non-agricultural wooded uplands such as aspen woodlands, juniper woodlands, pine woodlands, and planted trees. Additionally, palustrine forested wetlands are grouped under this land use classification. The total forest land crossed by the proposed pipeline route is 9.2 miles, or approximately 1 percent of the total proposed pipeline route. None of the forest land is managed for timber production.
- Developed land includes both residential and commercial land. Residential land consists of existing developed residential areas that include single and multiple family dwellings in subdivisions as well as in rural areas. This category includes homes and landscaped areas associated with a residence. Commercial land consists of community features (cemeteries, schools, churches, hospitals) and industrial developments (utility stations, rock quarries, railroad crossings, road crossings). The total developed land crossed by the proposed pipeline route would be 2.8 miles (less than 1 percent).
- **Table 3.8-2** identifies the number of structures located within 50 feet of the construction work area for the proposed pipeline route by county and state. Approximately 83 percent of the pipeline would be co-located with existing pipeline, utility or road ROWs.
- Open water consists of waterbody crossings 100 feet or greater in width. The proposed pipeline route would cross 0.3 mile of open water.

Table 3.8-2 Structures Within 50 feet of the Construction Work Area for the Proposed Action

State	Number of Structures Within 50 feet of the Construction Work Area
Wyoming	
Lincoln	2
Sweetwater	2
Carbon	3
Albany	2
Wyoming Subtotal	***9***
Colorado	
Weld	2
Logan	3
Washington	3
Yuma	4
Colorado Subtotal	***12***

Table 3.8-2 Structures Within 50 feet of the Construction Work Area for the Proposed Action

State	Number of Structures Within 50 feet of the Construction Work Area
Kansas	
Cheyenne	2
Rawlins	1
Sheridan	4
Gove	1
Trego	2
Ellis	2
Barton	4
Rice	3
Kansas Subtotal	***19***
PROJECT TOTAL	**40**

Wyoming. Each specific land use type located in the project area in Wyoming is identified and discussed in detail below and shown on **Table 3.8-3**.

- Rangeland – In Wyoming, 96.9 miles of federally owned rangeland and 212.9 miles of privately held rangeland is crossed by the proposed pipeline route. More than 50 percent of this land is in Sweetwater County in the southcentral portion of Wyoming. Rangeland consists of grasslands, pasture, shrublands, and livestock grazing areas. The proposed pipeline route crosses several tracts of land that are owned and administered by the Board of Land Commissioners and BLM for grazing.
- Agricultural land – Wyoming agricultural land is characterized by irrigated hay meadows and farmlands where native vegetation is no longer evident and crop production is apparent. Major agricultural crops include spring wheat, barley, oats, dry beans, sugar beets, alfalfa hay, and corn (Wyoming Agricultural Statistics 2006). No pivot irrigated crop land is crossed by the proposed pipeline route in Wyoming. The majority of hydric soils crossed by the proposed pipeline route are in Wyoming (5.4 miles), with 3.3 miles in Albany County. Few, if any drain tiles are anticipated on the proposed pipeline route.
- Open land – Approximately 2.8 miles of open land crossed in Wyoming comprises all of the open land crossed by the proposed pipeline route. A little over 54 percent of the open land crossed by the proposed pipeline route is in Sweetwater County (1.5 miles). The remainder of open lands crossed occur in Lincoln County (0.8 mile), with small sections scattered throughout Carbon, Albany, and Laramie counties (less than 1 mile combined).
- Forest land – In Wyoming, forest land makes up a relatively small percentage of the state. This cover type primarily occurs at high elevations in the southeastern part of the state area and includes aspen, juniper, limber pine, lodgepole pine, and spruce-fir. Some scattered patches of ponderosa pine exist between Laramie and Cheyenne, and cottonwood riparian communities occur at the major river crossings. A total of 5.7 miles of forest land in Albany, Carbon, Sweetwater, and Laramie counties would be crossed by the proposed pipeline route.
- Developed land – In Wyoming, the proposed pipeline route crosses approximately 1 mile of developed land. No occupied residences within 50 feet of the ROW were identified along the proposed pipeline route. The developed land includes major road crossings, county road crossings, and railroad crossings. The majority of railroad lines crossed are owned by Union Pacific, though several other trains have rights to use these proposed pipeline routes. Generally, the pipeline corridor through Wyoming would run parallel to I-80.

Table 3.8-3 Summary of Land Use Types Crossed by the Proposed Pipeline Route (in miles)

	Rangeland[1]		Agricultural[2]		Open[3]		Forest[4]		Developed[5]		Water[6]		Total[7]	
State/County	**Federal**	**Other**	**Federal**	**Other**	**Federal**	**Other**	**Federal**	**Other**	**Federal**	**Other**	**Federal**	**Other**	**Federal**	**Other**
Wyoming														
Lincoln	10.1	10.7	0.0	0.4	0.4	0.4	0.0	0.0	0.0	0.1	0.0	<0.1	10.5	11.7
Sweetwater	55.5	78.3	0.0	0.0	1.1	0.4	2.1	2.4	0.2	0.1	<0.1	<0.1	58.9	81.3
Carbon	29.1	59.3	0.0	1.9	0.2	0.1	0.0	0.6	<0.1	0.3	0.0	0.1	29.3	62.1
Albany	2.1	45.3	0.0	4.7	0.0	0.2	0.0	0.4	0.0	0.3	0.0	<0.1	2.1	50.8
Laramie	0.0	19.4	0.0	0.6	0.0	0.1	0.0	0.3	0.0	<0.1	0.0	0.0	0.0	20.4
Subtotal[7]	**96.9**	**212.9**	**0.0**	**7.6**	**1.6**	**1.2**	**2.1**	**3.6**	**0.2**	**0.8**	**<0.1**	**0.2**	**100.8**	**226.4**
Colorado														
Larimer	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Weld	22.3	50.5	<0.1	7.7	0.0	0.0	0.0	<0.1	<0.1	0.2	0.0	0.0	22.4	58.4
Morgan	0.0	6.8	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.4
Logan	0.0	6.5	0.0	2.8	0.0	<0.1	0.0	0.4	0.0	0.1	0.0	0.1	0.0	9.9
Washington	0.0	13.4	0.0	15.6	0.0	0.0	0.0	<0.1	0.0	0.1	0.0	0.0	0.0	29.1
Yuma	0.0	26.1	0.0	17.9	0.0	0.0	0.0	0.2	0.0	0.3	0.0	<0.1	0.0	44.6
Subtotal[7]	**22.3**	**103.2**	**<0.1**	**44.7**	**0.0**	**<0.1**	**0.0**	**0.6**	**<0.1**	**0.7**	**0.0**	**0.1**	**22.4**	**149.4**
Kansas														
Cheyenne	0.0	16.4	0.0	22.0	0.0	0.0	0.0	0.1	0.0	<0.1	0.0	0.0	0.0	38.5
Rawlins	0.0	5.6	0.0	13.5	0.0	0.0	0.0	<0.1	0.0	<0.1	0.0	0.0	0.0	19.2
Thomas	0.0	3.5	0.0	21.0	0.0	0.0	0.0	<0.1	0.0	<0.1	0.0	0.0	0.0	24.6
Sheridan	0.0	10.2	0.0	24.3	0.0	0.0	0.0	0.2	0.0	0.2	0.0	0.0	0.0	35.0
Gove	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	1.1
Trego	0.0	14.6	0.0	20.8	0.0	0.0	0.0	0.2	0.0	0.2	0.0	0.0	0.0	35.8
Ellis	0.0	13.1	0.0	19.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	<0.1	0.0	32.3
Russell	0.0	2.0	0.0	3.2	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	5.2
Barton	0.0	5.6	0.0	22.1	0.0	0.0	0.0	0.3	0.0	<0.1	0.0	0.0	0.0	28.0
Ellsworth	0.0	1.0	0.0	6.2	0.0	0.0	0.0	0.7	0.0	<0.1	0.0	0.0	0.0	7.9

Table 3.8-3 Summary of Land Use Types Crossed by the Proposed Pipeline Route (in miles)

	Rangeland[1]		Agricultural[2]		Open[3]		Forest[4]		Developed[5]		Water[6]		Total[7]	
State/County	**Federal**	**Other**	**Federal**	**Other**	**Federal**	**Other**	**Federal**	**Other**	**Federal**	**Other**	**Federal**	**Other**	**Federal**	**Other**
Rice	0.0	1.0	0.0	25.4	0.0	0.0	0.0	1.0	0.0	0.5	0.0	0.0	0.0	27.9
McPherson	0.0	0.1	0.0	5.1	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	5.4
Subtotal[7]	**0.0**	**74.1**	**0.0**	**182.8**	**0.0**	**0.0**	**0.0**	**2.9**	**0.0**	**1.1**	**0.0**	**0.0**	**0.0**	**260.9**
Project Total[g]	119.2	390.3	<0.1	235.1	1.6	1.3	2.1	7.1	0.3	2.6	<0.1	0.3	123.2	636.7

[1]Rangeland consists of grasslands, pasture, livestock grazing areas, and shrublands.

[2]Agricultural land consists of irrigated farmlands where crop production is apparent and disturbed areas containing non-desirable forb species adjacent to agricultural areas.

[3]Open land consists of bare rock, sand, clay, dry wash areas, and non-forested wetlands.

[4]Forest land consists mainly of non-agricultural wooded uplands.

[5]Developed land consists of existing residential developments and existing commercial development such as utility stations, rock quarries, railroad crossings, and road crossings.

[6]Open water consists of waterbody crossings 100 feet or greater in width.

[7]The numbers in this table have been rounded for presentation purposes. As a result, the totals may not reflect the exact sum of the addends in all cases.

- Two commercial structures in Lincoln County would be located within 25 feet of the proposed pipeline centerline and another structure would be located within 50 feet of the centerline. In Sweetwater County, the proposed pipeline route would pass within 50 feet of two commercial structures, and Albany and Carbon counties would have two and three commercial structures, respectively, within 50 feet of the proposed pipeline route (**Table 3.8-2**). The proposed pipeline route would be co-located with existing ROW for approximately 260 miles (78 percent of the total) through Wyoming.

Colorado. Each specific land use type located in the project area in Colorado is identified and discussed in detail below and shown on **Table 3.8-3**.

- Rangeland – In Colorado, the proposed pipeline route would cross approximately 125.5 miles of rangeland. The majority of this rangeland (72.8 miles) is located in Weld County, and of this, 22.3 miles are federally owned land. Several tracts of land are owned and administered by the BLM or owned by the Colorado State Land Board and administered by the CDOW for grazing, primarily for sheep and cattle.
- Agricultural land – In Colorado, agricultural land is characterized by irrigated hay meadows and farmlands where native vegetation is no longer evident and crop production is apparent. Major crops include grains and alfalfa. Approximately 44.8 miles of agricultural land would be crossed in Colorado by the proposed pipeline route. The greatest number of miles would occur in Yuma County (17.9 miles) and Washington County (15.6 miles). Of the total agricultural land crossed by the proposed pipeline route in Colorado, approximately 5.3 miles would cross pivot-irrigated crop land, all located in Yuma County. A total of 1.1 miles with hydric soils (with possible drain tiles) would be crossed in Colorado.
- Open land – No open land would be crossed by the proposed pipeline route through Colorado.
- Forest land – Of the approximately 172 miles of land crossed in Colorado, only 0.6 mile would be through forest land. These lands are not federally owned or managed.
- Developed land – In Colorado, the proposed pipeline route would cross less than 1 mile of developed land. No occupied residences have been located along the proposed pipeline route within 50 feet of the ROW in Colorado. Two commercial structures within 50 feet of the centerline were identified in Weld County, three structures were identified in both Logan and Washington counties, with another four structures identified within 50 feet in Yuma County (**Table 3.8-2**). Within Colorado, major roadways, county roads, and railroad lines would be crossed. Approximately 88 percent (152 miles) of the miles across Colorado would be co-located with other ROWs. Of these, 146 miles are co-located with Southern Star. Remaining miles are co-located with other utilities and CR 84.

Kansas. Each specific land use type located in the project area in Kansas is identified and discussed in detail below and shown on **Table 3.8-3**.

- Rangeland – No public grazing leases would be crossed in Kansas, however, 74.1 miles of privately held rangeland would be crossed by the proposed pipeline route. More than half of this land area is split between Cheyenne, Trego, Ellis, and Sheridan counties.
- Agricultural land – In Kansas, agricultural land is characterized by irrigated hay meadows and farmlands where native vegetation is no longer evident and crop production is apparent. Major crops include grains and alfalfa. A total of 182.8 miles of the 260.9 miles (70 percent) of pipeline in Kansas would cross agricultural land, including approximately 12 miles of pivot-irrigated crop land. In Cheyenne County, 2.9 miles of pivot-irrigated crop land would be crossed, while 1.8 miles would be crossed in Rawlins County, 4.7 miles would be crossed in Thomas County, and 2.6 miles would be crossed in Sheridan County. One and one-half miles with hydric soil (with possible drain tiles) would be located along the proposed pipeline route in Kansas.
- Open land – No open land would be crossed by the proposed pipeline route through Kansas.

- Forest land – The proposed pipeline route would cross through 2.9 miles of forested land in Kansas, spread across nearly all counties, with the highest number of miles (1.0 mile) occurring in Rice County.
- Developed land – The proposed pipeline route would cross a total of 1.1 miles of developed land in Kansas. No occupied residences would be within 50 feet of the proposed construction area. A total of 19 structures (ranging from farm buildings to sheds, to utility yards) were identified within 50 feet of the construction area in Cheyenne, Rawlins, Sheridan, Gove, Trego, Ellis, Barto, and Rice counties. Within Kansas, major roadways, county roads, and railroad lines would be crossed. A total of 212 of 261.4 miles (83 percent) of Overland Pass pipeline would be co-located with existing ROWs.

3.8.1.2 Congressional Designations and Special Management Areas

Conservation Reserve Program (CRP) Land

Established in 1985 by the Congress, the Farm Service Agency's (FSA) CRP is a voluntary program for agricultural landowners. Through CRP, participants can receive annual rental payments for 10 to 15 years and cost-share assistance to establish long-term, resource conserving covers on eligible farmland. Participating lands exhibit reduced soil erosion, improved water quality, and enhanced wildlife habitats. Nationally, CRP has 735,494 contracts and has restored grasses and trees on over 36 million acres (FSA 2006). Lands must meet the following criteria in order for lands to be eligible for the CRP:

- Cropland that has been planted or considered planted to an agricultural commodity 4 of the 6 years 1996 though 2001;
- Physically and legally capable of being planted in a normal manner to an agricultural commodity;
- Marginal pasture land;
- Have a weighted average Erosion Index of 8 or greater;
- Be expiring CRP; or
- Be located in a national or state CRP conservation priority area.

In consultation with local offices of the NRCS and FSA in Wyoming, Colorado, and Kansas, Overland Pass identified lands classified as CRP within a 1-mile radius of the proposed pipeline route (NRG 2006). No CRP land was identified in Wyoming. The NRCS and FSA identified approximately 3.5 miles and 8.3 miles of CRP lands crossed in Colorado and Kansas, respectively. **Table 3.8.4** identifies CRP lands crossed by the proposed pipeline route.

Table 3.8-4 Conservation Reserve Program Land Crossed by the Proposed Pipeline Route

State/ County	Miles
Colorado	
Morgan	1.4
Logan	0.7
Washington	0.2
Yuma	1.2
Colorado Subtotal	***3.5***
Kansas	
Cheyenne	2.4
Thomas	0.3
Sheridan	0.4
Trego	0.4
Sheridan	1.0

Table 3.8-4 Conservation Reserve Program Land Crossed by the Proposed Pipeline Route

State/ County	Miles
Ellis	1.2
Russell	1.0
Barton	0.5
Ellsworth	0.2
Rice	0.8
McPherson	0.1
Kansas Subtotal	***8.3***
Project Total	**11.8**

Recreational and Public Interest Areas

Generally, recreation and special interest areas include federal, state, or county parks and forests; conservation lands; wildlife habitat management areas; hunter management areas; natural landmarks; scenic byways; designated trails; recreational rivers; and campgrounds. Recreation and special interest areas were identified by reviewing USGS topographic maps; DeLorme Gazetteers for Wyoming, Colorado, and Kansas (DeLorme 2001, 2002, 2003); WGFD and CDOW interactive maps; BLM RMP maps of the proposed project area; landowner records; PNG management area maps; and field reconnaissance. Other historic or culturally significant areas crossed by the proposed pipeline route (e.g., Cherokee Trail, Lincoln Highway, Union Pacific Railroad) are discussed in Section 3.9.

No Wild and Scenic Rivers, Areas of Critical Environmental Concern (ACECs), Designated Wilderness, or Wilderness Study Areas would be crossed by the proposed action.

In addition to the federally managed lands, the proposed pipeline route traverses a total of four recreation and special interest areas. **Table 3.8-5** lists the location and land management agency responsible for each of these areas.

Table 3.8-5 Recreation and Special Interest Areas Affected by the Proposed Pipeline Route

State/County	RP	Name	Ownership
Wyoming			
Carbon	178.5	Continental Divide National Scenic Trail	USFS, BLM, National Park Service (NPS)
Albany	271.7	Snowy Range Scenic Drive	State of Wyoming
Colorado			
Weld	357.6	Pawnee Pioneer Trails Scenic Byway	State of Colorado
Kansas			
Trego	625.8	Smokey Valley Scenic Byway	State of Kansas

Wyoming. Approximately 1.8 miles of the proposed FGNRA, a federally managed recreation area, is crossed by the proposed pipeline route. The proposed pipeline route is proposed to cross the FGNRA at Cordwood and Davis Bottoms, near Green River, Wyoming.

The FGNRA is managed under the ANF LRMP. The ANF LRMP is intended to provide management direction for the many multiple uses of the national forest. Some of those multiple uses and resources include: outdoor recreation (i.e., four wheeling, kayaking/canoeing, and small game hunting), range, timber, watershed, fish and wildlife, minerals, wilderness, roadless areas, and cultural resources. During the winter, the area is mainly used for duck hunting and trapping. According to the ANF LRMP, the area crossed by the proposed pipeline route is allocated to the Northern Desert Management Area, Management Unit 5. The management unit encompasses land on both sides of the Green River. This area is managed to provide and encourage dispersed and river floating recreation activities.

The proposed pipeline route crosses the Continental Divide National Scenic Trail (CDT) at RP 178.5 in Carbon County, Wyoming. In November 1978, the Congressional Oversight Committee of the National Trails System designated the CDT as a National Scenic Trail. The CDT is a 3,100-mile-long trail, traveling from Canada to Mexico, through five western states, including approximately 1,900 miles of existing trails and primitive, seldom-used roads. A Comprehensive Plan for the CDT was completed in 1985 to serve as a coordinating document providing broad-based policy, guidelines, and standards for establishing and managing the CDT over time and in such a manner as to ensure its continued utility as a high quality national recreation facility. The plan also provides a continuous record of issues, concerns, and public attitudes identified as a result of public involvement regarding the development and management of the CDT in the early 1980s. In 1995, the Continental Divide Trail Alliance (CDTA), a non-profit organization, was developed to be devoted to the completion, maintenance, and protection of the CDT. In 1998, the CDTA set a goal to complete the CDT over the next 10 years. Allowable uses of the CDTA include hiking, mountain biking, horseback riding, and limited motor vehicle use. The BLM portion of the trail is 95 percent primitive two-track roads, 4 percent is improved roads, and 1 percent requires cross-country travel. Cross-country segments are closed to motorized vehicles.

The proposed pipeline route also crosses the Snowy Range Scenic Drive at RP 271.7 in Albany County, Wyoming. The Snowy Range Scenic Drive, which travels through the Medicine Bow National Forest, is closed during the winter, and is used primarily by tourists during the summer. This road snakes through southeastern Wyoming and was designated as the second National Forest Scenic Byway in the U.S. The Snowy Range Scenic Byway is a 41-mile-long paved highway from Centennial over the rugged crest of to the North Platte River Valley. The Snowy Range Scenic crosses the Snowy Range, a rugged segment of the Rocky Mountains chain that reaches well above timberline into a glacier-carved landscape, over the second highest highway pass in Wyoming.

The proposed pipeline route crosses the Salt Wells Wild Horse Herd Management Area within the Rock Springs BLM District between approximate RP 64.1 and RP 110.5.

Colorado. The proposed pipeline route crosses approximately 22.4 miles of lands in the PNG in Weld County, Colorado that are under the jurisdiction of the USFS. These lands are managed under the 1997 Revision of the LRMP for the Arapaho and Roosevelt National Forests and PNG.

Recreation uses within the PNG include scenic driving (on open roads only), cross-country hiking, horseback riding, mountain biking, off-highway vehicle (OHV) use (OHVs are restricted to the Main OHV area; their use is prohibited on the rest of the PNG), as well as camping, picnicking, bird watching, and hunting at established recreational sites. No designated trails are crossed by the proposed pipeline route within the PNG.

One specific area of interest is the Pawnee Pioneer Trails Scenic Byway, which the proposed pipeline route crosses at RP 357.6 in Weld County. The Pawnee Pioneer Trails Byway travels through the PNG and is used mostly by traffic along Colorado State Routes 40 and 52 and tourists. Bird-watching is one of the most popular attractions on the Pawnee Pioneer Trails Scenic Byway.

Kansas. No federally managed or recreational areas are crossed in Kansas. The proposed pipeline route crosses the Smokey Valley Scenic Byway at RP 625.8 in Trego County, Kansas. The Smokey Valley Scenic Byway travels around the Cedar Bluff State Park (which the Project will not affect), and is used primarily by traffic on State Route 283 and by tourists. The byway offers tourists viewing of native wildflowers and grasses through the seasons.

3.8.1.3 Aesthetics (Visual and Noise)

Existing Visual Environment

Private lands crossed by the proposed pipeline route are not subject to federal or state visual management standards. Visual resources on private lands are a function of geology, climate, and historical processes and are influenced by topographic relief, vegetation, water, wildlife, land use, human uses, and development. The primary land use on private lands crossed by the proposed pipeline route is rangeland. The topography varies along the proposed pipeline route from rolling hills in Wyoming and eastern Colorado to flat agricultural fields in Kansas. The proposed pipeline route also crosses drainages and washes associated with intermittent streams throughout the proposed project area.

Public lands affected by the proposed pipeline route consist primarily of BLM-administered land. The BLM has an RMP for each resource area crossed by the proposed pipeline route and each RMP includes a visual resource management (VRM) standard. BLM land is managed to maintain the quality of scenic and visual resources. VRM classes are assigned to the various landscapes in each of the BLM's resource areas. The BLM VRM Classes Range from Class I to Class V, with Class I being the most restrictive and Class V being the least restrictive.

The USFS uses a Scenery Management System (SMS) to inventory, classify, and manage lands for visual resource values. Based on an inventory and evaluation of visual resources associated with national forest lands, SMS criteria are established to provide a measurable standard or objective form for management of visual resources. SMS criteria indicate the acceptable degree of landscape alteration and classify land in one of five categories: preservation, retention, partial retention, modification, or maximum modification.

BLM VRM and USFS SMS classifications for federally managed land crossed by the proposed pipeline route are provided in **Table 3.8-6**.

Table 3.8-6 BLM VRM and USFS SMS Classifications for Areas Crossed by the Proposed Pipeline Route[1]

Agency/Field Office/ Begin Reference Point	Reference Point		VRM/SMS Class
	Begin	End	
BLM			
Kemmerer Field Office	0.0	1.6	Class II
	1.6	23.6	Class IV
	23.6	42.8	Class III
Rock Springs Field Office	42.8	48.2	Class III
	48.2	50.3	Class IV
	50.3	55.4	Class III
	55.4	58.5	Class IV
	58.5	59.2	Class III
	59.2	60.4	Class II
	60.4	65.6	Class III
	65.6	105.2	Class IV
	105.2	110.4	Class V
Rawlins Field Office	110.4	110.8	Class IV
	110.8	155.5	Class IV
	155.5	161.0	Class III
	161.0	172.9	Class IV
	172.9	256.6	Class III
	256.6	256.8	Class IV
	256.8	317.9	Class III

Table 3.8-6 BLM VRM and USFS SMS Classifications for Areas Crossed by the Proposed Pipeline Route[1]

Agency/Field Office/ Begin Reference Point	Reference Point		VRM/SMS Class
	Begin	End	
USFS			
FGNRA	57.0	59.6	Retention
PNG[2]	336.7	338.9	Partial Retention
	339.1	340.1	Partial Retention
	341.0	342.6	Partial Retention
	343.4	344.2	Partial Retention
	344.2	344.4	Partial Retention
	344.4	344.6	Partial Retention
	344.6	346.9	Partial Retention
	346.9	348.9	Partial Retention
	351.3	351.8	Partial Retention
	352.4	352.6	Partial Retention
	353.0	353.8	Partial Retention
	355.0	356.0	Partial Retention
	371.5	374.5	Partial Retention
	375.5	376.0	Partial Retention
	376.0	376.5	Partial Retention
	380.0	381.4	Partial Retention
	381.4	383.9	Partial Retention
	385.4	386.9	Partial Retention
	386.9	387.1	Modification

[1]All reference points were identified utilizing digital VRM data provided by respective BLM field offices.

[2]The PNG uses SMS classification and management areas (USFS 1997).

The BLM-managed lands that will be crossed by the proposed pipeline route range between Class II and Class IV, with Class IV being the predominant VRM class affected. The objectives of these BLM VRM classes are:

Class II To retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen, but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.

Class III To partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.

Class IV To provide for management activities which require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements.

All but one of the USFS-managed lands crossed by the proposed pipeline route on the PNG are classified as partial retention areas. There is one area that has a SMS class of modification. The objectives of the PNG visual classifications are:

Partial Retention	Alterations to the natural landscape may be apparent, but they are visually subordinate to natural features. Management activities such as timber harvest and roading may occur, but must be designed so they blend into the natural landscape. Includes areas where changes in the basic elements (form, line, color, or texture) caused by a management activity may be evident in the characteristic landscape. However, the changes should remain subordinate to the visual strength of the existing character.
Modification	Management activities may be visually dominant. They must be harmonious with features of the natural landscape, in their size, form, and linear characteristics. Recreation developments, timber harvest units, and roads are examples of elements that may be found in a landscape that meets this SMS. Alterations to the landscape may not be in glaring contrast to natural forms. Applies to areas where changes may subordinate the original composition and character; however, they should reflect what could be a natural occurrence within the characteristic landscape.

Existing Noise Environment

In 1974, the USEPA published a requisite evaluating the effects of environmental noise with respect to health and safety (USEPA 1974). The USEPA has determined that noise levels should not exceed a day-night (average sound) level (L_{dn}) of 55 decibels on the A-weighted scale (dBA), which is the level that protects the public from indoor and outdoor activity interference. This noise level has been useful for state and federal agencies to establish noise limitations for various noise sources. A 55 dBA L_{dn} noise level equates to a equivalent sound level (L_{eq}) of 48.6 dBA (i.e., a facility that does not exceed a continuous noise impact of 48.6 dBA will not exceed a 55 dBA L_{dn}).

Wyoming. The State of Wyoming and the counties of Carbon and Albany do not have any quantitative noise regulations. Two pump stations would be located in rural areas with few noise sources in the immediate vicinity. No Noise-Sensitive Areas (NSAs) are located within 1 mile of the proposed Echo Springs (RP 146.5) Pump Station in Carbon County and Laramie (RP 271.7) Pump Station in Albany County. Three meter stations also would be located in Wyoming.

Colorado. The State of Colorado has noise regulations (Title 25, Article 12) applicable to operations associated with the oil and gas industry. No pump stations would operate in Colorado, therefore, the State of Colorado noise regulations do not apply. Construction noise is not covered under Title 25, Article 12.

Kansas. No pump stations are currently proposed for Kansas, although a pump station at WaKeeney (RP 606.0) is likely in the foreseeable future. The WaKeeney Meter Station (RP 606.0) proposed for Sheridan County would be a new station. The State of Kansas and the county of Sheridan do not have any quantitative noise regulations. The location of the nearest NSA to the WaKeeney Meter Station is approximately 2,550 feet south/southwest (**Figure 3.8-1**).

3.8.2 Southern Energy Corridor – Copper Ridge Bypass Alternative

The Southern Energy Corridor – Copper Ridge Bypass Alternative would not differ substantially from the overall land use and aesthetics as described for the Proposed Action. Overall, the Southern Energy Corridor – Copper Ridge Bypass Alternative would add 4.8 miles to the total length of the pipeline. As a result, the amount of federal land crossed would increase from 10.9 miles to 18.5 miles. The alternative would cross the same number of paved roads, and one less dirt road. There are more buildings along the Southern Energy Corridor – Copper Ridge Bypass Alternative route within 500 feet of the ROW.

Overland Pass Pipeline Project

Figure 3.8-1

Noise Sensitive Area Location Map

3.9 Cultural Resources

3.9.1 Proposed Action

3.9.1.1 Regulatory Framework

Federal historic preservation legislation provides a legal environment for documentation, evaluation, and protection of archaeological and historic sites that may be affected by federal undertakings, or by private undertakings operating under federal license or on federally managed lands. The NEPA of 1969 states that federal undertakings shall take into consideration impacts to the natural environment with respect to an array of disciplines, and that alternatives must be considered. The courts have made it clear that archaeological and historic sites (i.e., cultural resources) are regarded as part of the natural environment. The NHPA of 1966, as amended, established the ACHP and the NRHP (in its modern form). The NHPA mandates that federal agencies consider projects' effects on cultural resources that are enrolled on or eligible for the NRHP and Section 106 of the NHPA establishes a four-step review process by which cultural resources are given consideration during the conduct of federal undertakings.

Regulations in 36 CFR 800 (revised 2004) outline the process through which historic preservation legislation under the NHPA is administered. The National Programmatic Agreement (NPA) among the BLM, ACHP, and National Conference of State Historic Preservation Officers regarding the manner in which the BLM would meet its responsibilities under the NHPA is the National BLM authority for meeting requirements of the NHPA. Day-to-day operations are based on the protocols developed by the local BLM offices in each state. In Wyoming, the State Protocol (signed in March 2006) between the BLM and the Wyoming SHPO defines how the SHPO and BLM would interact and cooperate under the NHPA, and provides direction for implementing the NHPA. Additionally, BLM Manual 8140 provides direction for protecting cultural resources from natural or human-caused deterioration and for recovering significant cultural resource data to mitigate adverse effects of proposed undertakings in accordance with the state protocol.

Additional information on BLM procedures for protecting cultural resource sites is provided in **Appendix H**.

3.9.1.2 Qualifications for Listing Cultural Resources on the NRHP

The NRHP, maintained by the NPS on behalf of the Secretary of the Interior, is the nation's inventory of important cultural resources. The NPS has established three main standards that a resource must meet to qualify for listing on the NRHP: age, integrity, and significance. To meet the age criteria, a resource generally must be at least 50 years (NPS 1995). To meet the integrity criteria, a resource must "possess integrity of location, design, setting, materials, workmanship, feeling, and association" (36 CFR 60.4). Finally, a resource must be significant according to one or more of the following criteria:

- Be associated with events that have made a significant contribution to the broad patterns of U.S. history (Criterion A); or
- Be associated with the lives of persons significant in U.S. history (Criterion B); or
- Embody the distinctive characteristics of a type, period, or method of construction, or represent the work of a master, or possess high artistic values, or represent a significant and distinguishable entity whose components may lack individual distinction (Criterion C); or
- Have yielded, or may likely yield, information important in prehistory or history (Criterion D).

3.9.1.3 Cultural Resources Investigations

Numerous cultural resources investigations have been conducted along or within the vicinity of the proposed pipeline corridor. These include numerous Class I, Class II, and Class III investigations, as well as research designs and prehistoric, historic, and ethnographic contexts. Class I investigations are a review of reports containing the results of previously conducted inventories in the project area, as well as library and archival sources for regional prehistory and history. Class II investigations are surveys of sample portions of an area to provide estimates of site distribution, density, and significance. Class III investigations are intensive field surveys of areas in which impacts are planned or are likely to occur. Cultural resources along the entire proposed pipeline corridor have been investigated at the Class I and Class III levels of intensity. The results of the cultural resources investigations are summarized below.

The proposed pipeline route crosses a variety of archaeology as it travels from western Wyoming to western Kansas. Habitation patterns, adaptive strategies, technical development, and cultural lifeways of prehistoric people to present-day populations vary greatly across the landscape. Archaeological investigations in the proposed project area indicate that people have inhabited the project area for at least 12,000 years, from Paleoindian occupation to the present. Prehistoric sites in the project area include lithic scatters, open camps, lithic procurement areas, and quarries; historic sites include, but are not limited to, expansion era trails, railroads, freight roads, homesteads, and staging stations. In addition, traditional cultural properties and other areas of tribal significance have been located within the proposed project area. Due to the size of the project area and expansive topography traversed by the proposed pipeline route, a cultural overview of prehistoric and historic development in the project area is not included in this EIS. However, the reader is referred to *Handbook of North American Indians, Volume 13, Plains*, (DeMallie 2001), for a comprehensive overview of prehistoric and historic development in the project area.

Wyoming

Between November 2005 and February 2006, a Class I files search of the proposed project area was conducted online at the Wyoming Cultural Records Office (WYCRO) and BLM field offices. The files search also included review of General Land Office (GLO) plats in order to identify potential historic site locations. The Class I files search examined a corridor extending 1 mile on each side of the proposed pipeline centerline. As a result of the files search, a total of 1,661 previously recorded sites and 140 features on the GLO plats of the project area were identified within the 2-mile-wide study corridor; 215 of the sites and 57 of the GLO features are located within 150 feet of the proposed pipeline centerline (Retter et al. 2006).

Of the 215 sites located within 150 feet of the proposed pipeline centerline, 50 are historic, 150 are prehistoric, 14 contain both historic and prehistoric components, and 1 is of unknown cultural affiliation. The prehistoric sites include lithic scatters, open camps, stone circles, and hearths; historic sites include several transportation routes (e.g., the Overland Trail, Union Pacific Railroad, Oregon Short Line Railroad, and Lincoln Highway), townsites, a bridge and homestead, and historic debris. The majority of multi-component sites include prehistoric artifact scatters and historic debris.

Review of the GLO maps revealed 57 features within 150 feet of the proposed pipeline centerline. These 57 features include roads, railroads, utility corridors, ditches, and structures.

Results of Field Investigations

From spring through fall 2006, cultural resources inventories were conducted along the Wyoming portion of the proposed project corridor (SWCA 2006a-f). The inventory included examination of the proposed pipeline corridor, alternate pipeline routes, additional TWAs, and access roads. Land crossed by the proposed pipeline mainly is privately owned; however, 2.2 miles of land administered by the USFS, 98.2 miles administered by the BLM, and 21.2 miles of state land also are crossed. As a result of the cultural resources inventory, 308 cultural resource sites and 144 isolated finds were identified. Of the 308 sites, 104 are historic, 181 are prehistoric, and 23 sites contain both prehistoric and historic components (**Appendix I**, **Table I-1**).

The majority of historic sites or site components are linear sites. These include multiple railroads (e.g., Union Pacific Railroad, Saratoga & Encampment Railroad, Oregon Short Line Railroad); ditches or canals (e.g., Robertson Ditch, Canon Ditch, Pioneer Canal); roads (e.g., Vernal-Green River Road, Rawlins to Baggs Stage Road, Bryan to Browns Park Wagon Road); trails (e.g., Blacks Fork Cutoff Trail, Overland Trail, Oregon Trail); and the Lincoln Highway.

Segments of the Union Pacific Railroad, Canon Ditch, Lincoln Highway, Overland Trail, and Rawlins to Baggs Stage Road are crossed multiple times by the proposed project corridor.

Union Pacific Railroad. The Union Pacific Railroad is the original Transcontinental Railroad connecting the eastern U.S. with the West during the late 19th and 20th centuries. The early development of coal mining, ranching, the trona industry, and the urban centers of southern Wyoming resulted from the presence of the Union Pacific railroad, which provided an efficient and relatively inexpensive mode of transportation.

Canon Ditch. The Canon Ditch, which is now a canal, was originally built in 1896 as a ditch for localized farm/ranch irrigation. The length of the canal was expanded in the early 1920s, and the width and depth were increased in 1944. The canal grew from an agricultural ditch to a large canal used to feed ranch rangelands.

Lincoln Highway. Originally proposed in 1913 by a group formed as the “Lincoln Highway Association,” the Lincoln Highway was to be the first transcontinental highway in the U.S., connecting New York City to San Francisco. When choosing a route across southern Wyoming, the Association selected the Union Pacific Railroad corridor, a route that basically followed the Overland Trail corridor. Sections of various Lincoln Highway routes and reroutes dating from between 1913 and the 1940s parallel the current U.S. Highway 30/287 through much of Albany and Carbon counties. In 1926, the Wyoming portion of the Lincoln Highway was designated by the Federal Government as U.S. Highway 30, thus incorporating the road into the new transcontinental highway system. U.S. Highway 30, which includes most of the Lincoln Highway, remained the major east-west route across Wyoming until the completion of I-80 in the 1960s.

Overland Trail. Established and owned by the “Stagecoach King,” Ben Holladay, the Overland Trail was a variation of the Oregon Trail. In 1862, Holladay and his Overland Stage Company were directed by the U.S. Post Office to move from the established route through Wyoming that followed the North Platte River to a different route following the South Platte. The new route had the advantage of being shorter, but it also was chosen in an effort to avoid Indian attacks that had been occurring on the Oregon Trail.

The route of the Overland Trail followed the southern bank of the South Platte River to Latham, near today's Greeley, Colorado, then went up along the Cache La Poudre River, crossed the Laramie Plains, traveled through Bridger's Pass, and rejoined the Oregon Trail at Fort Bridger. The western route out of Latham also was known as the Cherokee Trail.

While the Oregon Trail may have been more popular, the Overland Trail was not simply a detour. From 1862 to 1868, it was the only route upon which the federal government would permit travel and it served as the main highway to the west in those years. Holladay owned the Overland Stage Company until 1866 when, realizing the Transcontinental Railroad would end the need for stagecoach travel, he sold it to Wells Fargo.

Rawlins to Baggs Stage Road. Rawlins to Baggs Stage Road served as a major stage and travel route between Rawlins and Baggs during the latter half of the 19th century and early 20th century. The origins of the road are associated with two historical events: 1) the building of the first transcontinental railroad through southern Wyoming Territory in 1867-1868 and the founding of the Town of Rawlins, and 2) the creation of the White River Agency for the Ute Indians in northwestern Colorado in 1868. The road was originally used for freight, but passenger and mail service was added as more people settled in the region. Stage service ended on the Rawlins to Baggs Stage Road in 1909.

The majority of the 204 prehistoric sites or site components consist of open camps and lithic scatters. Based on the frequency of recorded campsites, it is assumed that prehistoric people came to the project area for food resource procurement. Non-human bone was observed in association with cultural remains at several sites, and ground stone at a few sites. None of the campsites located in the area had preserved habitation structures on the surface. In general, project area sites are associated with all prehistoric periods from the Late Paleoindian to the Protohistoric. However, sites with diagnostic projectile points or radiocarbon assays dated to the Late Prehistoric or Archaic periods.

Of the 144 isolated finds located during the inventory, 103 are prehistoric, 32 are historic, and 9 are multi-component. Most of the prehistoric isolated finds were one or a few flakes. Historic isolated finds were mainly cans, glass vessel fragments, or pieces of crockery.

Of the 308 sites located during the field survey, 123 are recommended or officially determined eligible for listing on the NRHP and 185 are recommended or officially determined not eligible for the NRHP. Sixty-two of the 123 recommended or officially determined NRHP-eligible sites are historic, 51 are prehistoric, and 10 contain both prehistoric and historic components. NRHP-eligible historic sites include, but are not limited to, trails, roads, railroads, and the Lincoln Highway. NRHP-eligible prehistoric are predominately lithic scatters and open camps. Management recommendations for the recommended or officially determined NRHP-eligible sites in Wyoming are provided in **Appendix I**, **Table I-1**.

Colorado

In November 2005, a Class I files search of the proposed project area was conducted through the Office of Archaeology and Historic Preservation (OAHP). On December 27, 2005, the files at the Pawnee National Grasslands/Arapaho-Roosevelt National Forest also were examined. Historic GLO plats were obtained from the BLM Colorado State Office in order to identify potential historic site locations. The Class I files search examined a corridor extending 0.5 mile on each side of the proposed pipeline centerline. As a result of the files search, 93 previously recorded cultural resource sites were identified within the 1-mile-wide study corridor; 37 of the sites are located within 150 feet of the proposed pipeline centerline (Horn and Wall 2006).

Of the 37 sites located within 150 feet of the proposed pipeline centerline, 18 are historic, 16 are prehistoric, 2 are multi-component sites containing both historic and prehistoric components, and 1 is of unknown cultural affiliation. The prehistoric sites include lithic scatters and camps; historic sites include a canal, highway, homestead, and trash scatter, farms, railroad grades, and transmission lines. The two multi-component sites include a prehistoric camp/historic homestead and prehistoric camp/historic trash scatter. The one site of unknown cultural affiliation consists of rock piles.

The GLO plats revealed 65 historic features, of which 8 had been previously recorded, resulting in a total of 57 potential historic sites in the 1-mile-wide study corridor. Of the 65 previously recorded and potential historic sites, 14 unnamed historic roads, the Eckley to Wray Road, two railroads (the Chicago, Burlington & Quincy Railroad and Colorado Central Railroad), three telegraph lines, and two ditches cross the proposed pipeline route. Four additional unnamed roads, four houses, and two homesteads are shown within 700 feet of the proposed pipeline centerline. Review of USGS 7.5-minute topographical maps revealed an additional 132 potential historic sites with no overlap in potential sites between the two data sources. Of the 132 potential historic sites identified from USGS 7.5-minute topographical maps, 17 appear to cross or be in close proximity to the proposed pipeline centerline. These include six windmills, five structure complexes, five canals or ditches, and the Union Pacific Railroad grade.

Results of the Field Investigations

From April through August 2006, cultural resources inventories were conducted along the Colorado portion of the proposed project corridor (Horn et al. 2006). The inventory included examination of the proposed pipeline corridor, alternate pipeline routes, additional TWAs, access roads, and above-ground facilities, including pipe yards and staging areas. Land crossed by the proposed pipeline mainly is privately owned; however, 22.4 miles of land administered by the USFS, PNG, and 10.6 miles of state land also are crossed. As a result of the cultural resources inventory, 66 cultural resource sites and 51 isolated finds were identified (**Appendix I**, **Table I-2**). Of the 66 sites, 42 are historic, 20 are prehistoric, and 4 sites contain both prehistoric and historic components. With the exception of one site, all of the sites recorded during the inventory were found along the proposed pipeline corridor.

Twenty of the 46 historic sites or site components are linear sites, including 8 segments of railroad grades; 7 segments of ditches or canals (e.g., South Platte Ditch, North Sterling Canal, Davis Brothers Ditch); 3 roads (Eckley to Wray Road and 2 unnamed roads); 1 highway (U.S. Highway 6); and 1 transmission line (Beaver

Creek to Sterling Transmission Line). The remaining 26 historic sites or site components include 1 camp circa 1931; 6 artifact scatters dating mainly from the 1910s to 1930s, with 1 dating from the 1930s to 1950s; and 19 homesteads or residential sites dating mainly from the 1910s to 1930s. Standing structures were present at three of the sites. One was a residence with collapsed outbuildings from the 1910s to 1970s, one was an active farm complex, and one was a relocated chicken coop from the 1920s.

Eighteen of the 24 prehistoric sites or site components were of unknown age or cultural affiliation. The six sites for which a temporal period could be ascertained extend from Early Archaic to Late Prehistoric. All of the prehistoric sites were lithic scatters, two of which were complex enough to be considered camps and five of which appeared to be the locus of lithic procurement and initial reduction activities.

Of the 51 isolated finds located during the inventory, 40 were prehistoric and 11 were historic. Most of the prehistoric isolated finds were one or a few flakes. Historic isolated finds were mainly cans, glass vessel fragments, or automobile parts.

Of the 66 sites located during the field survey, 27 sites and the prehistoric component of one multi-component site (SWL403) are recommended or officially determined eligible for listing on the NRHP and 38 sites and the historic component of a multi-component site (SWL403) are recommended or officially determined not eligible for the NRHP. The majority of recommended or officially determined NRHP-eligible sites are historic and include ditches, railroads, roads, and homesteads. All of the NRHP-eligible prehistoric sites are lithic scatters. Recommended management of the sites recommended and officially determined eligible for the NRHP in Colorado are provided in **Appendix I**, **Table I-2**.

In the fall of 2006, an additional Class III inventory of four reroutes, additional temporary work spaces, and a different configuration of a pipe yard were conducted (Horn 2006). The inventory resulted in the examination of 18.4 acres of private land and 29.4 acres of the PNG, for a total of 47.8 acres. Two new sites and one previously recorded site were recorded during the inventory **(Appendix I**, **Table I-2**). The two new sites are located on the PNG and consist of a prehistoric lithic scatter of unknown age and a historic homestead. The previously recorded site is a segment of a historic railroad grade.

Of the two newly recorded sites, the prehistoric lithic scatter is recommended as not eligible for the NRHP while the historic homestead is recommended as eligible. The previously recorded segment of the historic railroad grade was initially recorded during the original inventory conducted from April through August 2006 and was lengthened as a result of the additional inventory. The segment is considered to be a contributing element of the NRHP-eligible Burlington & Missouri River Railroad/Chicago, Burlington & Quincy Railroad/Burlington Northern Railroad grade.

An analysis of soils data and a geomorphological field reconnaissance of the entire proposed project area were conducted to assess the potential for soils in the project area to contain buried sites. Eolian, alluvial, colluvial, and lacustrine soil deposits of Late Pleistocene to Holocene age were identified and assessed. The analysis and reconnaissance resulted in recommendations for monitoring at 44 locations within the proposed project area that have the potential to contain archaeological sites in buried contexts. These areas are primarily in the vicinity of drainages where alluvial sedimentation has occurred and where aeolian deposition of late Pleistocene or more recent age has taken place.

Kansas

In January and February 2006, a Class I files search of the proposed project area was conducted through the Kansas State Historical Society (KSHS). The files search also included review of GLO plats in order to identify potential historic site locations. The Class I inventory examined a corridor extending 0.5 mile on each side of the proposed pipeline centerline. As a result of the files search, 45 previously recorded cultural resource sites were identified within or adjacent to the proposed pipeline ROW (Maymon and Bevitt 2006).

Of the 45 sites located within or adjacent to the proposed pipeline ROW, 3 are historic, 41 are prehistoric, and 1 is a multi-component site containing both historic and prehistoric components. The prehistoric sites include lithic scatters, quarries, and camps; historic sites include trash scatters, habitation sites, and graffiti. The multi-component site includes a prehistoric camp and historic dugout depression.

The GLO plats indicate the potential presence of additional historic resources in the vicinity of the proposed pipeline corridor including a number of wagon roads or trails. County plat maps yielded additional information on Euro-American use of the region, generally in the form of individual homesteads and farms. A total of 340 homes were identified from early 20th Century documents within 0.5 mile of the proposed pipeline centerline, in addition to 5 townsites, 17 rural schools, 2 churches, and 4 cemeteries.

Results of the Field Investigations

From April through August 2006, cultural resources inventories were conducted along the Kansas portion of the project corridor (Maymon 2006). The inventory included examination of the proposed pipeline corridor, alternate pipeline routes, additional TWAs, access roads, and aboveground facilities, including proposed pump stations, pipe yards, and staging areas. All of the land crossed by the proposed pipeline is privately owned. As a result of the cultural resources inventory, 47 cultural resources and 26 isolated finds were identified (**Appendix I**, **Table I-3**). Of the 47 cultural resources, 10 are historic sites, 35 are prehistoric sites, and 2 are sites containing both prehistoric and historic components.

The 12 historic sites or site components include one machinery dump dating from 1900 to 1950, 1 trash dump dating from the 1930s to 1970s, one artifact scatter dating from the early to mid-20th Century, and nine homesteads or residential sites dating mainly from the mid 19th century to mid-20th Century. The six architectural properties date from 1900 to 1950 and include four farms, one sod house, and a two-story wood-frame house.

Twenty-five of the 37 prehistoric sites or site components are of unknown age or cultural affiliation. The 13 sites for which a temporal period could be ascertained extend from Paleoindian to Protohistoric. Most of the prehistoric sites or site components are lithic scatters; however, five camps, one village, two camps/lithic scatters, one lithic procurement area, two quarries/lithic procurement areas, three camps/lithic procurement areas, and one possible bison kill site also are included in the identified prehistoric sites or site components.

Of the 26 isolated finds located during the inventory, 12 were prehistoric and 14 were historic. Most of the prehistoric isolated finds were stone flakes or fragments. Historic isolated finds were mainly cans, glass vessel fragments, farm implements, automobiles, automobile parts, and metal, wood, or ceramic debris.

In fall 2006, archaeological evaluation of 18 of the sites located during the cultural resources inventory was conducted within the project corridor in Kansas (Goodwin & Associates 2006). The sites evaluated included: 14RW102, 14SD00107, 14SD00108/109, 14SD00102, 14SD00103, 14SD00104, 14SD00110, 14SD00428, 14SD00452, 14SD00101, 14GO00102, 14GO00301, 14TO00101, 14TO00306, 14TO00317, 14TO00314, 14TO00103, and 14TO00109 (**Appendix I**, **Table I-3**). The objective of the archaeological evaluation was to determine the significance of these 18 sites applying the NRHP Criteria for Evaluation (36 CFR 60.4 [a-d]). The evaluation also defined potential impacts to the resources and provided management recommendations for those sites evaluated as eligible for the NRHP. In addition to the evaluation of these sites, non-invasive geophysical survey was completed at site 14RC00313, which is already listed on the NRHP, in preparation for anticipated data recovery.

As a result of the site evaluations, five sites (14SD00108/109, 14SD00102, 14SD00103, 14SD00104, and 14TO00306) were determined to possess the qualities of significance as defined by the NRHP criteria for evaluation (**Appendix I**, **Table I-3**). Three of the sites are prehistoric lithic scatters, one is a prehistoric camp/workshop, and one is a prehistoric chipped stone quarry/workshop.

As a result of the field surveys and site evaluations, 6 sites are recommended or officially determined eligible for listing on the NRHP, 34 are recommended or officially determined not eligible for the NRHP, and 7 are unevaluated. Of the recommended or officially determined NRHP-eligible sites, five are prehistoric and one is a multi-component site consisting of a historic residence and prehistoric camp/lithic procurement area. The

NRHP-eligible prehistoric sites include lithic scatters and lithic procurement areas. Management recommendations for the recommended or officially determined NRHP-eligible sites in Kansas are provided in **Appendix I**, **Table I-3**.

An analysis of soils data, a review of USGS 7.5-minute topographic maps, and a geomorphological field reconnaissance of the entire proposed project area were conducted to assess the potential for soils in the project area to contain buried sites. The reconnaissance involved assessing geomorphic settings, with emphasis on identifying Holocene and late Pleistocene landform sediment assemblages, such as alluvial terraces and fans, colluvial aprons and playa basins. Seven localities in the proposed project area were identified as areas with potential for buried cultural deposits. Five of the seven localities were identified as areas that would require deep testing (i.e., backhoe trenching) if they cannot be avoided by a reroute.

3.9.2 Southern Energy Corridor – Copper Ridge Bypass Alternative

Since the proposed Southern Energy Corridor – Copper Ridge Bypass Alternative is considered an alternate corridor at this time, only a Class I files search was conducted. If the proposed Southern Energy Corridor – Copper Ridge Bypass Alternative was selected for construction, a Class III pedestrian survey would be conducted along the entire length of the proposed bypass corridor.

The Class I files search of the proposed Southern Energy Corridor – Copper Ridge Bypass Alternative was conducted online through the WYCRO. The files search also included review of GLO plats. The Class I files search examined a corridor extending 0.5 mile on either side of the proposed bypass centerline. As a result of the files search, a total of 53 previously recorded sites were identified within the 1-mile-wide study corridor (Wesson 2006). Thirty-seven of these are prehistoric sites, 11 are historic sites, 5 are multi-component sites containing both prehistoric and historic components, and 1 is a rock cairn of unknown cultural affiliation. The prehistoric sites consist of lithic scatters, open camps, habitation sites, and a food processing site. The 11 historic sites consist of roads/trails, debris scatters, a bridge, corral, telephone line, and cairn. In general, the multi-component sites contain prehistoric lithic scatters and historic debris scatters.

Of the 53 previously recorded sites within the 1-mile-wide study corridor, nine are located within approximately 100 feet of the proposed Southern Energy Corridor – Copper Ridge Bypass Alternative centerline. Three of the nine sites are prehistoric, five are historic, and one is a multi-component site. All of the prehistoric sites are lithic scatters. The five historic resources include two freight roads, a telephone line, bridge, and corral. The one multi-component site is described as a prehistoric/historic open camp. The NRHP eligibility of five of the sites is unknown, two are recommended as not eligible, one is eligible with SHPO concurrence, and one is an NRHP-eligible historic freight road; however, the segment that is within 100 feet of the proposed alternate centerline is unevaluated.

Compared to the proposed Southern Energy Corridor – Copper Ridge Bypass Alternative, a total of 16 previously recorded sites were identified within 0.5 mile of the segment of the proposed pipeline corridor that would be eliminated if the proposed bypass were chosen. Of the 16 sites, 13 are prehistoric sites, 2 are historic sites, and 1 is a multi-component site. The 13 prehistoric sites consist of 6 lithic scatters, 2 open campsites, 1 lithic scatter/open camp/quarry, 3 habitation sites, and a rock art site. The two historic sites are both freight roads and the one multi-component site consists of a prehistoric open camp and historic cabin.

During the Class III pedestrian survey, 5 sites were located within 100 feet of the proposed pipeline centerline that would be eliminated if the proposed bypass were chosen. Two of the sites were previously recorded. Of the five sites, one is a prehistoric lithic scatter/open camp/quarry, three are prehistoric lithic scatters, and one is a historic freight road. The historic freight road is not eligible for the NRHP with SHPO concurrence; the four prehistoric sites are recommended as not eligible for the NRHP.

In summary, 9 sites were identified within 100 feet of the proposed Southern Energy Corridor – Copper Ridge Bypass Alternative centerline as a result of the Class I files search and 5 sites were located within 100 feet of the segment of the proposed pipeline centerline that would be eliminated if the bypass were chosen as a result of the Class III pedestrian survey. All of the five sites located along the proposed pipeline route are recommended as not eligible for the NRHP. Of the nine previously recorded sites identified along the proposed Southern Energy Corridor – Copper Ridge Bypass Alternative corridor, two are recommended as not eligible for the NRHP, five are unevaluated, one is eligible for the NRHP with SHPO concurrence, and one is an NRHP-eligible linear feature; however, the segment of the linear feature identified within 100 feet of the proposed alternative centerline is unevaluated.

3.10 Native American Consultation

3.10.1 Proposed Action

3.10.1.1 Regulatory Framework

Various federal statutes require consultation with Native American tribes concerning the identification of cultural values, religious beliefs, and traditional practices of Native American people that may be affected by federally approved actions. These federal statutes are interrelated regarding Native American consultation and include, but are not limited to, Section 106 NHPA of 1966, as amended; EO 13007 (FR 1996); AIRFA of 1978; and NAGPRA of 1990.

Section 106 of NHPA requires all federal agencies to take into account the effects of their actions on historic properties and provide the ACHP with an opportunity to comment on those actions and the manner in which federal agencies are taking historic properties into account in their decisions.

EO 13007 (FR 1996) requires federal agencies to accommodate access to and ceremonial use of Native American sacred sites by Indian religious practitioners and to avoid adversely affecting the physical integrity of such sacred sites. It also requires agencies to develop procedures for reasonable notification of proposed actions or land management policies that may restrict access to or ceremonial use of, or adversely affect, sacred sites.

AIRFA established federal policy of protecting and preserving the inherent right of individual Native Americans to believe, express, and exercise their traditional religions including, but not limited to, access to sites, use and possession of sacred objects, and the freedom to worship through ceremonials and traditional rites.

NAGPRA established a means for Native Americans, including Indian tribes, to request the return of human remains and other sensitive cultural items held by federal agencies or federally assisted museums or institutions. NAGPRA also contains provisions regarding the intentional excavation and removal of, inadvertent discovery of, and illegal trafficking in Native American human remains and sensitive cultural items.

Consultation includes the identification of places (i.e., physical locations) of traditional cultural importance to Native American tribes. Places that may be of traditional cultural importance to Native American people include, but are not limited to, locations associated with the traditional beliefs concerning tribal origins, cultural history, or the nature of the world; locations where religious practitioners go, either in the past or the present, to perform ceremonial activities based on traditional cultural rules or practice; ancestral habitation sites; trails; burial sites; and places from which plants, animals, minerals, and waters possessing healing powers or used for other subsistence purposes, may be taken. Additionally, some of these locations may be considered sacred to particular Native American individuals or tribes. The BLM must take into account the effects of the proposed project on these types of locations.

If a resource has been identified as having importance in traditional cultural practices and the continuing cultural identity of a community, it may be considered a TCP. The term “traditional cultural property” first came into use within the federal legal framework for historic preservation and cultural resource management in an attempt to categorize historic properties containing traditional cultural significance. National Register Bulletin 38: *Guidelines for Evaluating and Documenting Traditional Cultural Properties* (Parker and King 1989) defines a TCP as “one that is eligible for inclusion in the NRHP because of its association with cultural practices or beliefs of a living community that (a) are rooted in that community’s history, and (b) are important in maintaining the continuing cultural identify of the community.” To qualify for nomination to the NRHP, a TCP must be more than 50 years old, must be a place with definable boundaries, must retain integrity, and meet certain criteria as outlined in National Register Bulletin 15 (NPS 1995).

3.10.1.2 Native American Consultation

In compliance with Section 106 of the NHPA, the BLM initiated government-to-government consultation by sending letters to 22 Native American tribes on March 1, 2006 (**Table 3.10-1**). The letters were sent to inform the various tribes of the proposed undertaking and solicit their concerns/comments regarding the possible presence of TCPs or places of cultural, traditional, or religious importance to the tribes in the proposed project area. In addition, on March 31, 2006, the BLM sent out offers for Cooperating Agency status to the tribes. Subsequently, the BLM conducted follow-up telephone calls and field visits to selected sites along the proposed pipeline route that were identified during the Class I overviews as places of cultural, traditional, or religious importance.

The BLM Rawlins Field Office invited tribal officials from the 22 Native American tribes to participate in an informational meeting on June 6, 2006, and field visits on June 6 and 7, 2006. Five of the 22 Native American tribes attended the meeting in Rawlins: Shoshone Business Council of the Eastern Shoshone Tribe, Fort Peck Tribes, Arapaho Business Council of the Northern Arapaho Tribe, Northern Cheyenne Tribe, and Northern Ute Indian Tribe. The purpose of the meeting was to discuss how tribal consultation for the proposed project should proceed with the BLM Rawlins Field Office. The meeting was followed by visits to selected archaeological sites that had been identified as sites of concern by the tribes during review of the Class I cultural resources inventory reports. During the site visits, several tribal representatives requested information on the plant communities along the proposed pipeline route and re-vegetation procedures following pipeline construction.

A second field visit to selected segments of the proposed pipeline corridor was conducted by the BLM Rawlins Field Office on July 25 through 28, 2006, and was attended by the Arapaho Business Council and Northern Cheyenne. The Fort Peck Assiniboine were scheduled to attend the July meeting; however, last minute conflicts prevented them from attending. During the field visit, Arapaho Business Council representatives requested tribal monitors during pipeline construction and requested to be notified of inadvertent discovery situations, including burials and funerary items. Northern Cheyenne representatives were concerned about sites with religious significance, recommended tribal monitors during all pipeline construction activities, and requested to be kept informed of any inadvertent discoveries located in the project area. The Northern Cheyenne also attended a third field visit near WaKeeney, Kansas, on August 24, 2006, to monitor several sites undergoing deep trench testing.

On September 27, 2006, the BLM Rawlins Field Office conducted a second tribal informational meeting. Five tribes (Crow Tribe, Fort Peck and Assiniboine Sioux Tribes, Northern Cheyenne Tribe, Shoshone Business Council [Eastern Shoshone Tribe], and Uintah Ouray Ute Tribe [Northern Ute Tribe]) attended the meeting. The Northern Arapaho Tribe had expressed interest in coming to the meeting, but was unable to attend due to last minute conflicts. The following issues were discussed during the meeting:

- NAGPRA responsibilities and state burial laws;
- The tribal consultation process;
- Cultural sites that were visited by the tribes;
- Suggested mitigation measures;
- Cultural resources data gathering and information sharing between the BLM and tribes;
- Drafting an agreement document on how data would be shared;
- Review of the Class III survey reports;
- Use of tribal monitors during project construction;
- Results from the deep trench testing in Kansas;
- Inadvertent discovery situations;
- Data recovery on private lands in Wyoming, Colorado, and Kansas;

- Additional survey of selected sites by tribal members; and
- Gathering comments from tribes not able to attend the meeting.

At the end of the meeting, the tribes expressed interest in a follow-up meeting to discuss in greater detail an agreement document and review of the Class III survey reports. At this time, no date has been set for a follow-up meeting.

Table 3.10-1 lists the Native American tribes that have been contacted and summarizes the concerns they have raised to date and the status of consultation.

3.10.2 Southern Energy Corridor – Copper Ridge Bypass Alternative

If the Southern Energy Corridor – Copper Ridge Bypass Alternative was selected for construction, the BLM would send a letter to the tribal groups to inform them of the revised pipeline route and solicit their concerns about places of cultural, traditional, or religious importance to the tribes that may be located along the proposed alternative. Consultation between the BLM and the identified tribal groups would follow the same protocol as the Proposed Action.

Table 3.10-1 Status of Native American Consultation

Name of Tribe	Date of Initial Contact	Follow up Contact	Summary of Issues Raised during Consultation
Apache Tribe of Oklahoma	March 30, 2006	April 6, 7, 11, 2006 May 9, 2006	Tribe stated they did not have any concerns with the proposed project.
Arapaho Business Council (Northern Arapaho Tribe)	March 30, 2006	April 3, 5, 2006 May 4, 24, 2006 June 19, 29, 30, 2006 July 5, 25-28, 2006 August 9, 14, 15, 2006 September 5, 6, 22, 2006	Have indicated concerns with the project and consultation is on-going as the project continues. Tribal representatives requested tribal monitors during construction and requested to be notified of inadvertent discoveries. Have asked for a plant survey of the project area and a copy of the reclamation plan with seed mixes included to ensure that vegetation is restored to pre-construction stands. Tribe requested additional surveys of project area to determine if additional areas included sacred sites.
Cherokee Nation	March 30, 2006	April 4,6,2006	Tribe stated they did not have any concerns with the proposed project.
Cheyenne and Arapaho Tribes of Oklahoma	March 30, 2006	April 5, 2006 May 22, 2006 need to address all follow up dates here	Tribe stated they had no concerns with the proposed project, but requested to be kept informed with project updates and project reports.
Cheyenne River Lakota Tribe	March 31, 2006	April 4, 2006 need to address all follow up dates here	Have continued to send updates for meetings and projects but have not received any response.
Comanche Tribe of Oklahoma	March 31, 2006	April 5, 2006 June 26, 2006 need to address all follow up dates here	The tribe did not have any concerns with the proposed project, but requested to be kept informed with project updates and project reports.
Crow Tribe	April 2, 2006	May 4, 8, 16, 2006 June 27, 2006 July 5, 2006 August 8, 2006 September 18, 27, 2006	Have indicated concerns with the project as known TCPs are located within the project area. Consultation with the tribe is ongoing through the project.
Crow Creek Lakota Tribe	April 2, 2006	April 7, 2006 May 3, 9, 16, 2006 need to address all follow up dates here	Tribe indicated they did not have any concerns with the project, but stated they would review project information before making a decision. Have continued to send updates for meetings and projects but have not received any response.
Fort Peck Assiniboine and Sioux Tribes	April 2, 2006	May 4, 22, 2006 June 6, 20, 2006 July 18, 19, 31, 2006 August 4, 21, 2006 September 8, 26, 27 2006	Tribe requested additional surveys of project area to determine if additional areas included sacred sites. Consultation is on-going as the project continues.
Jicarilla Apache Tribe	March 31, 2006	April 7, 11, 12, 2006	The tribe stated they did not have any concerns with the project and requested no further involvement.
Kaw Tribe of Oklahoma	March 30, 2006	March 31, 2006 April 5, 11, 12, 2006 May 4, 16, 26, 2006 June 30, 2006 August 2, 14, 17, 28, 2006	Have indicated concerns with the project and consultation is on-going as the project continues.
Kiowa Tribe	March 30,2006	April 4, 11, 2006	The Kiowa stated they did not have concerns with the project.

Table 3.10-1 Status of Native American Consultation

Name of Tribe	Date of Initial Contact	Follow up Contact	Summary of Issues Raised during Consultation
Northern Cheyenne Tribe	April 2, 2006	April 3, 12, 14, 2006 May 2, 16, 26, 2006 June 6, 26, 2006 July 5, 11, 25-28, 2006 August 8, 14, 15, 18, 30, 2006 September 5, 7, 27 2006	Tribal representatives were concerned with sites that had religious significance and recommended tribal monitors during construction, and to be kept informed of any inadvertent discoveries. Tribe requested additional surveys of project area to determine if additional areas included sacred sites.
Oglala Lakota Tribe	April 3, 2006	April 11, 18, 2006 May 17, 2006	The tribe requested to be kept informed of scheduled meetings, field visits to the project area, and project updates. Have continued to send updates for meetings and projects but have not received any response.
Osage Nation of Oklahoma	March 30, 2006	April 10, 13, 2006 August 2, 10, 2006	Tribe stated they have no concerns with the project. Would like to be notified of inadvertent discoveries and informed of the project through updates and reports.
Pawnee Nation of Oklahoma	March 30, 2006	March 31, 2006 April 7, 2006	Tribe stated that they did not have any concerns with the proposed project.
Rosebud Lakota Tribe	April 2, 2006	April 4, 2006 need to address all follow up dates here	Have continued to send updates for meetings and projects but have not received any response.
Shoshone Business Council (Eastern Shoshone Tribe)	March 31, 2006	April 12, 18, 2006 May 4, 2006 June 6, 7-8, 26, 29, 2006 July 17, 19-20, 2006 September 5, 8, 27 2006	Tribe requested reroutes around specific areas of the project area with known TCPs. Tribal representatives requested tribal monitors during construction and requested to be notified of inadvertent discoveries. Have asked for a plant survey of the project area and a copy of the reclamation plan with seed mixes included to ensure that vegetation is restored to pre-construction stands.
Shoshone-Bannock Tribes	March 30, 2006	April 18, 2006 need to address all follow up dates here	Have continued to send updates for meetings and projects but have not received any response.
Southern Ute Indian Tribe	April 2, 2006	June 7, 11, 14, 18, 2006	Tribe indicated that they had no concerns with the project, but would like to be informed of any inadvertent discoveries.
Uintah Ouray Ute Tribe (Northern Ute Tribe)	March 29, 2006	April 4, 18, 2006 May 24, 2006 June 6, 7-8, 2006 July 26, 2006 September 18, 27, 2006	Tribe requested reroutes around specific areas of the project area with known TCPs. Tribal representatives requested tribal monitors during construction and requested to be notified of inadvertent discoveries. Have asked for a plant survey of the project area and a copy of the reclamation plan with seed mixes included to ensure that vegetation is restored to pre-construction stands.
Wichita and Affiliated Tribes (Wichita Executive Committee)	March 30, 2006	March 31, 2006 April 6, 12, 2006 May 2, 23, 2006	Have indicated concerns with the project and consultation is on-going as the project continues.

Source: Seletstewa 2006, 2007.

3.11 Social and Economic Conditions

3.11.1 Proposed Action

The Proposed Action crosses 23 counties in Wyoming, Colorado, and Kansas. Counties crossed are listed by state in **Table 3.11-1**.

Table 3.11-1 States and Counties Crossed by the Proposed Pipeline Project

State	Number of Counties	Counties
Wyoming	5	Lincoln, Sweetwater, Carbon, Albany, and Laramie
Colorado	6	Larimer, Weld, Morgan, Logan, Washington, and Yuma
Kansas	12	Cheyenne, Rawlins, Thomas, Sheridan, Gove, Trego, Ellis, Russell, Barton, Ellsworth, Rice, and McPherson

A list of communities that may be affected by the proposed pipeline route and their respective year 2000 population statistics are shown in **Table 3.11-2**. This list identifies all communities within 0.5 and 2 miles of the project.

The proposed pipeline route crosses approximately 123.2 miles of federally owned land: 98.8 miles managed by the BLM and 24.4 miles managed by the USFS. BLM land affected by the project are in Lincoln, Sweetwater, Carbon, and Albany counties in Wyoming, and USFS managed lands are in Sweetwater County, Wyoming, and Weld County, Colorado. Federally owned lands represent approximately 16 percent of the total project.

3.11.1.1 Population, Employment, and Income

Table 3.11-3 summarizes the population, income trends, and unemployment rates in the counties crossed by the proposed pipeline route. The proposed pipeline route lies in predominantly rural and sparsely populated areas, with population densities generally ranging from approximately three to 35 people per square mile for the majority of the proposed pipeline route. The average population growth rate from 1990 to 2000 for all counties crossed by the project is 4.9 percent. This is substantially less than the growth rates observed in any of the three states affected by the project and well below the U.S. population growth rate for that timeframe of 13.1 percent. The 2004/2005 civilian unemployment rates for each affected county as provided by the applicable state's Department of Labor (NRG 2006) were relatively constant throughout the proposed project area, averaging approximately 3.6 percent and ranging from approximately 2.5 to 4.7 percent.

Wyoming

The greatest population densities in affected counties in Wyoming occur in Laramie County, Wyoming, with 30.4 people per square mile. These population densities are primarily attributed to the city of Cheyenne, Wyoming, which is approximately 10 miles from the proposed project area. The portion of Wyoming affected by the proposed project experienced an average population growth of 4.4 percent, with the greatest decline of 6.1 percent in Carbon County and the greatest increases of 15.4 and 11.6 percent in Lincoln and Laramie counties, respectively. The lowest 2000 median household income levels along the proposed pipeline route are found in Albany County, Wyoming.

Colorado

Where the proposed pipeline route crosses Larimer and Weld counties in northern Colorado, the population densities per square mile are 96.7 and 45.0, respectively. The majority of the population in Larimer County, Colorado, lives in and around the cities of Fort Collins and Loveland, which are 30 miles or more from the proposed project area. The majority of the population in Weld County, Colorado, is in and around the City of

Greeley or in the northern suburbs of Denver. These more densely populated areas in Weld County also are more than 30 miles from the proposed project. Of the three states crossed by the proposed project, Colorado experienced the greatest population growth. Populations in affected counties in Colorado all experienced growth, ranging from a low of 2.4 percent in Washington County to highs of 37.3 and 35.1 percent in Weld and Larimer counties, respectively. However, the largest cities likely to be making the largest contribution to these growth rates in each of these counties are more than 30 miles from the proposed project area.

Table 3.11-2 Affected Communities[1] Along the Proposed Project

State / Community[2]	County	Class[3]	Relative Proximity to Project (miles)	Population (2000)
WYOMING				
Arrowhead Springs	Sweetwater	CDP	0.5	68
Green River	Sweetwater	city	0.5	11,808
Opal	Lincoln	town	0.5	102
Rawlins	Carbon	city	0.5	8,538
Sweeney Ranch	Sweetwater	CDP	0.5	17
Table Rock	Sweetwater	CDP	0.5	82
The Buttes	Albany	CDP	0.5	31
Wamsutter	Sweetwater	town	0.5	261
Elk Mountain	Carbon	town	2	192
Granger	Sweetwater	town	2	146
James Town	Sweetwater	CDP	2	552
Laramie	Albany	city	2	27,204
Little America	Sweetwater	CDP	2	56
Sinclair	Carbon	town	2	423
COLORADO				
Raymer	Weld	town	0.5	91
Eckley	Yuma	town	2	278
Wray	Yuma	city	2	2,187
KANSAS				
Bird City	Cheyenne	city	0.5	482
Susank	Barton	city	0.5	57
WaKeeney	Trego	city	0.5	1,924
Windom	McPherson	city	0.5	137
Frederick	Rice	city	2	11
Little River	Rice	city	2	536
Menlo	Thomas	city	2	57

[1]Affected communities include those communities where new pipeline facilities or surface disturbing activities associated with pipeline refurbishment are proposed.

[2]Communities are listed in order by state as the proposed project crosses from west to east, proximity to proposed project centerline, and descending size based on year 2000 population.

[3]CDP classification represents census-designated place identified by the U.S. Census Bureau for statistical reporting.

Sources: Census 2000a; NRG 2006.

The lowest 2000 per capita income levels occur in Morgan and Yuma counties in Colorado. Larimer County, Colorado, which has the greatest population, population density, and one of the highest population growth rates for all affected counties in the proposed project area, also has the highest income level of both per capita income and median household income. The 2005 civilian labor force available in each affected county of Colorado varies proportionately with the size of the general populations for 2000. The greatest civilian workforce occurred in Larimer and Weld counties in Colorado. The unemployment rate in the affected counties ranged from a low of 3.3 (Yuma County) to 4.7 percent for Weld County.

Table 3.11-3 Socioeconomic Conditions in Affected Counties[1] Along the Proposed Project

State / County[2]	Population in 1990	Population in 2000	% Change in Population 1990-2000	Population Density (per square mile) 2000	Per Capita Personal Income ($ U.S.) 1999	Median Household Income ($ U.S.) 1999	Civilian Labor Force (persons) 2005	Unemployment Rate (%) 2004 / 2005
WYOMING	**453,427**	**493,782**	**8.9**	**5.1**	**19,134**	**37,892**	**254,508**	**4.0**
Lincoln	12,328	14,573	15.4	3.6	17,533	40,794	8,477	3.4
Sweetwater	38,816	37,613	-3.1	3.6	19,575	46,537	22,676	2.9
Carbon	16,655	15,639	-6.1	2.0	18,375	36,060	8,115	3.5
Albany	30,783	32,014	4.0	7.5	16,706	28,790	18,831	3.0
Laramie	73,125	81,607	11.6	30.4	19,634	39,607	42,633	3.8
COLORADO	**3,293,462**	**4,301,261**	**30.6**	**41.5**	**24,049**	**47,203**	**2,304,454**	**5.0**
Larimer	186,154	251,494	35.1	96.7	23,689	48,655	166,986	4.1
Weld	131,782	180,936	37.3	45.0	18,957	42,321	111,454	4.7
Morgan	21,947	27,171	23.8	21.0	15,492	34,568	14,010	4.5
Logan	17,570	20,504	16.7	11.1	16,721	32,724	10,288	4.2
Washington	4,811	4,926	2.4	2.0	17,788	32,431	2,730	3.8
Yuma	8,955	9,841	9.9	4.2	16,005	33,169	6,076	3.3
KANSAS	**2,477,805**	**2,688,418**	**8.5**	**32.9**	**20,506**	**40,624**	**1,374,698**	**5.1**
Cheyenne	3,243	3,165	-2.4	3.1	17,862	30,599	1,645	3.6
Rawlins	3,405	2,966	-12.9	2.8	17,161	32,105	1,425	3.6
Thomas	8,254	8,180	-0.9	7.6	19,028	37,034	4,287	3.1
Sheridan	3,044	2,813	-7.6	3.1	16,299	33,547	1,539	2.6
Gove	3,229	3,068	-5.0	2.9	17,852	33,510	1,524	3.0
Trego	3,696	3,319	-10.2	3.7	16,239	29,677	2,006	2.5
Ellis	25,999	27,507	5.8	30.5	18,259	32,339	17,386	3.2
Russell	7,832	7,370	-5.9	8.2	17,073	29,284	3,525	4.4
Barton	29,380	28,205	-4.0	31.3	16,695	32,176	15,284	3.7
Ellsworth	6,584	6,525	-0.9	9.0	16,569	35,772	3,232	4.0
Rice	10,612	10,761	1.4	14.8	16,064	35,671	5,451	4.7
McPherson	27,264	29,554	8.4	32.8	18,921	41,138	17,630	3.6

[1]Affected counties include those counties where new pipeline facilities or surface disturbing activities associated with pipeline refurbishment are proposed.

[2]States and counties are listed geographically from west to east as proposed project crosses the area.

Sources: Census 2000a; NRG 2006.

Kansas

The greatest population densities along the proposed pipeline route within Kansas are in McPherson County, Kansas, with 32.8 people per square mile. In general, populations in the 12 affected counties in Kansas have declined from 1990 to 2000, with an average decline of 2.8 percent. The greatest declines in population occurred in Rawlins and Trego counties, with growth rates dropping 12.9 and 10.9 percent in each, respectively. McPherson County saw the greatest increase in population for affected counties in Kansas with a growth rate of 8.4 percent. Trego and Russell counties in Kansas have the lowest 2000 median household income levels of the counties crossed by the proposed pipeline route. The 2005 civilian labor force available in each affected county varies proportionately with the size of the general populations for 2000. The smallest civilian workforce occurred in Rawlins, Gove, and Sheridan counties in Kansas. Trego and Sheridan counties in Kansas experienced the lowest unemployment rate of all counties crossed by the proposed pipeline route, while Rice County, Kansas, had the highest rate at 4.7 percent.

3.11.1.2 Infrastructure

Housing

Housing availability across the proposed pipeline route is a function of the housing stock, recent economic and population growth, the inventory of short-term lodging accommodations, such as RV parks and hotel and motel rooms, and demand for housing from other sources. **Table 3.11-4** summarizes the base housing stock in counties crossed by the project for 2000 and planned development for 2004. **Table 3.11-5** summarizes the available housing stock in counties crossed by the proposed project for 2000. The most pertinent component of local housing markets for purposes of the proposed project is the inventory of available short-term accommodations. Such accommodations include the number of available rental units, RV spaces, motel and hotel rooms, and mobile home spaces. In some instances, recreational cabins and seasonal housing for migratory workers also may be included.

Table 3.11-4 Total Housing for Counties along the Proposed Project

State / County[1]	Total Housing Units	Total Vacant Housing Units[2]	Total Rental Units	Building Permits (2004)
WYOMING				
Lincoln	6,831	1,565	1,261	212
Sweetwater	15,921	1,816	4,199	216
Carbon	8,307	2,178	2,136	60
Albany	15,215	1,946	6,793	410
Laramie	34,213	2,286	10,697	876
Wyoming Subtotal	*80,487*	*9,791*	*25,086*	*1,774*
COLORADO				
Larimer	105,392	8,228	32,739	3,252
Weld	66,194	2,947	20,660	4,414
Morgan	10,410	871	3,189	143
Logan	8,424	873	2,584	46
Washington	2,307	318	582	4
Yuma	4,295	495	1,197	2
Colorado Subtotal	*197,022*	*13,732*	*60,952*	*7,861*
KANSAS				
Cheyenne	1,636	276	335	0
Rawlins	1,565	296	336	2
Thomas	3,562	336	1,082	3
Sheridan	1,263	139	221	0
Gove	1,423	178	281	0
Trego	1,723	311	308	25

Table 3.11-4 Total Housing for Counties along the Proposed Project

State / County[1]	Total Housing Units	Total Vacant Housing Units[2]	Total Rental Units	Building Permits (2004)
Ellis	12,078	885	4,408	45
Russell	3,871	664	945	4
Barton	12,888	1,495	3,635	41
Ellsworth	3,228	747	586	19
Rice	4,609	559	1,046	8
McPherson	11,830	625	3,118	128
Kansas Subtotal	*59,676*	*6,511*	*16,302*	*275*
PROJECT TOTAL	**337,185**	**30,034**	**102,340**	**9,910**

[1]States and counties are listed geographically from west to east as proposed project crosses area.

[2]Includes units for rent, for sale, rented or sold but not occupied, available for seasonal, recreational, or migratory use, or other vacant status.

Sources: Census 2000b,c; NRG 2006.

Wyoming. Counties throughout Wyoming tend to have a high total housing supply. Within Wyoming, Laramie County had the highest number of total housing units (34,213) as well as the highest new development in 2004. High numbers of permanent and temporary housing units were available in Sweetwater and Laramie counties in 2000.

Colorado. Counties in more rural areas of eastern Colorado tended to have a low total housing supply and a low level of new development, while counties in northern Colorado tended to have the highest. Larimer and Weld counties in Colorado had the highest number of total housing units as well as the highest new development in 2004. Both permanent and temporary housing units were readily available in 2000 in the more urban communities, such as Larimer and Weld counties.

Kansas. Throughout Kansas, the counties crossed by the proposed pipeline route tended to have the lowest total housing supply and lowest level of new development of the three affected states. The lowest housing supply and growth occur in Sheridan, Gove, Rawlins, and Cheyenne counties in Kansas, and the highest supply and growth occur in Thomas County. Among the rural counties in the eastern portion of the proposed pipeline route the number of available housing stock units recorded in the 2000 Census was lowest in Sheridan, Cheyenne, Rawlins, Gove, and Trego counties in Kansas, all with less than 400 total available rental units. Ellis County had the largest number of available units in 2000.

Public Services and Facilities

Table 3.11-6 outlines selected public services and facilities serving the proposed project area. In general, the public services available are functions of the size and population of the county and the number of larger communities in the county. There are multiple law enforcement providers including the respective state patrols, county sheriffs, local police departments, and special law enforcement services, such as university police. In many instances, mutual aid/cooperative agreements among agencies allow members of one agency to provide support or backup to other agencies in emergency situations.

A network of fire departments and districts provides fire protection and suppression services across the region. Many of the fire districts across the region are staffed by volunteers and are housed in stations located in the larger communities.

For each county along the proposed pipeline route there is at least one acute care facility either within the county crossed or within approximately 50 miles of the proposed pipeline route in a neighboring county. These facilities provide emergency medical care and in several cases, also serve as the base for local emergency medical response and transport services.

Table 3.11-5 Available Housing Summary in Counties along the Proposed Project

		Rental Property			Special Use Vacancies		Temporary Housing Summary	
State / County[1]	Housing Units for Sale	Vacant Rental Units	Rental Vacancy Rate (%)	Median Monthly Rent ($)	Vacant for Seasonal, Recreational, or Occasional Use	Vacant for Migrant Workers	Total Apartment Units and Motel Rooms	Mobile Home / RV Spaces
WYOMING								
Lincoln	122	275	21.8	464	912	9	1,135	1,350
Sweetwater	282	681	16.2	428	243	12	2,388	3,911
Carbon	217	360	16.9	377	1,050	13	987	2,978
Albany	140	356	5.2	464	1,097	1	1,509	1,418
Laramie	328	820	7.7	473	238	1	3,032	2,787
Wyoming Subtotal	*1,089*	*2,492*	*13.6% (avg)*	*$441 (avg)*	*3,540*	*36*	*9,051*	*12,444*
COLORADO								
Larimer	795	1,334	4.1	678	4,870	11	NA	4,145
Weld	744	837	4.0	564	191	50	11,000	729
Morgan	103	174	5.5	482	333	1	1,013	NA
Logan	127	309	12.0	451	74	0	1,220	1,043
Washington	58	57	9.8	341	49	0	749	332
Yuma	75	88	7.4	375	60	6	438	412
Colorado Subtotal	*1,902*	*2,799*	*7.1% (avg)*	*$482 (avg)*	*5,577*	*71*	*14,420*	*6,661*
KANSAS								
Cheyenne	68	25	7.5	314	15	0	44	96
Rawlins	63	42	12.5	328	38	0	51	155
Thomas	52	83	7.7	373	18	1	635	560
Sheridan	28	22	10.0	286	25	0	37	81
Gove	38	30	10.7	330	22	2	135	142
Trego	32	41	13.3	326	106	0	201	130
Ellis	113	302	6.9	431	43	0	3,866	987
Russell	100	150	15.9	325	60	1	564	282
Barton	261	456	12.5	390	64	1	1,560	1,208
Ellsworth	66	81	13.8	336	302	1	182	459
Rice	80	98	9.4	340	84	1	275	646
McPherson	127	206	6.6	416	35	0	951	860
Kansas Subtotal	*1,028*	*1,536*	*10.6% (avg)*	*$350 (avg)*	*812*	*7*	*8,501*	*5,606*
PROJECT TOTAL	**4,019**	**6,827**	**10.1% (avg)**	**$404 (avg)**	**9,929**	**114**	**31,972**	**24,711**

[1]States and counties are listed geographically from west to east.

NA = Data not available.

Sources: Census 2000b,c; NRG 2006.

Table 3.11-6 Existing Public Services and Facilities Along the Proposed Overland Pass Pipeline Route

State / County[1]	Police/Sheriff Departments[2]		Fire Departments[3]		Medical Facilities[4]		
	Number of Depts.	Approximate Distance to Nearest (miles)	Number of Depts.	Approximate Distance to Nearest (miles)	Number of Hospitals	Name/Location	Approximate Distance to Nearest (miles)
WYOMING							
Lincoln	5	10	7	10	2	South Lincoln Medical Center (Kemmerer); Star Valley Medical Center (Afton)	10.0
Sweetwater	4	1	10	1	1	Memorial Hospital of Sweetwater County (Rock Springs)	6.6
Carbon	7	2	8	2	1	Memorial Hospital of Carbon County (Rawlins)	1.6
Albany	3	4	5	4	1	Ivinson Memorial Hospital (Laramie)	5.1
Laramie	4	4	10	11	2	United Medical Center West (Cheyenne); Cheyenne VA Medical Center (Cheyenne)	11.6
COLORADO							
Larimer	6	28	16	18	3	Poudre Valley Hospital (Fort Collins); McKee Medical Center (Loveland); Estes Park Medical Center (Estes Park)	29.1
Weld	16	24	19	8	1	North Colorado Medical Center (Greeley)	31.9
Morgan	3	17	4	11	2	East Morgan County Hospital (Brush); Colorado Plains Medical Center (Fort Morgan)	18.0
Logan	2	14	6	14	1	Sterling Regional Medical Center (Sterling)	12.7
Washington	1	15	3	10	0	N/A (see Morgan, Logan, or Yuma County)	N/A
Yuma	3	2	4	2	2	Wray Community District Hospital (Wray); Yuma District Hospital (Yuma)	2.1
KANSAS							
Cheyenne	2	5	2	1	1	Cheyenne County Hospital (Saint Francis)	6.3
Rawlins	2	16	4	5	1	Rawlins County Health Center (Atwood)	16.6
Thomas	2	9	4	2	1	Citizens Medical Center (Colby)	9.7
Sheridan	2	6	2	6	1	Sheridan County Health Complex (Hoxie)	5.9
Gove	2	22	3	15	1	Gove County Medical Center (Quinter)	22.7
Graham[5]	2	6	4	9	1	Graham County Hospital (Hill City)	6.1

Table 3.11-6 Existing Public Services and Facilities Along the Proposed Overland Pass Pipeline Route

State / County[1]	Police/Sheriff Departments[2]		Fire Departments[3]		Medical Facilities[4]		
	Number of Depts.	Approximate Distance to Nearest (miles)	Number of Depts.	Approximate Distance to Nearest (miles)	Number of Hospitals	Name/Location	Approximate Distance to Nearest (miles)
Trego	2	5	3	5	1	Trego County Lemke Memorial Hospital (WaKeeney)	1.8
Ellis	5	6	4	6	2	Hays Medical Center (Hays); NW Kansas Surgery Center (Hays)	6.4
Rush[5]	2	12	6	9	1	Rush County Memorial Hospital (La Crosse)	17.0
Russell	3	14	11	11	1	Russell Regional Hospital (Russell)	13.9
Barton	4	8	8	3	4	Clara Barton Hospital (Hoisington); Ellinwood District Hospital (Ellinwood); Central Kansas Medical Center (Great Bend); Surgical and Diagnostic Center of Great Bend (Great Bend)	8.1
Ellsworth	4	2	5	3	1	Ellsworth County Medical Center (Ellsworth)	16.0
Rice	5	3	8	2	1	Rice County Hospital District No. 1 (Lyons)	6.5
McPherson	8	11	11	9	3	Memorial Hospital Inc. (McPherson); Mercy Hospital Inc. (Moundridge); Lindsborg Community Hospital (Lindsborg)	8.5

[1]States and counties are listed geographically from west to east as proposed project crosses the area.

[2]Includes special law enforcement units for universities.

[3]Includes volunteer, district, city, and town fire departments, but does not include departments and services offered by the BLM or Department of Defense.

[4]Does not include mental health centers, drug/alcohol rehab, or eye surgery/laser facilities.

[5]Rush and Graham counties, Kansas, are not crossed by the proposed pipeline route, but have public services and facilities within close proximity and have therefore been included.

Source: NRG 2006.

3.11.1.3 Fiscal Relationships

Tax revenues constitute the primary source of income to the economies of the states, counties, and communities affected by pipeline construction. Taxes levied by various state, county, or local taxing jurisdictions may include property taxes paid on the purchase of land, payroll taxes on wages paid to temporary project employees, sales taxes on gross receipts from the sales of goods and services, and corporate income taxes. Sales tax revenues typically are generated by the temporary influx of workers who purchase local goods and services, the local purchase of construction materials, and leases/rentals on various office and/or storage spaces and construction equipment. Federal agencies also assess fees for use of public lands for activities such as pipeline and transmission line ROWs. These taxes and fees vary by region.

Employing a cost approach, states generally assess the value of pipelines to facilitate consistent valuation over all the counties crossed within the state. The resultant value is assigned to affected counties and taxing jurisdictions and property taxes are assessed accordingly. The effective property tax rates are then calculated using state property tax levies for pipelines, county property tax levies on pipelines, or a combination of the two. The impact a pipeline may have on the value of a tract of land depends on many factors including the size of the tract, values of adjacent properties, presence of other utilities, the current value of the land, and the current land use. Based on miles of pipeline through each state, Overland Pass anticipates that they would pay a total of approximately $10 million distributed proportionately to each state: approximately 15 percent to Wyoming, 10 percent to Colorado, and 75 percent to Kansas. Each state would then distribute these tax revenues to their respective counties accordingly.

3.11.1.4 Environmental Justice

EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, requires that impacts on minority or low-income populations be taken into account when preparing environmental and socioeconomic analyses of projects or programs that are proposed, funded, or licensed by federal agencies (FR 1994). The Environmental Justice Guidance under NEPA prepared by the CEQ (1997) is commonly used in implementing EO 12898 in preparing NEPA documents.

The purpose of the order is to avoid the disproportionate placement of any adverse environmental, economic, social, or health impacts from federal actions and policies on minority populations, low-income populations, and Indian tribes and to allow all portions of the population an opportunity to participate in the development of, compliance with, and enforcement of federal laws, regulations, and policies affecting human health of the environment regardless of race, color, national origin, or income. The provisions of the order apply to programs involving Native Americans and Hispanic communities. These requirements would be addressed by a) ensuring broad distribution of public information on the project through public scoping meetings and b) conducting government-to-government consultation with Native American groups either residing in or with historical ties to the project area. Details regarding public scoping meeting dates and locations can be found in Section 1.7. For an expanded discussion of Native American consultation, see Section 3.10.

Minority Populations

The CEQ defines the term “minority population” to include people who identify themselves during the Census as Black or African American, Asian or Pacific Islander, Native American or Alaskan Native, or Hispanic. Hispanic origin refers to ethnicity and language, not race, and may include people whose heritage is Puerto Rican, Cuban, Mexican, and Central or South American.

In accordance with the CEQ, minority populations should be identified where either a) the minority population in an affected area (e.g., a community) exceeds 50 percent; or b) the minority population percentage of the affected area is meaningfully greater (1.5 times) than the minority population percentage in the general population of the surrounding area (e.g., the county or other appropriate unit of geographical analysis). This is determined by multiplying the percentage of minorities in the surrounding area by 1.5. If the resulting figure exceeds the percentage of the minority population in the community, the community is not a minority population.

Tables 3.11-7 and **3.11-8** provide 2000 Bureau of the Census statistics on race, ethnicity, and income status in affected counties and communities. Affected counties are those counties crossed by the proposed project and affected communities are those in the proximity of the proposed pipeline route. Communities in the proximity of the proposed pipeline routes include those communities crossed by the proposed pipeline route (within 0.5 mile) as well as communities located within 2 miles of the proposed pipeline route. Based upon review of the available Census data for minority populations in all of the counties crossed and communities in the proximity of the proposed pipeline route, the various minority populations do not exceed 50 percent, however, there are minority populations occurring in portions of the counties crossed by the proposed pipeline route that are “meaningfully greater” than their corresponding minority populations in the general population. Therefore, for the purposes of identifying environmental justice concerns, minority populations, as defined in the CEQ, exist within the study area. For this EIS, general minority populations used for comparison were state populations.

Wyoming. In Wyoming, 3 counties and 7 of the affected communities have minority populations greater than 1.5 times the relevant minority population in their associated general populations. These include Carbon, Albany, and Laramie counties and the communities of Arrowhead Springs, Green River, Rawlins, Table Rock, and Wamsutter within 0.5 mile, and Laramie and Little America within 2 miles of the proposed project.

Colorado. Two affected counties and 1 affected community in Colorado have minority populations greater than 1.5 times their respective relevant minority populations. These include Weld and Morgan Counties and the community of Eckley, which is within 2 miles of the proposed project.

Kansas. There are no counties or communities in Kansas with minority populations greater than 1.5 times the relevant minority population in the associated general populations.

<u>Low-Income Populations</u>

According to the CEQ, low-income populations in an affected area should be identified using the annual statistical poverty thresholds from the Bureau of the Census’ Current Population Reports, Series P-60 on Income and Poverty. In identifying low-income populations, federal agencies may consider as a community either a group of individuals living in geographic proximity to one another or a set of individuals (such as migrant workers or Native Americans) where either type of group experiences common conditions of environmental exposure or effect. The poverty thresholds are revised annually to allow for changes in the cost of living as reflected in the Consumer Price Index. They are the same for all parts of the country (i.e., they are not adjusted for regional, state, or local variations in the cost of living). The poverty threshold for a family of three used for analysis was $13,290 in 2000. The median family income in the nation was $50,046 for a family of three and the percent of families below the poverty level was 9.2 percent.

Low income populations were identified along the proposed pipeline route by comparing the percent of the population below the poverty level in the affected counties and communities to the percent of the population below the poverty level in each respective state. If the percent in the affected county or community was greater than the percent in the state, the affected county or community was determined to be a low-income population. Low-income counties and communities are identified on **Tables 3.11-7** and **3.11-8**. The percent of the population below the poverty level in all three states is lower than the percent of the population below that of the national population.

Wyoming. In Wyoming, there are two counties (Carbon and Albany) and four communities (Rawlins, Wamsutter, Granger, and Laramie) that are identified as low-income populations. Roughly 10 percent of families in Carbon and Albany counties have incomes below the poverty level.

Colorado. In the more heavily populated state of Colorado, five of six affected counties and all three affected communities, Raymer, Eckley and Wray, are considered low-income populations. However, the national percentage of the population below the poverty level is greater than that of any of the affected counties in Colorado.

Table 3.11-7 Environmental Justice Statistics in Affected Counties[1]

State / County[2]	Total Population 2000	Racial/Ethnic Categories (% of total population, 2000)[3]							Median Family Income (1999)[5]	Families With Income Below the Poverty Level[6] (%) (1999)
		White	Black	Native American or Alaskan Native	Asian or Pacific Islander	Hispanic[4]	Other	Two or More Races		
WYOMING	**493,782**	**92.1**	**0.8**	**2.3**	**0.7**	**6.4**	**2.5**	**1.8**	**45,685**	**8.0**
Lincoln	14,573	97.1	0.1	0.6	0.3	2.2	0.7	1.2	44,919	6.4
Sweetwater	37,613	91.6	0.7	1.0	0.6	9.4	3.6	2.4	54,173	5.4
Carbon	15,639	90.1	0.7	1.3	0.8	13.8*	5.2	2.1	41,991	9.8*
Albany	32,014	91.3	1.1	1.0	1.8*	7.5	2.6	2.2	44,334	10.8*
Laramie	81,607	88.9	2.6*	0.8	1.1	10.9*	4.0	2.6	46,536	6.5
COLORADO	**4,301,261**	**82.8**	**3.8**	**1.0**	**2.3**	**17.1**	**7.2**	**2.8**	**55,883**	**6.2**
Larimer	251,494	91.4	0.7	0.7	1.7	6.3	3.4	2.2	58,866	4.3
Weld	180,936	81.7	0.6	0.9	0.9	27.0*	13.3	2.7	49,569	8.0*
Morgan	27,171	79.7	0.3	0.8	0.4	31.2*	16.4	2.5	39,102	8.5*
Logan	20,504	91.7	2.0	0.6	0.5	11.9	3.8	1.4	42,241	9.0*
Washington	4,926	96.4	0.0	0.6	0.1	6.3	2.0	0.9	37,287	8.6*
Yuma	9,841	94.2	0.1	0.3	0.1	12.9	4.1	1.2	39,814	8.8*
KANSAS	**2,688,418**	**86.1**	**5.7**	**0.9**	**1.7**	**7.0**	**3.4**	**2.1**	**49,624**	**6.7**
Cheyenne	3,165	97.9	0.1	0.1	0.3	2.6	1.0	0.5	34,816	7.4*
Rawlins	2,966	98.5	0.3	0.3	0.1	0.8	0.1	0.7	40,074	7.9*
Thomas	8,180	97.1	0.4	0.3	0.3	1.8	1.0	0.9	45,931	6.6
Sheridan	2,813	98.6	0.1	0.1	0.2	0.9	0.4	0.6	38,292	12.0*
Gove	3,068	97.9	0.1	0.2	0.1	1.2	0.7	1.0	40,438	8.0*
Trego	3,319	97.8	0.2	0.4	0.6	1.1	0.2	1.0	40,524	11.2*
Ellis	27,507	96.1	0.7	0.2	0.8	2.4	1.3	0.9	44,498	6.5
Russell	7,370	97.6	0.5	0.6	0.3	1.0	0.3	0.7	40,355	9.1*
Barton	28,205	93.0	1.1	0.5	0.2	8.3	3.5	1.6	39,929	9.9*
Ellsworth	6,525	93.7	3.6	0.5	0.2	3.6	0.9	1.2	44,360	4.0
Rice	10,761	94.7	1.2	0.6	0.3	5.6	1.8	1.4	40,960	8.5*
McPherson	29,554	96.5	0.8	0.3	0.4	1.9	0.8	1.2	48,243	4.2

[1] Affected areas are those counties where existing facilities exist, or counties where new pipeline facilities or surface disturbing activities associated with pipeline refurbishment are proposed.

[2] States and counties are listed geographically from west to east as proposed project crosses the area.

[3] Minority populations defined as black, Native American or Alaskan Native, Asian Pacific Islander, or Hispanic with percentages meaningfully greater than 1.5 times that of the minority population percentage in the general population of the surrounding area (i.e., the corresponding state) are identified with an asterisk (*).

[4] Persons of Hispanic origin may be of any race, and for census-gathering purposes, Hispanic is a self-identified category. In this table individuals may have reported themselves as only Hispanic or in combination with one or more of the other races listed. This may result in the sum of percentages for all ethnic categories to be greater than 100 percent for any one county.

[5] The median family income is defined here for a family of three. The poverty threshold is defined as the average threshold for a family of three and is not adjusted for regional, state, or local variations in the cost of living.

[6] The percent of families with income below the poverty threshold in 2000, as defined by the Census Bureau for federal statistical purposes, based on a family of three. Counties with a higher percent of the population below the poverty level than that occurring in the respective state are identified with an asterisk (*).

Source: Census 2000b; NRG 2006.

Table 3.11-8 Environmental Justice Statistics in Affected Communities[1]

State / Community[2]	Relative Proximity to Route (within x miles)	Racial/Ethnic Categories (% of total population)[3]							Median Family Income (1999)[5]	Families With Income Below the Poverty Level[6] (%) (1999)
		White	Black	Native American or Alaskan Native	Asian or Pacific Islander	Hispanic[4]	Other	Two or More Races		
WYOMING		**92.1**	**0.8**	**2.3**	**0.7**	**6.4**	**2.5**	**1.8**	**45,685**	**8.0**
Arrowhead Springs	0.5	92.6	0.0	0.0	5.9*	0.0	0.0	1.5	83,654	0.0
Green River	0.5	92.1	0.3	1.4	0.4	10.2*	4.2	1.6	59,100	3.1
Opal	0.5	99.0	0.0	0.0	0.0	5.9	0.0	1.0	52,083	0.0
Rawlins	0.5	85.9	0.8	1.5	0.9	21.0*	8.3	2.6	42,137	10.4*
Sweeney Ranch	0.5	100.0	0.0	0.0	0.0	0.0	0.0	0.0	N/A	0.0
Table Rock	0.5	86.6	0.0	1.2	1.2*	11.0*	3.7	7.3	48,750	0.0
The Buttes	0.5	100.0	0.0	0.0	0.0	0.0	0.0	0.0	63,750	0.0
Wamsutter	0.5	93.9	0.0	0.8	0.0	13.0*	3.1	2.3	46,250	11.4*
Elk Mountain	2	95.8	0.0	1.0	0.0	5.2	2.1	1.0	46,042	0.0
Granger	2	82.2	0.0	0.0	0.0	2.1	8.2	9.6	52,083	10.5*
James Town	2	95.3	0.4	0.4	0.0	6.5	1.1	2.9	53,295	4.5
Laramie	2	90.8	1.2	0.9	2.0*	7.9	2.9	2.2	43,395	11.1*
Little America	2	71.4	0.0	0.0	0.0	44.6*	28.6	0.0	18,750	0.0
Sinclair	2	96.2	0.5	1.4	0.0	2.6	0.9	0.9	54,688	1.7
COLORADO		**82.8**	**3.8**	**1.0**	**2.3**	**17.1**	**7.2**	**2.8**	**55,883**	**6.2**
Raymer	0.5	98.9	0.0	0.0	0.0	7.7	1.1	0.0	36,875	14.8*
Eckley	2	85.3	0.4	1.8*	0.0	19.4	10.8	1.8	26,250	17.8*
Wray	2	94.4	0.1	0.3	0.1	10.0	3.5	1.6	38,942	11.3*
KANSAS		**86.1**	**5.7**	**0.9**	**1.7**	**7.0**	**3.4**	**2.1**	**49,624**	**6.7**
Bird City	0.5	99.2	0.0	0.2	0.0	2.9	0.2	0.4	32,589	15.0*
Susank	0.5	98.2	0.0	0.0	0.0	0.0	0.0	1.8	18,125	33.3*
WaKeeney	0.5	97.1	0.1	0.5	0.9	0.6	0.0	1.5	40,547	6.3
Windom	0.5	95.6	0.0	0.0	0.0	0.0	1.5	2.9	38,125	7.1*
Frederick	2	100.0	0.0	0.0	0.0	0.0	0.0	0.0	46,250	0.0
Little River	2	97.4	0.0	0.0	0.0	1.3	0.4	2.2	33,125	16.0*
Menlo	2	98.2	0.0	0.0	0.0	0.0	0.0	1.8	27,500	25.0*

[1]Affected areas are those communities where existing facilities exist, or communities where new pipeline facilities or surface disturbing activities associated with pipeline refurbishment are proposed.

[2]Communities are listed in order by state as the proposed project crosses from west to east, proximity to proposed project centerline, and descending size based on year 2000 population.

[3]Minority populations defined as black, Native American or Alaskan Native, Asian Pacific Islander, or Hispanic with percentages meaningfully greater than 1.5 times that of the minority population percentage in the general population of the surrounding area (i.e., the corresponding state) are identified with an asterisk (*).

[4]Persons of Hispanic origin may be of any race, and for census-gathering purposes, Hispanic is a self-identified category. In this table individuals may have reported themselves as only Hispanic or in combination with one or more of the other races listed. This may result in the sum of percentages for all ethnic categories to be greater than 100 percent for any one community.

[5]The median family income is defined here for a family of three. The poverty threshold is defined as the average threshold for a family of three and is not adjusted for regional, state, or local variations in the cost of living.

[6]The percent of families with income below the poverty threshold in 2000, as defined by the Census Bureau for federal statistical purposes, based on a family of three. Communities with a higher percent of the population below the poverty level than that occurring in the respective state are identified with an asterisk (*).

Source: Census 2000b.

Kansas. Nine of the 12 counties crossed by the proposed pipeline route and 5 of 7 communities along the proposed pipeline route in Kansas are identified as low income populations. The highest percentage poverty level across all three states was 33.3 percent in the community of Susank, Kansas.

3.11.2 Southern Energy Corridor – Copper Ridge Bypass Alternative

The socioeconomic analysis using the Southern Energy Corridor – Copper Ridge Bypass Alternative is no different from that of the Proposed Action except that the pipeline would be approximately 5.6 miles from the community of Arrowhead Springs, Wyoming. All counties and all other communities affected by the Proposed Action also would be affected by the Southern Energy Corridor – Copper Ridge Bypass Alternative.

3.12 Public Health and Safety

3.12.1 Proposed Action

3.12.1.1 Hazardous Materials and Wastes

Pre-existing soil contamination along the proposed pipeline route may exist. Review of the USEPA's CERCLIS Database (USEPA 2006b) and state Superfund Site Status Summaries indicates that the proposed pipeline route does not intercept any known areas of contamination.

Wyoming. One site listed in the CERCLIS Database, the Pole Mountain Former Target and Maneuver Area, is currently managed by the USFS as a recreational area in Wyoming. The area is located roughly 350 feet from the proposed centerline at approximate RP 294.6. This site is not listed on the NPL but could potentially contain unexploded munitions. No other Wyoming sites with previous contamination are crossed by the proposed pipeline route and the proposed project does not cross any municipal solid waste or hazardous waste landfills in Wyoming.

Colorado. No Superfund sites are intersected or within 5 miles of the proposed pipeline (USEPA 2006b).

Kansas. No Superfund sites are intersected or within 5 miles of the proposed pipeline route (USEPA 2006b).

3.12.1.2 Emergency Response Organizations

The existing public services and facilities in the project are shown on **Table 3.11-6**. In general, the public services available in the proposed project area are directly related to the numbers of cities and towns in each county and the population figures of the county.

The number of police and/or sheriff departments within each county that would be affected by the proposed project ranges from one department in Washington County, Colorado, to 16 departments in Weld County, Colorado. Weld County also has the highest number of fire departments with 19, whereas the counties in northwestern Kansas have only 2 to 4 fire departments each. Barton County, Kansas, has the most medical facilities available (4) within the project area, while Washington County, Colorado has no acute care hospital capable of providing emergency medical assistance.

3.12.2 Southern Energy Corridor – Copper Ridge Bypass Alternative

Public health and safety resources for this alternative are the same as the Proposed Action. No hazardous waste sites are located along the Southern Energy Corridor – Copper Ridge Bypass Alternative

4.0 Environmental Consequences

4.1 Analysis Assumptions and Analysis Guidelines

Assumptions

1. Overland Pass' construction and operation methods and environmental protection measures contained in the *Construction, Reclamation, and Revegetation Plan* (**Appendix B**) would be implemented on federal lands, and similar procedures would be used on non-federal lands, with the primary differences identified in Chapter 2.0. Individual landowners may include specific construction and reclamation requirements in ROW agreements with Overland Pass. These requirements would likely result in similar or less environmental impacts than discussed in this section.

2. Overland Pass would acquire all necessary federal, state, and local permits and approvals to construct and operate the Overland Pass Pipeline system (but not including powerlines, which would be controlled and operated by power companies), regardless of whether the requirements for these permits and approvals are listed in this document.

Guidelines

1. For the Proposed Action and all alternatives, the term "Construction Phase" is defined fully in Chapter 2.0. Activities in this phase include the surface-disturbing activities needed to construct the pipeline, pump stations, meter stations, pigging facilities, valves, and permanent access roads so that the entire pipeline system can be placed into service. It also includes reclamation activities for areas where the surface has been disturbed.

2. For the Proposed Action and all alternatives, the term "Operation Phase" is defined fully in Chapter 2.0. Activities in this phase include transportation of NGLs in the Overland Pass Pipeline system. This definition also includes normal operations; routine pipeline ground and aerial inspections; emergency response activities; future routine internal and external integrity inspections and repairs along short segments of the entire pipeline; and future remedial restoration activities such as reseeding and repair of erosion control structures.

3. Prior to abandonment, Overland Pass would coordinate with appropriate federal and state management agencies to ensure that abandonment procedures follow agency-approved procedures at that time.

4. For all resources, unless specific exceptions are stated, short-term impacts are those that would occur over a 5-year period or less, while long-term impacts are those that exceed 5 years.

5. Overland Pass' committed environmental protection measures included in their draft POD were used to evaluate environmental impacts. Several site-specific plans that are part of the applicant's draft POD have been included as an appendix to the EIS. Other specific plans are not attached but are referred to in this document and can be found on the BLM website as technical reference reports (www.blm.gov/wy/st/en/info/NEPA/rfodocs/overland_pipeline.html). The POD is currently a draft document that will be finalized by Overland Pass and submitted to BLM for review and approval after completion of a final EIS.

6. Mitigation measures contained in the EIS are recommendations. If the project was approved, the Authorized Officer would determine which mitigation measures would be added as stipulations in any ROW grant that BLM would grant for the project.

4.2 Climate and Air Quality

4.2.1 Proposed Action

Construction Phase

Issues

- Construction dust generation.
- Construction equipment pollutant emissions.

Analysis

In addition to the new NGL pipeline, Overland Pass plans to construct three pump stations (including one future pump station) and seven meter stations as listed in **Table 2.1-1**. The proposed pipeline project would generate air emissions through short-term construction activities. Emissions from all phases of construction would be subject to applicable state and federal air regulations. The air emissions potentially resulting from construction of the proposed compression facilities and presented in this report represent worse-case scenarios based on currently available equipment.

Construction of the proposed pipeline and pump stations would result in intermittent and short-term fugitive emissions. The average daily uncontrolled fugitive dust emissions for a typical pipeline spread (4 miles per day) are estimated at 1430 pounds per day using an emission factor of 1.2 tons per acre per month for construction activities (USEPA 1995). By applying water as a control measure, the potential emissions may be reduced by 50 to 80 percent, resulting in actual emissions of approximately 700 – 300 pounds per day. Emissions would be restricted to the brief construction period along each stretch of the pipeline route. Construction impacts would diminish once construction activities end and after disturbed areas are reclaimed. These emissions would include dust from soil disruption and combustion emissions from the construction equipment. The fugitive dust emissions would depend on the moisture content and texture of the soils that would be disturbed. However, emissions from construction are not expected to cause or significantly contribute to a violation of an applicable ambient air quality standard because the construction equipment would be operated on an as-needed basis during daylight hours only. Emissions from the gasoline and diesel engines would be minimized because the engines must be built to meet the standards for mobile sources established by the USEPA mobile source emission regulations (Title 40 CFR Part 85). In addition, the USEPA is requiring that the maximum sulfur content of diesel fuel for highway vehicles be reduced from 500 ppmw to 15 ppmw by mid-2006, making lower sulfur diesel available nationwide.

Additional Mitigation

No additional mitigation was identified.

Conclusion

The procedures proposed by Overland Pass are sufficient to minimize impacts to air resources.

Operation Phase

Issues

- Operational emissions.

Analysis

The proposed pipeline project includes long-term operation of the stationary emission units at the pump stations. The pumps are electric and therefore do not emit any emissions. Emergency flares would be the only source of emissions at the proposed pump stations. The emergency flares are used when a blow down of the pipeline is necessary. Blow downs occur only during emergency situations and are not required for routine maintenance of the pump station.

Emissions from operation would be subject to applicable state and federal air regulations. Potential emissions would be less than the PSD major source thresholds of 250 tpy for all criteria; therefore, the project sources would not be subject to PSD permitting. and are not expected to have a significant impact on air quality. As such, dispersion modeling is not required under the federal construction permitting program. Overland Pass would not need to obtain air permits for the proposed pump stations. The facilities associated with this project would be located in attainment or maintenance areas; therefore; the project sources would not be subject to NNSR permitting.

Additional Mitigation

No additional mitigation was identified.

Conclusion

No operational impacts to air quality are expected.

4.2.2 No Action Alternative

Under the No Action Alternative, the BLM would reject Overland Pass' application to construct the pipeline as proposed and the project would not be constructed. Because natural gas extraction in the region would continue and associated NGL production is expected to exceed existing pipeline capacity, other pipeline projects may be proposed in the future.

When viewed in its entirety, the proposed Overland Pass proposed pipeline route is a fairly direct route from NGL supply sources to delivery points in Kansas. Other pipeline routes that would achieve the stated purpose and need of the project likely would be of similar or longer in overall length. Consequently, other future pipelines would have similar or greater impacts to air quality during construction and operation due to the additional length of pipe and pump power sources with similar or greater emissions.

4.2.3 Southern Energy Corridor – Copper Ridge Bypass Alternative

The Southern Energy Corridor – Copper Ridge Bypass Alternative would be 4.8 miles greater in length than the Proposed Action. As a result, there would be an increase in the emissions and dust during construction. However, the overall change in length represents less than a 1 percent change for the entire route and therefore would not result in significant overall differences between the alternatives.

The Southern Energy Corridor – Copper Ridge Bypass Alternative would not require additional pumps or pump stations to be constructed. The alternative would, however, require 42.5 hp, compared to the 30 hp required by the Proposed Action. Despite this difference in horsepower, no change in air quality is anticipated because the pump stations would be electric-powered.

4.3 Geology and Geologic Hazards

4.3.1 Proposed Action

4.3.1.1 Physiography and Geology

Construction Phase

Issues

- Disturbances to topography.

Analysis

The effects of construction would include disturbances to the topography along the ROW and at aboveground facilities due to grading and trenching activities. Upon completion of construction, Overland Pass would restore topographic contours and drainage patterns as closely as possible to the pre-construction condition.

Blasting potentially could adversely impact the geologic and physiographic environment. Limited blasting could be required in areas where shallow bedrock or boulders were encountered that could not be removed by conventional excavation with a trackhoe trencher, ripping with a bulldozer followed by trackhoe excavation, or hammering with a trackhoe-attached device (hoe-ram) followed by excavation. Blasting is more likely to be required in areas where hard bedrock is near the surface.

Overland Pass' construction specialists reviewed the proposed pipeline route and estimate that blasting may be necessary along approximately 21.6 miles (3 percent) of the proposed pipeline route. Based on the proposed construction spreads, the areas where blasting may be required are identified in **Table 4.3-1**.

Table 4.3-1 Areas Containing Shallow Bedrock where Blasting may be Required

State	County	Location (RP)	Length of Area Containing Shallow Hard Bedrock (miles)
Wyoming	Lincoln, Sweetwater	0.0 – 45.0	1.3
	Sweetwater	45.0 – 103.0	3.5
	Sweetwater, Carbon	103.0 – 147.0	3.5
	Carbon, Sweetwater	147.0 – 194.0	3.8
	Carbon	194.0 – 196.0	0.6
	Carbon	196.0 – 208.0	4.2
	Carbon, Albany	208.0 – 281.0	0.7
Wyoming/Colorado	Albany, Weld	281.0 – 330.0	3.9
Colorado/Kansas	multiple counties	330.0 – 749.4	0.0
PROJECT TOTAL			**21.6**

Blasting operations could damage nearby structures, including buildings, springs and wells, and existing underground pipelines.

Additional Mitigation

Overland Pass developed a blasting plan as part of their draft POD that incorporates notification and monitoring requirements (Overland Pass 2006).

Conclusion

The construction techniques proposed by Overland Pass are largely sufficient to minimize impacts and restore surface contours. However, agricultural lands that rely on flood irrigation may have overland flow of water disrupted by the pipeline trench, even after compaction and restoration (Section 4.4.1).

While blasting could adversely affect nearby structures, springs and wells, and existing underground pipelines, Overland Pass has committed to repair or fairly compensate landowners for damage to these features. Based on Overland Pass' proposed procedures and committed mitigation, no significant adverse impacts would be anticipated from blasting activities.

Operation Phase

Issues

- No issues associated with geological resources were identified with operation.

Analysis

Operation of the proposed pipeline and associated aboveground facilities would not materially alter the geologic and physiographic conditions or worsen existing unfavorable geologic conditions in the area.

Additional Mitigation

No additional mitigation was identified.

Conclusion

No significant adverse impacts to geological resources would be anticipated.

4.3.1.2 Mineral Resources

Construction Phase

Issues

- Potential interference with existing mining operations.

Analysis

Construction activities along the proposed ROW could interfere with current mining or mineral extraction activities. As shown in **Tables 3.3-2**, the proposed pipeline route crosses numerous oil and gas fields. In addition, the proposed pipeline route crosses areas of known trona mining, coal resources, and is close to active sand and gravel quarries (**Table 3.3-3**). Nevertheless, construction would have very minor and short-term impact on current mineral extraction activities due to the temporary and localize nature of pipeline construction activities.

No oil and gas wells were identified within the proposed pipeline construction ROW. However, blasting operations potentially could damage nearby oil and gas wells, and trenching could encounter underground gathering pipelines associated with the wells. Because oil and gas generally is produced from depths of more than 1,000 feet, construction of the pipeline would not be expected to affect the ability of the wells to produce oil and/or natural gas. Rather, any construction-related damage that could occur would be limited to surface or near-surface components of the wells and gathering systems, which could temporarily disrupt production until repairs were made. Potential affects of blasting on nearby wells would be mitigated by implementing Overland Pass' *Blasting Plan* (Overland Pass 2006). Prior to construction, Overland Pass shall identify any associated underground gathering lines in the project construction ROW and either avoid piping or take appropriate precautions to protect the integrity of such facilities.

Additional Mitigation

No additional mitigation was identified.

Conclusion

Potential impacts to surface mining operations, if any, would be limited to temporary short-term encumbrances during construction and would be minimized by Overland Pass working with the owners and/or operators of these mining operations during ROW negotiations and facilities construction to minimize conflicts where mineral resources could be affected. Because construction of the pipeline would be limited to near-surface disturbance, the proposed project would not impact oil and gas production in the area or other underground resource recovery operations, such as coal.

Operation Phase

Issues

- Potential for reduced access to underlying minerals.
- Potential interference with future mining operations.
- Potential damage to pipeline and ancillary facilities from mine-induced subsidence.

Analysis

Long-term operation of a pipeline has the potential to preclude access to mineral resources. Overland Pass recognized the potential conflicts with trona mining and re-routed around leased areas where mining is anticipated in the foreseeable future, thereby reducing the potential for future conflicts with trona mining (Section 2.3.3.3).

Placement of a pipeline over underground mining operation could place the pipeline at risk for surface subsidence to result in damage to the pipeline, aboveground facilities, and interruption of service. Since most of the proposed pipeline route is co-located in existing pipeline ROW, there is low potential for the preclusion of mineral resources. However, subsidence over active mining areas could present some problems. Subsidence over trona mining areas is on the order of around 6 feet. The amount of subsidence is influenced by a number of factors including, but not limited to, the mining method, thickness of mined-out material, the depth of the overburden, and the strength of overburden materials (Dunrud 1976). No underground salt mining operations were identified beneath the proposed pipeline route in Kansas.

Additional Mitigation

GEO-1: Overland Pass shall conduct studies prior to construction to determine if subsidence is occurring or if potential subsidence could occur along the proposed pipeline route. If subsidence has occurred or has the strong potential to occur, Overland Pass shall use appropriate design standards and ground monitoring devices to assure pipeline integrity.

Conclusion

Operation of the proposed pipeline and aboveground facilities would not have a significant added impact on current or future mineral recovery operations in the area because most of the proposed pipeline route would follow existing ROWs that have already precluded mineral development along the proposed pipeline route. Additionally, impacts on future mineral development would not constitute a significant loss of mineral resource or mineral availability because of the narrow, linear nature of the pipeline ROW relative to the expanse of areas with mineral resource potential.

It is anticipated that the pipeline would be backfilled with materials derived from the trench excavation, and it might be necessary to obtain some construction sand and gravel from local, existing commercial sources for use as backfill, road base, or surface facility pads. These demands for sand and gravel would not substantially affect the long-term availability of construction materials in the area.

While there is a slight risk of mine-induced subsidence along localized portions of the Proposed Action, federal regulations require Overland Pass to design, operate, and maintain its pipeline to account for risk factors, such as subsidence.

4.3.1.3 Geological Hazards

Construction Phase

Issues

- Geological hazards that could affect pipeline and workers during construction.

Analysis

The hazard of concern during construction of the pipeline would be from unintentional undercutting of slopes or construction on steep slopes resulting in instability that would lead to landslides. Overland Pass attempted to minimize the amount of steep slopes crossed by the pipeline. Special pipeline construction practices described in Section 2.2.1.3 would minimize slope stability issues during construction. Implementation of Overland Pass' *Construction, Reclamation, and Revegetation Plan* (**Appendix B**) and *Blasting Plan* would reduce the potential for construction-related activities to trigger landslides or other slope failures. Additional committed measures for potential ground failure would include the implementation of erosion control measures as described in the POD. At a minimum, these measures would include the construction of trench breakers, permanent slope breakers, and establishment of permanent vegetation within the ROW.

Additional Mitigation

No additional mitigation was identified.

Conclusion

Construction of the proposed project facilities would not materially alter the geologic and physiographic conditions or worsen existing unfavorable geologic conditions in the area.

Operation Phase

Issues

- Potential damage to pipeline and ancillary facilities from earthquakes (ground shaking and subsidence) and fault displacement.
- Potential damage to the pipeline and ancillary facilities from ground subsidence in karst terrain.
- Potential damage to the pipeline from flood scour.

Analysis

Seismicity. Seismic hazards could potentially damage the project facilities through strong ground shaking, surface faulting, or secondary ground deformation such as liquefaction and flow failure. Pipelines and aboveground facilities are capable of withstanding substantial ground motion. The proposed project is in an area where the probability of a strong earthquake is low. Since ground motion hazard probability is low, there is a low risk of related hazards of earthquake induced landslides. The proposed project does not cross identified active faults so ground displacement due to fault movement is not a concern.

To protect the pipeline and facilities from seismic activity and its associated hazards, project facilities would be constructed and tested to meet federal standards outlined in 49 CFR Part 195 and geotechnical studies would be conducted so that facilities would be designed and constructed to minimize any effects that shaking or faulting could have on the project facilities.

Subsidence. Potential subsidence as a result of underground mining is discussed in Section 4.3.1.2. Two other causes of potential subsidence were discussed in Section 3.3.1.3 and include solution of subsurface salt or chalk beds by the natural circulation of groundwater. Subsidence also can be induced by leakage of water from improperly cased or damaged oil field produced water disposal wells.

Overland Pass avoided areas prone to subsidence whenever practical and sites of proposed surface facilities were selected to avoid any known underground mines in the area. Overall, the potential for localized subsidence or collapse features to develop along the proposed pipeline route is low.

Localized areas of subsidence that materialize as a sinkhole can cause a span area in the pipeline. The length of acceptable span varies depending on the pipe design parameters, but can be easily calculated. The strength and ductility of the pipeline allows it to span over a considerable distance without threatening the integrity of the pipeline. Overland Pass would study potential subsidence areas (RP 675 to RP 749) and monitor the proposed pipeline route for sinkholes during construction and operation. If a span was created that posed a safety hazard, Overland Pass would be required to mitigate the hazard as required by USDOT regulations.

Flooding and Scour. Flooding could damage the project facilities by inundating surface facilities, causing debris flows which could damage surface facilities, or scouring stream beds at the point of the pipeline crossing, which could impact pipelines by leaving unsupported spans of pipe. In general, seasonal flooding hazards exist where the proposed pipeline route would cross major streams and rivers, and flash flooding hazards exist where the pipeline would cross small watersheds. The proposed pipeline route would cross 70 perennial, 404 intermittent waterbody, and 5 playa crossings in Wyoming, 10 perennial. 74 intermittent waterbody, and 7 playa crossings in Colorado, and 17 perennial 311 intermittent waterbody, and 1 playa crossing in Kansas, all of which are locations where seasonal or flash flooding could occur. Though flooding in and of itself does not represent a significant risk to buried pipelines, stream scour and mud/debris flows that can accompany flooding can impact pipelines by exposing and leaving unsupported spans of pipe. To minimize these effects, the pipeline would be buried at a sufficient depth to avoid possible scour at waterbody crossings. In addition, regular visual inspection of the proposed pipeline route would be used to identify areas that might be potentially exposed after flood events.

Flooding also could damage the project facilities by inundating surface facilities, scouring streambeds at the point of the pipeline crossing, or causing debris flows that could damage surface facilities. Aboveground facilities (pump stations, meter stations, pigging stations, and MLVs) do not appear to be located within areas susceptible to flooding.

Additional Mitigation

USDOT pipeline regulations specifically address mitigation of geological hazards. No additional mitigation was identified.

Conclusion

Operation of the pipeline and its associated facilities would not affect the geologic and physiographic conditions in the project area. Due to the routing of the pipeline and its design, it is unlikely that the pipeline facilities would suffer significant damage from geologic hazards or other naturally occurring events during operation. Further, construction and operation of the project and facilities would not worsen unfavorable geologic conditions in the area.

4.3.1.4 Paleontological Resources

Construction Phase

Issues

- Potential damage and loss of scientifically valuable fossils from ROW clearing and trench excavation.

Analysis

Construction activities have the potential to damage or destroy scientifically important or unique fossils. Potential impacts to fossil localities during construction could be both direct and indirect. Trenching through significant fossil beds could result in direct damage to or destruction of fossils. Indirect effects during construction could include erosion of fossil beds due to slope regrading and vegetation clearing. Another possible indirect effect could be unauthorized collection of significant fossils by construction workers or the public due to increased access to fossil localities along the ROW.

To manage impacts to fossil localities, Overland Pass intends to prepare and would implement a *Paleontological Monitoring and Mitigation Plan* (Paleo Plan) to protect fossil resources on federal lands that may be encountered during project construction, including the resources identified during the field survey. Primary elements of the Paleo Plan include:

- Paleontological monitoring and spot checking of construction activities across Condition 1 and 2 units;
- Mitigation procedures for fossil localities identified during construction (e.g., avoidance, excavation, recording of localities);
- Provisions for the preparation and curation of fossil collections; and
- Provisions for the preparation of a final report based on the recovered data.

All work conducted under the Paleo Plan would be performed by qualified paleontologists with trained assistants.

Under no circumstances would fossils be removed from private lands for any reason, including curation, without the written consent of the landowners.

Additional Mitigation

No additional mitigation was identified.

Conclusion

Adherence to the Paleo Plan would minimize adverse impacts to paleontological resources on federal lands. Important paleontological resources on non-federal lands may be recovered only with approval of the landowners, and therefore may be unavailable for scientific curation.

Operation Phase

Issues

- Future maintenance activities could cause potential damage and loss of scientifically valuable fossils.

Analysis

Any potential effects would be isolated due to the probable dispersed nature of maintenance activities. Also, potential damage during operations and maintenance minimal since work would occur on previously disturbed ROW.

Mitigation

PALEO-1: On federal lands, paleontological monitoring shall occur in areas where future maintenance activities require trenching or excavation in areas that would be wider than the original trench.

Conclusion

Normal operation of the proposed pipeline and its associated facilities would not disturb important paleontological resources. Maintenance activities would result in surface disturbance, but typically would occur within the trenchline previously disturbed during construction. Since no new disturbances would be anticipated from maintenance activities (i.e., maintenance activities would occur within the ROW), impacts to paleontological resources would be negligible.

4.3.2 No Action Alternative

Under the No Action Alternative, none of the identified potential project-specific impacts would occur. Impacts would occur at present levels as the result of natural conditions and existing development in the project area.

4.3.3 Southern Energy Corridor – Copper Ridge Bypass Alternative

The geological resources affected by the Southern Energy Corridor – Copper Ridge Bypass Alternative would be the same as the Proposed Action except for a greater amount of steep or side slopes (**Table 4.3-2**) and their associated potential hazards.

Table 4.3-2 Comparison of Steep Slopes and Side Slopes Along the Proposed Action and the Southern Energy Corridor – Copper Ridge Bypass Alternative

	Areas with Steep Slopes or Side Slopes (miles)				
Proposed Pipeline Route	**10%**	**>10%**	**>20%**	**>30%**	**Total**
Proposed Action	3.4	0.8	1.5	0.0	5.7
Southern Energy Corridor – Copper Ridge Bypass	8.4	1.4	1.7	0.1	11.6

4.4 Soils

4.4.1 Proposed Action

Construction Phase

Issues

- Potential topsoil losses from wind and water erosion on disturbed surfaces during and after construction.
- Potential reduction in soil productivity and quality from topsoil losses, soil mixing and compaction.
- Pre-existing soil contamination or contamination from construction operations.

Analysis

Impact assessments were based on a wide range of soil characteristics. Acres of disturbed soils along the proposed pipeline route are summarized according to important soil characteristics that influence the magnitude of construction impacts (**Table 4.4-1**). Topsoil depth and slope classes based on aggregate percentages of component soil series within a particular class are identified in **Table 4.4-2**.

Erosion by Water and Wind

Susceptibility to erosion is a complex function of characteristics such as soil texture and structure, topography, surface roughness, soil cover (made up of vegetation, duff/litter, rock, and woody debris), and climate. Erosion also may be influenced by the length of time the soils are bare and by disruption of drainage and erosion control structures. Erosion resulting from water occurs primarily on loose, non-cohesive soils on moderate to steep slopes, particularly during high intensity storm events. Wind-induced erosion often occurs on dry, fine sandy soils where vegetation cover is sparse and strong winds are prevalent.

The majority of the proposed pipeline route crosses range and shrublands on gently rolling to moderately steep slopes that are highly erodible. Of the total 6,906 acres (excluding TWA's, aboveground facilities, access roads and open water acres) potentially affected by pipeline construction, the majority (3,793 acres, 55 percent) are considered highly erodible by water. Approximately 8 percent (516 acres) of the soils along the proposed pipeline route are highly erodible by wind, although there is considerable overlap between wind and water erosion classes in some counties. Approximately 65 percent (4,474 acres) of the soils along the proposed pipeline route have average slope-ranges in the 0 to 5 percent category, 608 acres of which are on federally managed lands. Thirty-three percent of the remaining soils range from greater than 5 percent to 30 percent slope (2,256 acres), 475 acres of which are on federally managed lands. Approximately 2 percent of soils have slopes greater than 30 percent (176 acres), 37 acres of which are on federally managed lands.

Many of the soils within the proposed disturbance footprint are considered susceptible to water and wind erosion. Approximately 2,385 acres of soils highly susceptible to erosion by water would be crossed in Wyoming, 977 acres would be crossed in Colorado, and 431 acres would be crossed in Kansas. Approximately 241 acres of soils highly susceptible to erosion by wind would be crossed in Wyoming, 265 acres would be crossed in Colorado, and 10 miles would be crossed in Kansas. Of the total, approximately 868 and 113 acres of soils susceptible to water and wind erosion, respectively, are on federally managed lands.

Soils subject to water erosion include steeply sloping land with shallow soils. Highly wind erodible soils along the proposed pipeline route are associated with sandy and silty textured, sparsely vegetated soils on a variety of parent materials. Although accelerated erosion due to construction-related soil disturbance could occur at any stage of construction, the maximum potential for erosion within the construction ROW would be expected while soils are loose, on top of the soil surface in spoil piles. Erosion also would be of concern after final grading has occurred but before a vegetative cover had been reestablished. If the ground surface was left

Table 4.4-1 Acreage Summary by State of Soil Characteristics for the Proposed Overland Pass Pipeline Route

State/County	Total Acres[1]		Highly Erodible Water[2]		Highly Erodible Wind[3]		Prime Farmland[4]		Hydric[5]		Compaction Prone[6]		Stony – Rocky[7]		Shallow-to-Bedrock[8]		Droughty[9]	
	Federal	Other	Federal	Other	Federal	Other	Federal	Other	Federal	Other	Federal	Other	Federal	Other	Federal	Other	Federal	Other
Wyoming																		
Lincoln		106	75	67	21	22	0	0	1	3	0	0	10	8	51	45	26	24
Sweetwater	535	738	392	573	52	70	0	0	7	7	0	0	56	81	319	470	100	153
Carbon	267	564	224	518	34	36	0	0	0	0	0	0	59	107	87	231	131	229
Albany		462	18	334	0	6	0	0	0	30	0	7	7	139	13	191	2	82
Laramie		186	0	184	0	0	0	13	0	3	0	0	0	134	0	132	0	3
Subtotal	**916**	**2,056**	**708**	**1,676**	**107**	**134**	**0**	**13**	**8**	**43**	**0**	**7**	**132**	**469**	**471**	**1,070**	**259**	**491**
Colorado																		
Larimer		<1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Weld	204	532	159	394	6	33	118	349	0	0	0	0	1	30	37	67	8	57
Morgan		67	0	49	0	18	0	54	0	0	0	0	0	0	0	3	0	14
Logan		90	0	53	0	26	0	67	0	4	0	1	0	4	0	1	0	23
Washington		264	0	99	0	48	0	206	0	0	0	0	0	0	0	8	0	10
Yuma		405	0	223	0	134	0	211	0	6	0	1	0	30	0	17	0	58
Subtotal	**204**	**1,358**	**159**	**818**	**6**	**259**	**118**	**887**	**0**	**10**	**0**	**2**	**1**	**64**	**37**	**96**	**8**	**162**
Kansas																		
Cheyenne		350	0	127	0	5	0	236	0	5	0	0	0	3	0	5	0	5
Rawlins		174	0	47	0	1	0	129	0	3	0	0	0	0	0	3	0	1
Thomas		224	0	25	0	0	0	197	0	2	0	0	0	0	0	0	0	0
Sheridan	0	318	0	68	0	3	0	249	0	2	0	0	0	0	0	6	0	3
Gove		10	0	5	0	0	0	4	0	0	0	0	0	0	0	1	0	0
Trego	0	326	0	75	0	1	0	236	0	0	0	0	0	10	0	30	0	1
Ellis	0	293	0	43	0	0	0	209	0	0	0	0	0	19	0	34	0	0
Russell		48	0	12	0	0	0	40	0	0	0	0	0	4	0	9	0	0

Table 4.4-1 Acreage Summary by State of Soil Characteristics for the Proposed Overland Pass Pipeline Route

State/County	Total Acres[1]		Highly Erodible Water[2]		Highly Erodible Wind[3]		Prime Farmland[4]		Hydric[5]		Compaction Prone[6]		Stony – Rocky[7]		Shallow-to-Bedrock[8]		Droughty[9]	
	Federal	Other	Federal	Other	Federal	Other	Federal	Other	Federal	Other	Federal	Other	Federal	Other	Federal	Other	Federal	Other
Barton		254	0	13	0	0	0	251	0	0	0	0	0	0	0	13	0	0
Ellsworth		72	0	4	0	0	0	72	0	0	0	0	0	0	0	4	0	0
Rice		254	0	12	0	0	0	249	0	1	0	2	0	2	0	11	0	0
McPherson		49	0	0	0	0	0	49	0	0	0	1	0	0	0	0	0	0
Subtotal		**2,372**	**0**	**431**	**0**	**10**	**0**	**1,921**	**0**	**13**	**0**	**3**	**0**	**38**	**0**	**116**	**0**	**10**
Project Total[10]	1,120	5,786	868	2,925	113	403	118	2,821	8	66	0	12	133	571	508	1,281	267	663

[1]Acreage was calculated using actual pipeline length and assumes a 75-foot-wide ROW. Values do not include 1,408 acres associated with aboveground facilities, laterals, pipe and contractor yards, TWAs, and access roads, or 3.5 acres associated with open water. Values within a table row do not add up to the total listed in the Total Acres column because soils may occur in more than one characteristic class or may not occur in any class listed in the table. Federal lands data based on BLM-provided land layers and USFS jurisdictional boundaries for the FGNRA and PNG.

[2]Includes land in capability subclasses 4E through 8E and soils with slopes greater than or equal to 9 percent.

[3]Includes soils in wind erodibility groups 1 and 2.

[4]Includes land listed by the NRCS as potential prime farmland if adequate protection from flooding and adequate drainage are provided.

[5]As designated by the NRCS.

[6]Includes soils that have clay loam or finer textures in somewhat poor, poor and very poor drainage classes.

[7]Includes soils that have either: 1) a cobbley, stony, bouldery, gravelly, or shaly modifier to the textural class, or 2) have > 5 percent (weight basis) of stones larger than 3 inches in the surface layer.

[8]Includes soils that have bedrock within 60 inches of the soil surface.

[9]Includes coarse-textured soils (sandy loams and coarser) that are moderately well to excessively drained.

[10]Slight discrepancies in state and project totals are due to rounding.

Table 4.4-2 Acreage Breakdown of Topsoil Depth and Average Slope Class Along the Proposed Overland Pass Pipeline Route

State/County	Total Acres[1]		Topsoil Depth[2] (inches)										Slope Class[3] (percent)									
			0 – 6		>6 – 12		>12 – 18		>18 – 24		>24		0 – 5		>5 – 8		>8 – 15		>15 – 30		>30	
	Federal	Other	Federal	Other	Federal	Other	Federal	Other	Federal	Other	Federal	Other	Federal	Other	Federal	Other	Federal	Other	Federal	Other	Federal	Other
Wyoming																						
Lincoln		106	70	73	20	29	5	4	0	0	0	0	66	81	0	0	20	18	6	5	3	2
Sweetwater	535	738	378	537	91	108	66	93	0	0	0	0	256	336	41	54	104	153	108	158	26	37
Carbon	267	564	189	404	78	160	0	0	0	0	0	0	120	201	49	96	51	130	44	122	3	15
Albany 95		462	15	333	4	68	0	47	0	14	0	0	5	231	1	30	2	76	6	66	5	59
Laramie		186	0	87	0	82	0	14	0	3	0	0	0	34	0	26	0	37	0	72	0	17
Subtotal	**916**	**2,056**	**652**	**1,434**	**193**	**447**	**71**	**158**	**0**	**17**	**0**	**0**	**447**	**883**	**91**	**206**	**177**	**414**	**164**	**423**	**36**	**130**
Colorado 19																						
Larimer 0		<1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Weld	204	532	85	182	108	329	11	20	0	1	0	0	161	384	31	90	9	38	3	20	0	0
Morgan		67	0	23	0	41	0	3	0	0	0	0	0	55	0	7	0	0	0	5	0	0
Logan 0	0	90	0	48	0	37	0	5	0	0	0	0	0	80	0	2	0	0	0	8	0	0
Washington		264	0	106	0	154	0	4	0	0	0	0	0	195	0	29	0	2	0	38	0	0
Yuma 0		405	0	181	0	206	0	18	0	0	0	0	0	246	0	29	0	38	0	89	0	3
Subtotal 0	**204**	**1,358**	**138**	**486**	**108**	**767**	**11**	**50**	**0**	**2**	**0**	**0**	**161**	**960**	**31**	**157**	**9**	**78**	**3**	**160**	**0**	**3**
Kansas																						
Cheyenne 0		350	0	99	0	201	0	50	0	0	0	0	0	245	0	9	0	72	0	21	0	3
Rawlins		174	0	34	0	121	0	18	0	1	0	0	0	130	0	2	0	24	0	17	0	1
Thomas 0		224	0	24	0	190	0	10	0	0	0	0	0	200	0	1	0	19	0	3	0	1
Sheridan	0	318	0	39	0	247	0	29	0	3	0	0	0	254	0	1	0	39	0	23	0	1
Gove 0		10	0	2	0	6	0	2	0	0	0	0	0	5	0	0	0	3	0	2	0	0
Trego 0	0	326	0	12	0	256	0	43	0	15	0	0	0	259	0	17	0	42	0	8	0	0
Ellis	0	293	0	0	0	228	0	33	0	32	0	0	0	268	0	9	0	16	0	0	0	0

0

Table 4.4-2 Acreage Breakdown of Topsoil Depth and Average Slope Class Along the Proposed Overland Pass Pipeline Route

State/County	Total Acres[1]		Topsoil Depth[2] (inches)										Slope Class[3] (percent)									
			0 – 6		>6 – 12		>12 – 18		>18 – 24		>24		0 – 5		>5 – 8		>8 – 15		>15 – 30		>30	
	Federal	Other	Federal	Other	Federal	Other	Federal	Other	Federal	Other	Federal	Other	Federal	Other	Federal	Other	Federal	Other	Federal	Other	Federal	Other
Russell		48	0	0	0	40	0	3	0	5	0	0	0	42	0	0	0	6	0	0	0	0
Barton		254	0	3	0	228	0	13	0	10	0	0	0	251	0	0	0	3	0	0	0	0
Ellsworth		72	0	1	0	64	0	4	0	3	0	0	0	71	0	0	0	1	0	0	0	0
Rice		254	0	7	0	214	0	20	0	13	0	0	0	249	0	1	0	4	0	0	0	0
McPherson		49	0	3	0	44	0	1	0	1	0	0	0	49	0	0	0	0	0	0	0	0
Subtotal		**2,372**	**0**	**224**	**0**	**1,839**	**0**	**226**	**0**	**83**	**0**	**0**	**0**	**2,027**	**0**	**40**	**0**	**229**	**0**	**74**	**0**	**6**
Project Total	**1,120**	**5,786**	**737**	**2,198**	**301**	**3,053**	**82**	**434**	**0**	**101**	**0**	**0**	**746**	**3,870**	**122**	**403**	**186**	**721**	**167**	**657**	**37**	**139**

[1] Acreage was calculated using actual pipeline length and assumes a 75-foot-wide ROW. Values do not include 1,408 acres associated with aboveground facilities, laterals, pipe and contractor yards, and additional TWAs, access roads, or 3.5 acres associated with open water. Federal lands data based on BLM-provided land layers and USFS jurisdictional boundaries for the FGNRA and PNG.

[2] Topsoil includes A-horizons (layers 1, 11, and 12) listed in the STATSGO database layer table.

[3] Slopes are grouped by the averages of the high and low slope ranges provided in the STATSGO database for each MUID component soil series. For example, Tresano series, 3 to 10 percent slopes, is 20 percent of MUID CO010. Its average slope is 6.5 percent. The representative acreage, calculated by multiplying percent composition by the total MUID acreage, is included in the >5 to 8 percent slope class.

smooth and bare during this period, winds could dislodge soil particles and rainfall intercepting bare surfaces could result in increased erosion.

Soil Productivity

The mixing of soil horizons during grading, trenching, and backfilling would lower soil productivity of agricultural and rangeland by diluting the physical, biological and chemical properties of the topsoil with less productive subsoil. This could affect revegetation success. Segregation of topsoil helps to mitigate these effects. If topsoil is lost, mitigation can be difficult because it may take hundreds to thousands of years for a topsoil horizon to form naturally.

Erosion of the topsoil spoil pile could occur during construction, leading to a decreased amount of topsoil to be placed back on the surface. This could affect nutrient cycling and soil productivity. Approximately 2,903 acres of prime farmland or potentially prime farmland on highly productive agricultural soils would be affected by the proposed project. Protecting topsoil spoil piles from wind and water erosion is essential in these areas.

Approximately 49 percent of the soils affected by the proposed project would have between 6 and 12 inches of topsoil, while approximately 42 percent of soils have between 0 and 6 inches of topsoil. Erosion, rutting, and the mixing of topsoil and subsoil horizons is of particular concern in areas with thin topsoil horizons because soil productivity can be drastically decreased if topsoil is mixed with subsoil or topsoil is lost to erosion. Only approximately 9 percent of the proposed project would affect soils with more than 12 inches of topsoil. Summaries of acres of various topsoil depths are located in **Table 4.4-2**.

Soil Compaction and Rutting

Soil compaction occurs when soil particles are pressed together and the pore spaces between them are reduced and bulk density is increased. Moist fine textured soils are most susceptible to severe compaction. However, compaction may occur on loamy to coarse textured soils and under drier conditions due to multiple passes by heavy mechanical equipment.

Rutting occurs when the soil strength is not sufficient to support the applied load from vehicle traffic. Rutting affects the surface hydrology of a site as well as the rooting environment. The process of rutting physically severs roots and reduces the aeration and infiltration of the soil, thereby degrading the rooting environment. Rutting also disrupts natural surface water hydrology by damming surface water flows, creating increased soil saturation upgradient from ruts, or by diverting and concentrating water flows creating accelerated erosion. Rutting is most likely to occur on moist or wet fine textured soils but may also occur on dry sandy soils due to low soil strength. Soil rutting is an important indication that other physical soil impacts may be occurring on a site.

Soil compaction and rutting could result from the movement of heavy construction vehicles along the construction ROW and additional TWAs, and on temporary access roads. The degree of compaction would depend on the moisture content and texture of the soil at the time of construction. Compaction would be most severe where heavy equipment operates on moist to wet soils with high clay contents. Detrimental compaction also can occur on soils of various textures and moisture contents if multiple passes are made by high ground-weight equipment. If soils are moist or wet where trenchline only topsoil trenching has occurred, topsoil also may adhere to tires and/or tracked vehicles and be carried away. Rutting restrictions would help to mitigate these concerns.

Soil that is excessively compacted is limited in its ability to function. Compaction damages soil structure and reduces pore space, which impedes the movement of air and water to plant roots and can result in lower growth rates and hinder revegetation. Compaction reduces infiltration and results in excessive surface runoff, erosion, nutrient loss, and potential water-quality problems. Detrimental soil compaction, when extreme and unmitigated, can directly result in an irretrievable reduction in soil productivity.

Stony/Rocky Soils and Shallow-to-Bedrock Soils

Grading, trenching, and backfilling may bring stones to the surface that could interfere with or damage agricultural equipment and hamper revegetation efforts by reducing soil moisture holding capacity. Ripping and blasting of shallow bedrock during construction could result in incorporation of bedrock fragments into topsoil. Approximately 10 percent (705 acres) of the proposed pipeline route contains soils with substantial rocks and stones in the surface horizons. The majority of stony/rocky soils occur in the Wyoming and Colorado segments of the proposed pipeline route with 601 acres located in Wyoming, 65 acres in Colorado, and 38 acres in Kansas. Of the total, 133 acres are located on federally managed lands. Summaries of acres in stony-rocky classes are listed in **Table 4.4-1**.

Soils containing shallow bedrock occupy approximately 26 percent (1,788 acres) of the proposed project. The majority of soils containing shallow bedrock are located in Wyoming (1,539 acres), with an additional 133 acres in Colorado, and 116 acres in Kansas. Of the total, 571 acres are located on federally managed lands. Approximately 20 percent of the total acreage of shallow bedrock is designated as hard rock that could require blasting. The remaining areas of shallow bedrock are soft enough to be ripped with backhoes or bulldozers equipped with rippers. The majority of shallow-to-bedrock soils are located in Sweetwater and Carbon counties, Wyoming (789 and 318 acres, respectively). Summaries of acres in shallow bedrock classes are provided in **Table 4.4-1**.

Droughty Soils

Revegetation success within the construction ROW could be a concern on droughty soils. Coarse-textured soils in moderately well drained or drier drainage classes are particularly susceptible to drought. Revegetation success on droughty soils could be compromised if seeding and revegetation efforts occur during dry periods. Approximately 13 percent (930 acres) of soils affected by the proposed project are inherently droughty. The majority of droughty soils are located in Wyoming (750 acres). An additional 170 acres are in Colorado and 10 acres are located in Kansas. Of the total, 267 acres are located on federally managed land. Summaries of acres in droughty soil-classes are listed in **Table 4.4-1**.

Drain Tiles

Pipeline construction activities could disrupt or damage existing subsurface drainage systems. Hydric soils are generally an indicator of areas that may require drain tiles for crop production. The proposed project would affect approximately 74 acres (approximately 1 percent of total area) of hydric soils. The majority of hydric soils are in Wyoming (51 acres). An additional 10 acres are in Colorado and 13 acres are located in Kansas. Of the total, 8 acres are located on federally managed lands. This represents a relatively small percentage of the total acreage affected and few if any drain tiles are expected to be encountered.

Irrigation Systems

Grading, trenching, and backfilling could disrupt water flow to irrigation systems. Overland Pass has committed to maintaining water flow to irrigation systems throughout construction, unless landowner permission was obtained to temporarily interrupt water flow.

Soil Contamination

Soil contamination along the proposed pipeline route could result from material spills during construction and trench excavation through pre-existing contaminated areas. These impacts typically would be minor because of the low frequency and volumes of these occurrences. However, if large spills occur they could result in the removal and disposal of large amounts of soil. Saturated soils may have the potential to diffuse contaminants. Mitigations that buffer wetlands and waterbodies from refueling or fuel storage, would help to prevent spills in saturated areas. No areas of pre-existing soil contamination were identified along the proposed pipeline route.

Aboveground and Ancillary Facilities

Construction of the project would involve the construction of two pump stations (plus one future pump station at WaKeeney) and seven meter stations. None of these aboveground facilities would be located on federally managed land. Meter stations at Opal, Bushton, and Conway would be constructed within existing, previously disturbed commercial/industrial properties, resulting in no additional soil impacts than are already experienced at these facilities. Additional facilities would affect previously undisturbed lands including the Echo Springs Pump and Meter Station, Laramie Pump and Meter Station, Washington County Meter Station (RP 447.8), and the WaKeeney Meter (and future pump) Station (**Table 4.4.3**). Because these sites may exist for an indeterminate amount of time, site-specific impacts could result in an irretrievable reduction in soil productivity.

Table 4.4-3 Characteristics and Limitations of Soils at Pump and Meter Stations

Station Name	Map Unit Symbol[1]	Map Unit Name	Susceptibility to Erosion	Prime Farmland
Opal Meter Station	NA	Previously disturbed commercial/industrial site	NA	No
Echo Springs Pump and Meter Station	WY166	Multiple STASTGO MUIDs	Susceptible to water and wind erosion	No
Laramie Pump and Meter Station[2,3]	188	McFadden gravelly fine sandy loam, 1 to 6 percent slopes	Not highly susceptible to erosion.	No
Washington County Meter Station (RP 447.8)[2,3]	4	Ascalon fine sandy loam, 3 to 9 percent slopes	Susceptible to water erosion.	No
WaKeeney Meter Station (future pump station)[2,3]	1620	Keith silt loam, 1 to 3 percent slopes	Not highly susceptible to erosion.	Yes
Bushton Meter Station	NA	Previously disturbed commercial/industrial site	NA	No
Conway Meter Station	NA	Previously disturbed commercial/industrial site	NA	No

[1]Map unit estimated from station footprints and soil survey map sheets.

[2]Map unit symbols and names taken from the applicable map sheets in NRCS county soil surveys.

[3]Susceptibility to water and wind erosion and prime farmland designations determined from NRCS data provided in county soil surveys and Soil Survey Geographic database (USDA NRCS 2005, 1994).

Construction activities affecting new land would involve initial soil disturbance due to grading and excavation and a change in land use as a result of construction and operation. The majority of the soils that would be affected by construction and operation of the pump station exhibit low susceptibility to water and wind erosion. At the proposed Wyoming and Colorado locations, no prime farmland soils would be impacted by construction and operation of the stations; in Kansas, prime farmland soils potentially would be affected.

The project also would require the construction and operation of 11 pigging facilities and 144 MLVs along the proposed pipeline route (**Table 2.2-1**). Pigging facilities would be constructed within a 208-foot by 208- to 250-foot site, while operation of a launcher/receiver would occur within a 175- to 125-foot by 125-foot site. The block and check valves would be operated within a permanent 25-foot by 25-foot fenced area, while remote valve sites would be operated within a 100-foot by 25-foot site. MLVs would be situated entirely within the permanent ROW. Soil constraints for pigging facilities and MLVs would be the same as those identified for the surrounding pipeline ROW.

Ancillary facilities consist of contractor and pipe storage yards and access roads. Overland Pass would use 24 pipe storage and contractor yards during construction (**Table 2.2-6**). Each yard is located on non-federal land. In Wyoming, seven of the eight yards would be located on previously developed sites, while three would be on rangeland. One yard in Colorado would be on previously developed land, while the other four would be on agricultural or rangeland. Thirteen yards would be required in Kansas, of which two would be on developed or partially developed land. The remaining sites would be on agricultural land. Generally, yard preparation would be limited to grading and leveling, and possibly importing some fill. Where the yards would be located in rangeland, topsoil would be stripped and stored at the edge of the yard and temporary traffic lanes would be installed by placing gravel over geotextile fabric. If gravel compresses through the geotextile fabric, rock could be incorporated into the soil and would be difficult to remove. Impacts would be similar to those of pipeline construction (i.e., possibility of reduction of soil quality by topsoil loss or mixing with subsoils, compaction, and introduction of invasive or noxious weeds). Upon completion of the project, the traffic lanes would be removed, compacted soils would be mitigated according to Overland Pass' POD and topsoil would be restored to its original position.

Access to the project primarily would be via existing public roads that would not require modifications. Some of the access roads, however, would be dirt roads, such as BLM or USFS access roads and two-track trails. Road maintenance, such as grading and filling, likely would not be required to maintain the dirt roads in a passable condition unless rain occurs and travel over the roads deteriorates surface conditions.

<u>Additional Mitigation</u>

SOIL-1: On the PNG, to minimize topsoil erosion, hydrologic impacts, and potential impacts to range and wildlife, Overland Pass shall limit the time that a trench would remain open to 1 mile of open trench at the end of each construction day.

SOIL-2: On the PNG, if topsoil losses are noted due to wind erosion by the EI of PNG inspector, Overland Pass shall apply a Polyacrylamide (PAM) tackifier within 24 hours to the topsoil spoil pile.

The tackifier shall be a liquid formulation having PAM as the primary active ingredient, and shall be available as a prepackaged product. The PAM shall be a linear, anionic copolymer, which is safe to humans, wildlife, and fisheries. Studies conducted by the USDA/Agricultural Research Service (ARS) demonstrated that soil stabilization was optimized by using very high molecular weight (12 to 15 mg/mole), highly anionic (greater than 20 percent hydrolysis) PAM. Magnesium chloride shall not be used on the PNG.

SOIL-3: On federal lands, Overland Pass shall consult with the applicable federal agency on roads that require maintenance or reclamation during or after construction. Two-track roads found to be disturbed by construction activities would be reclaimed, at the agencies discretion, by decompacting soils, constructing permanent erosion control (such as drivable water bars), and reseeding the entire roadbed. The two-track shall be allowed to reestablish through normal traffic patterns and use.

SOIL-4: On the PNG, Overland Pass shall offset their pipeline 30 feet from the existing, adjacent pipeline.

SOIL-5: On lands managed by the BLM and the ANF, full ROW topsoil stripping shall occur to a depth of 6 inches. On the PNG, the full dept of the topsoil horizon shall be removed from the trenchline only.

SOIL-6: On the PNG, pocking shall not be used. At the time of final slope recontouring, Overland Pass shall install photodegradable or biodegradable erosion control fabric that is non-toxic to vegetation or germination of seed, and non-toxic or injurious to humans or wildlife, on waterbody banks and slopes over 10 percent. Overland Pass shall anchor the erosion control fabric in accordance with the manufacturer's specifications.

SOIL-7: In areas where topsoil has not been removed, rutting from construction activities shall not exceed 4 inches on all federal lands, with the exception of the PNG where the rutting restriction is 3 inches. If rutting exceeds these depths, it shall be considered excessive and operations halted until conditions are dry. If conditions do not improve, Overland Pass shall consult with the applicable federal agencies to determine if alternate topsoil removal techniques may be employed to alleviate rutting concern.

SOIL-8: Prior to preparation of the final POD, Overland Pass shall consult with the federal land management agencies to obtain detailed soil inventory information that will be used to fine-tune the proponents site-specific reclamation and revegetation plans. Site-specific changes and mitigation measures shall be incorporated by RP into the *Construction, Reclamation, and Revegetation Plan*. The changes shall be incorporated directly into the text of the final POD or made an addendum to the final POD for the project.

SOIL-9: On the PNG, the entire length of the working side of the ROW shall be ripped to the depth of compaction using the required compaction reduction tool, equipped with winged shanks (**Figure 4.4-3**).

SOIL-10: On the PNG, certified weed-free straw or hay mulch shall be crimped in at a rate of 1.5 tons/acre.

SOIL-11: Overland Pass would test for compaction at regular intervals no less than every 0.25 mile on the working side of the ROW. Where the soil has a 15 percent increase in bulk density from the average undisturbed density, mitigate for compaction by ripping to the depth of compaction with a ripper or subsoiler.

Conclusion

The soils in the project area are diverse with a broad range of textures and depths. Much of the proposed pipeline route crosses soils that have shallow topsoil, are susceptible to erosion, have poor reclamation potential, and are prone to compaction and rutting. Pipeline construction activities may result in adverse impacts on the soil resources. Soil impacts would be mitigated by the implementation of Overland Pass' POD (including the *Construction, Reclamation, and Revegetation Plan*). Measures to minimize soil impacts include erosion control measures, topsoil separation and handling procedures, and remediation of compacted soils. Impacts anticipated from pipeline construction include the possibility of reduction of soil quality by topsoil loss or mixing with subsoils, compaction, and introduction of invasive or noxious weeds.

Application of the additional mitigation measures would further reduce impacts to soil resources. SOIL-1, SOIL-2, SOIL-6, and SOIL-10 would reduce the amount of topsoil lost to erosion. SOIL-3 would reduce compaction and rutting on two-track roads, reducing topsoil loss and minimizing the expansion of the two-track by braiding. By increasing the overlap between adjacent ROWs, SOIL-4 would decrease the amount of newly disturbed ROW by 20 percent. SOIL-7 would reduce the risk of topsoil and subsoil mixing and loss of soil productivity due to rutting. SOIL-9 and SOIL-11 would mitigate compaction that may occur on the working side of the ROW due to multiple passes by heavy equipment.

The STATSGO data used for analysis represents general soil data and does not provide a detailed representation of existing conditions. As a result, the BLM and USFS prefer that the project-specific POD provide a higher level of resolution to the soils data in order to properly identify areas of concern. SOIL-8 would provide an opportunity for land management agencies to work with Overland Pass to identify specific resource concerns along the proposed pipeline route and incorporate site-specific mitigations as necessary.

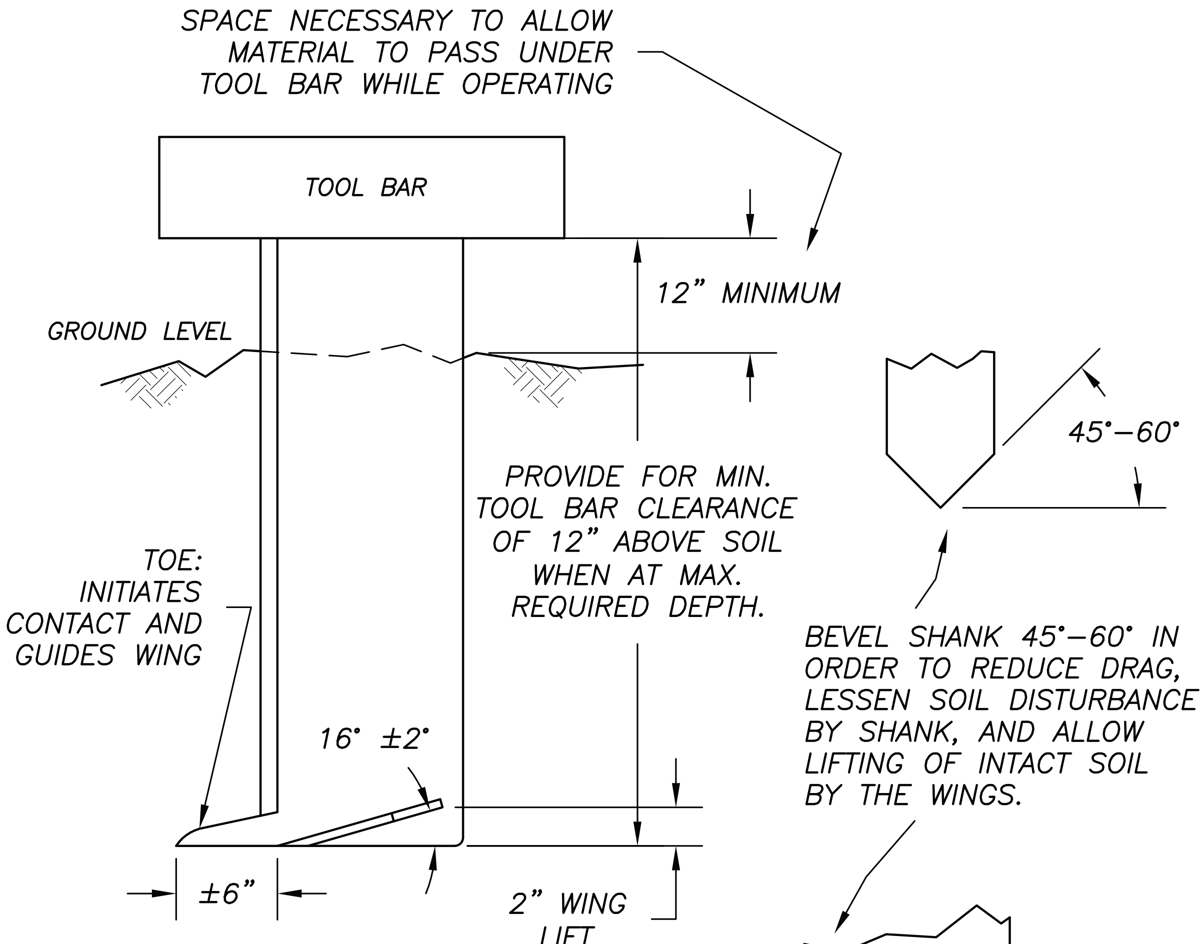
Operation Phase

Issues

- Potential topsoil losses from wind and water erosion on disturbed surfaces during and after maintenance activities.
- Potential reduction in soil productivity and quality from topsoil losses, soil mixing and compaction.
- Soil contamination from pipeline leaks, particularly in prime farmland.

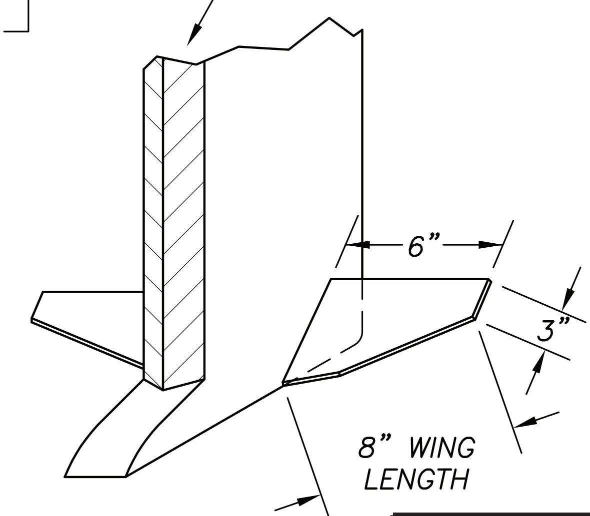
COMPACTION REDUCTION TOOL

TYPICAL FOR TOOL BAR MOUNTED SUBSOILING



NOTES:

1. SHANK SHOULD BE STRAIGHT.
2. INTENDED FOR USE WHEN OPERATING 3 SHANKS OVER AN 8' WIDTH.
3. WINGS WITH TOO GREAT AN ANGLE OF LIFT CAN RESULT IN A PLOWING EFFECT.
4. BEST RESULTS WHEN SOIL IS MOIST; BETTER FRACTURING AND LOWER POWER REQUIRED.
5. RECOMMEND HARD FACING WINGS AND DOUBLING THICKNESS OF WINGS FOR STRENGTH AND DURABILITY.
6. LESS DRAG AND SOIL DISRUPTION OCCUR THE NARROWER THE SHANK; OPTIMUM THICKNESS IS 2"



NOT TO SCALE

Overland Pass Pipeline Project

Figure 4.4-1
U.S.F.S. Compaction Reduction Tool

Source: USDA 2003

Analysis

Potential topsoil losses from wind and water erosion could occur during maintenance operations along the ROW or at aboveground facilities. These activities would be dispersed along the length of the proposed pipeline route and would occur intermittently.

There is a small probability the pipeline could accidentally leak, releasing NGL into the environment (Section 3.12). The physical, chemical and toxicological properties of the NGLs that Overland proposes to transport were evaluated to determine potential environmental effects (**Appendix J**). NGLs primarily consist of gas that is liquefied by pressure (e.g., propane). Consequently, in the unlikely event of a pipeline release, NGL components would rapidly volatilize, thereby resulting in minimal impacts to soil resources.

Additional Mitigation

No additional mitigation was identified.

Conclusion

Operation of the WaKeeney Meter Station would result in the conversion of approximately 1 acre of prime farmland to industrial use.

Maintenance activities would result in localized impacts of short duration (less than 14 days in most cases) and these impacts would be dispersed along the entire route.

If NGLs were accidentally released into the environment, minimal impacts, if any, would be expected to soil resources.

4.4.2 No Action Alternative

Under the No Action Alternative, the proposed project would not be constructed or operated. No project-related disturbance would occur to soils. Impacts would continue at present levels as a result of natural conditions and existing development in the project area.

4.4.3 Southern Energy Corridor – Copper Ridge Bypass Alternative

Effects of the Southern Energy Corridor – Copper Ridge Bypass Alternative would be the same as the Proposed Action with the exception of the Southern Energy Corridor – Copper Ridge Bypass Alternative. Steep and side slope construction would result in 35 acres of TWAs along the Southern Energy Corridor – Copper Ridge Bypass Alternative, compared to 17 acres for the Proposed Action. These areas would be more susceptible to erosion and would be more difficult to reclaim.

Acres of various soil characteristics that would be affected by the construction of the alternative route and the corresponding segment of the proposed pipeline route have been provided in **Tables 4.4-4** and **4.4-5**. The alternative route would affect fewer acres of prime farmland relative to the corresponding segment of the proposed pipeline route. However, the alternative route would affect more acres of soils susceptible to erosion caused by wind and water, hydric soils, stony-rocky soils, shallow depth to bedrock, and droughty soils. Impacts to soils with topsoil depths of 0 to 6 inches and greater than 6 inches to 12 inches would be comparable between the alternative and corresponding segment of the proposed pipeline route. However, the alternative route would affect approximately 59 acres of soils with topsoil depths greater than 12 inches compared with the corresponding segment of the proposed, which would not cross soils with topsoil depths of greater that 12 inches. In addition, the alternative route would affect more acres of soils with steeper slopes than the corresponding segment of the proposed pipeline route.

Table 4.4-4 Comparison of Soil Characteristics Affected by the Southern Energy Corridor – Copper Ridge Bypass Alternative and Corresponding Segment of the Proposed Action (Acres)

	Highly Erodible Water[1]	Highly Erodible Wind[2]	Prime Farmland[3]	Hydric[4]	Compaction Prone[5]	Stony-Rocky[6]	Shallow-to-Bedrock[7]	Droughty[8]
Proposed Action	226.1	2.1	2.1	0.0	0.0	24.4	183.1	224.1
Southern Energy Corridor – Copper Ridge Bypass Alternative	279.7	13.7	0.0	1.8	0.0	28.2	223.2	278.2

[1]Includes land in capability subclasses 4E through 8E and soils with slopes greater than or equal to 9 percent.

[2]Includes soils in wind erodibility groups 1 and 2.

[3]Includes land listed by the NRCS as potential prime farmland if adequate protection from flooding and adequate drainage are provided.

[4]As designated by the NRCS.

[5]Includes soils that have clay loam or finer textures in somewhat poor, poor, and very poor drainage classes.

[6]Includes soils that have either: 1) a cobbley, stony, bouldery, gravelly, or shaly modifier to the textural class, or 2) have >5 percent (weight basis) of stones larger than 3 inches in the surface layer.

[7]Includes soils that have bedrock within 60 inches of the soil surface.

[8]Includes coarse-textured soils (sandy loams and coarser) that are moderately well to excessively drained.

Table 4.4-5 Acreage Summary of Topsoil Depth and Average Slope Class Affected by the Southern Energy Corridor – Copper Ridge Bypass Alternative and Corresponding Segment of the Proposed Pipeline Route

	Topsoil[1] (inches)					Slope[2] (percent)				
	0-6	>6-12	>12-18	>18-24	>24	0-5	>5-8	>8-15	>15-30	>30
Proposed Action	162.1	63.9	0.0	0.0	0.0	206.1	0.0	18.4	0.0	0.0
Southern Energy Corridor – Copper Ridge Bypass Alternative	205.9	14.4	44.4	15.2	0.0	80.2	28.12	128.32	22.32	20.3

[1]Topsoil includes A horizons (layers 1, 11, and 12) listed in the STATSGO database layer.

[2]Slopes are grouped by the averages of the high and low slope ranges provided in the STATSGO database for each MUID component soil series.

4.5 Water Resources

4.5.1 Proposed Action

4.5.1.1 Surface Water

Construction Phase

Issues

- Increased turbidity and sedimentation in streams resulting from in-stream construction;
- Risk of fuels, solvents, or hazardous material spills during construction;
- Channel and bank modification, affecting channel morphology;
- Reductions in flow volumes in streams where water is withdrawn for hydrostatic testing;
- Potential transmittal of whirling disease, zebra mussels or other invasive aquatic species between watersheds;
- Accelerated erosion, turbidity, and sedimentation from disposal of hydrostatic testing water; and
- Increased salt loading from surface discharge in the Colorado River Basin.

Analysis

Crossings

Overland Pass proposes to select waterbody crossing methods based on the presence or absence of water, flow conditions, and stream width. In general, if an intermittent or ephemeral waterbody had no perceptible flow at the time of crossing, upland construction techniques would be used. The open cut construction technique (i.e., wet-ditch method) would be used for flowing streams less than 30 feet wide. Dry-ditch methods (flume or dam-and-pump methods) would be used for stream with perceptible flow and widths greater than 30 feet. On the PNG, all intermittent streams would be crossed using a dry-ditch technique.

In most cases, open-cut and dry ditch waterbody crossings typically would be completed within 24 to 48 hours.

Crossing methods for ten major and sensitive waterbody crossings, including Hams Fork River, Blacks Fork River (two crossings), Green River, Bitter Creek, North Platte River, Medicine Bow River, South Platte River, Airkaree River, and South Fork Republican River are identified in **Table 3.5-2**. Site-specific crossing plans for these crossings are being developed by Overland Pass. The plans will address:

- The method and equipment that would be used to excavate the in-stream trench;
- The location of the spoil storage in the waterbody and onshore, and the mitigative measures that would be used to control and store the spoil;
- The method that would be used to install the pipeline across the waterbody, including the amount of time required for the installation;
- The method and material that would be used to backfill the trench in the riverbed;
- An explanation of the size requirements of the additional TWAs on each bank (such as trench size and work that would be done at each workspace);
- A description of any special mitigation that would minimize impact on riparian vegetation and in-stream habitat; and
- A discussion of special mitigation for contaminated sediments.

As proposed by Overland Pass, all but one of these major and sensitive waterbodies (South Platte River) would be crossed using the open-cut construction method.

Open cut crossing procedures could result in temporary impacts to surface waters. Trenching across small waterbodies would cause a minor, short-term increase in the sediment load. Because the disturbance area would be substantially greater for streams greater than 30 feet in width, Overland Pass would use dry-ditch methods at these crossings. Overland Pass would adhere to the measures contained in its *Construction, Reclamation, and Revegetation Plan* (**Appendix B**) to prevent or minimize impacts to surface water. On non-federally managed land, spoil would be placed or stored a minimum of 10 feet from the edge of a water body. On federally managed land spoil would be placed or stored a minimum of 50 feet from the edge of a water body. Nonetheless, impacts including temporarily increased turbidity and downstream sedimentation would occur at open cut crossings. These impacts could affect fisheries, recreation, and public water supplies.

TWAs would be required at waterbody crossings unless impractical due to topography or other technical constraint. Overland Pass proposes to set these areas back at least 50 feet from the riparian edge on federal land and 10 feet on private land. Refuling, storage and use of hazardous materials, and equipment storage would be set back 500 feet from the riparian edge on federal land and 100 feet on private land.

Open cut crossings of sensitive waterbodies (**Table 3.5-2**) could result in significant impacts to environmental resources. Trenched crossings in these locations could temporarily increase sediment load and degrade surface water quality. At most locations, trenching would result in physical alteration of channel morphology, including streambanks and bottom substrates. The impact and extent would vary with soil materials. In general, application of erosion control techniques would keep impacts minimized and localized. At the Hams Fork and Blacks Fork, however, open cut crossings in silt or soft material may have long-term effects, such as scouring, sedimentation and erosion. Fine silts and colloids also could result in diminished aesthetics of the waterbodies for anglers and other recreational users, and impact potable water supplies that obtain water from surface water intakes. There are five known surface water intakes within 10 miles downstream of the proposed pipeline crossings (**Table 3.5-4**). Overland Pass would provide written notification to the authorities responsible for potable surface water supply intakes located within 3 miles downstream of the crossing at least 1 week before beginning work in a waterbody, or as otherwise specified by that authority. Additionally, Overland Pass would notify the appropriate state authorities at least 48 hours before beginning trenching or blasting within the waterbody, or as specified in state permits.

Overland Pass initially planned to HDD the Green River crossing in southwestern Wyoming. Site-specific geotechnical investigations have subsequently indicated that such a crossing method would have a high risk of failure due to unsuitable soil and rock characteristics, as well as from uncontrolled water flow into the bore from the aquifer. The USFS has concerns about an open cut alternative to an HDD crossing, due to recreation and fisheries resources in the locale.

Pipeline integrity during floods and related channel scouring is a major concern for the proposed open-cut crossing of the Green River. The channel is approximately 300 feet wide at the proposed crossing location. If the pipeline burial depth was insufficient and bed or bank materials were eroded away, portions of the pipe may become unsupported. If deep scouring took place during a large flood event, an exposed pipeline would be subjected to the force of the floodwater and to impacts from rocks or debris transported in the flow. Over time, either repeated smaller floods or the occurrence of a single large event could threaten the structural integrity of the pipeline.

A leak or rupture would create adverse impacts to surface water and related fisheries and recreation resources downstream. Emergency control valves are proposed on either side of the Green River over an approximately 2.6 mile length of the pipeline, and the proposed crossing generally is centered within this distance. In case of rupture, these valves would activate and minimize the volume of product spilled. However, adverse impacts still would occur from transported NGLs being released to the surface water environment and from emergency response activities disturbing the river channel and adjacent floodplains. Because of these potential impacts, additional mitigation measure WATER-9 is recommended. Implementation of mitigation measure WATER-9 may generate additional impacts on fishery resources; these are discussed in the respective resource section (Section 4.7).

The BLM is concerned about the use of the open cut method at several crossings: Blacks Fork River, Hams Fork River, Bitter Creek, and North Platte River. The use of the open cut crossing method by other recent pipeline projects across the Blacks Fork and Hams Fork rivers resulted in adverse affects by changing channel and streambank morphology, modifying flow velocities, increasing sedimentation, and creating related adverse impacts to the aquatic community, which includes the presence of special status fish species and game fisheries. BLM recommends the Blacks Fork and Hams Fork rivers be directionally drilled to avoid additional impacts on game and special status species and to minimize impediments to fish movement in the rivers.

The BLM has similar concerns for the North Platte River due to its high recreational value and use as a municipal drinking water supply. The recent Entrega Pipeline Project open cut this river. After observing this crossing, the BLM recommends the North Platte River be directionally drilled to avoid similar sedimentation impacts on water resources. However, since the North Platte River crossing would not occur on federal lands, the BLM has no authority to enforce this recommendation.

Bitter Creek (RP 108) contains a unique population of flannelmouth suckers, considered to be a sensitive species by the BLM and WGFD, downstream of the crossing location. Overland Pass proposes to use upland construction techniques if no water is flowing at the time of construction. If water is flowing at the time of construction, Overland Pass proposes to open-cut the crossing without disturbing the existing beaver dam and aquatic habitat immediately up stream of the crossing location.

Overland Pass has committed to one HDD river crossing at the South Platte River in Colorado and associated ditches. Consequently, construction-related impacts on aquatic resources due to sedimentation would be minor at this river. HDD minimizes impacts by avoiding instream activities. Nevertheless, there is a possibility that mud consisting of water, bentonite and cuttings, from the directional drilling (or from HDD failure or tunnel collapse) could inadvertently enter the active stream along the drilling route. However, if mud seepage was detected, the drilling operation would be stopped immediately to reduce pressure within the bore hole. Corrective measures would be implemented to eliminate or minimize seepage. If any seepage enters the stream, increased turbidity of the surface water would be localized and short-term in duration (less than 1 day). Long-term impacts from drilling mud would be mitigated by the measures described above.

In the event the HDD is not successful at the South Platte river crossing, the potential for open-cut methods would be evaluated. Similar impacts described above for open-cut crossings (temporary increases in sediment loading) could occur. Erosion control techniques would keep suspended sediment localized and conditions would be expected to return to pre-construction levels within several days.

Fuel Spills

The use of heavy equipment to complete pipeline installation across waterbodies increases the potential for accidental releases of fuels, lubricants, and coolants. The accidental release of these materials could adversely affect aquatic species and, in a few cases (e.g., North Platte River, Rock Creek, Smoky Hill River), contaminate public water supplies that rely on surface water intakes located downstream of the waterbody crossing. Overland Pass would minimize the potential impact of spills of hazardous materials by adhering to its SPCC Plan (Overland Pass 2006). The SPCC Plan describes preventive measures such as personnel training, equipment inspection, and refueling procedures to reduce the likelihood of spills; and mitigative measures, such as containment and cleanup, to minimize potential impacts should a spill occur. On federal land, a minimum setback distance of 500 feet from riparian zones would be maintained for all refueling activities, storage and use of hazardous materials, and equipment storage. On private land, this minimum set back distance would be 100 feet.

Overland Pass has committed to install bridge structures at all perennial waterbody crossings or at intermittent crossings greater than 30 feet that have flowing condition at the time of construction to allow for construction equipment and vehicles to cross the waterbody. Clearing equipment and equipment for installation of a bridge would be allowed to pass across the waterbody or wetland only once. Overland Pass would limit the amount and duration of instream work using heavy equipment at these crossings. As described above, Overland Pass would provide advance notification to the operators of surface water intakes regarding waterbody construction schedules and would notify the operators and the BLM of any accidental releases of hazardous materials that could impact their water supply.

Vehicle and equipment use within and adjacent to waterbodies also could pose a risk to water quality from fuel or lubricant spills. If fuel reached a waterbody, aquatic species could be exposed to toxic conditions, depending on factors such as volume spilled, stream velocity, and channel morphology.

Bank Stability and Flooding

Long-term impacts on water quality could result from alteration of the streambank and removal of riparian vegetation. Vegetative cover along streambanks of a waterbody provides bank stability and erosion control. If not stabilized and revegetated properly, soil erosion associated with surface runoff and streambank sloughing could result in deposition of sediments in the waterbodies after construction was completed. Given the relatively small width of disturbance associated with a pipeline crossing, the above potential impacts would be considered minor relative to an entire stream system. Overland Pass would ensure that disturbed areas successfully revegetate with wetland herbaceous and/or woody plant species by implementing the *Construction, Reclamation, and Revegetation Plan* (**Appendix B**).

Overland Pass has identified 29 locations of active erosion or channel incising (**Table 4.5-1**). To minimize impacts to these locations and to avoid exacerbating conditions, Overland Pass defined procedures that would be implemented to stabilize these stream crossings, including the use of permanent slope and trench breakers, geotextile fabric, and 1 foot of clean gravel or native cobble to reduce bottom scour (**Figures 4.5-1** and **4.5-2**).

If necessary, specialized, site-specific construction practices and plans would be developed in areas where standard construction practices are not sufficient to protect a resource. For open-cut crossings, waterbody banks would be stabilized and temporary sediment barriers installed within 24 hours of completing instream construction activities. For dry-ditch crossings, streambed and bank stabilization would be completed before returning flow to the waterbody channel. Waterbody banks would be returned to preconstruction contours or to a stable angle of repose.

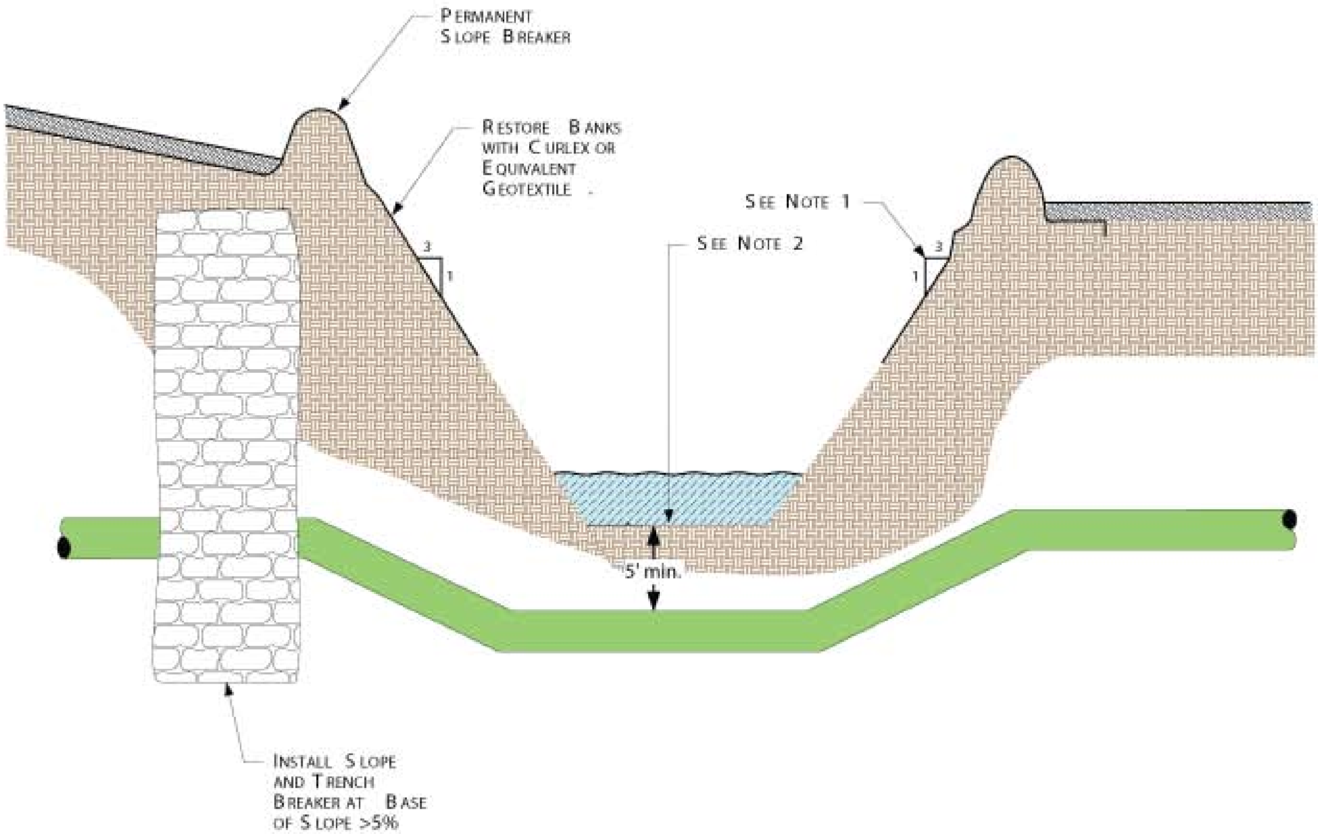
Hydrostatic Testing

The appropriation of large volumes of hydrostatic test water from surface water sources could temporarily affect the recreational and biological uses of the resource if the diversions constitute a large percentage of the source's total flow or volume.

Water withdrawal from the Green River at the crossing would not constitute withdrawal of a large percentage of the available surface water. A review of the U.S. Bureau of Reclamation (USBOR) data found that the Flaming Gorge Reservoir water volumes ranged from approximately 2,500,000 acre-feet to 3,500,000 acre-feet during October/November from 1996 to 2005. The most recent reported volume was 3,000,000 acre-feet in October, 2005 (USBOR 2006a). The USBOR forecast 3,311,000 acre-feet of water would be present in the Reservoir in December of 2007 (USBOR 2006b), when Overland Pass proposes to conduct hydrostatic testing.

The Overland Pass *Hydrostatic Test Plan* (**Appendix C**) lists five streams, numerous private wells in Colorado and Kansas, and storage ponds at the ONEOK Bushton Plant as water sources for hydrostatic testing. The withdrawal location and volumes are provided in **Table 4.5-2**. Overland Pass proposes to withdraw water between November 1 and December 15, 2007. Withdrawal rates from surface water sources would not exceed 0.5 percent of the average monthly flow rates as identified by the USGS.

Stream Bank Profile View



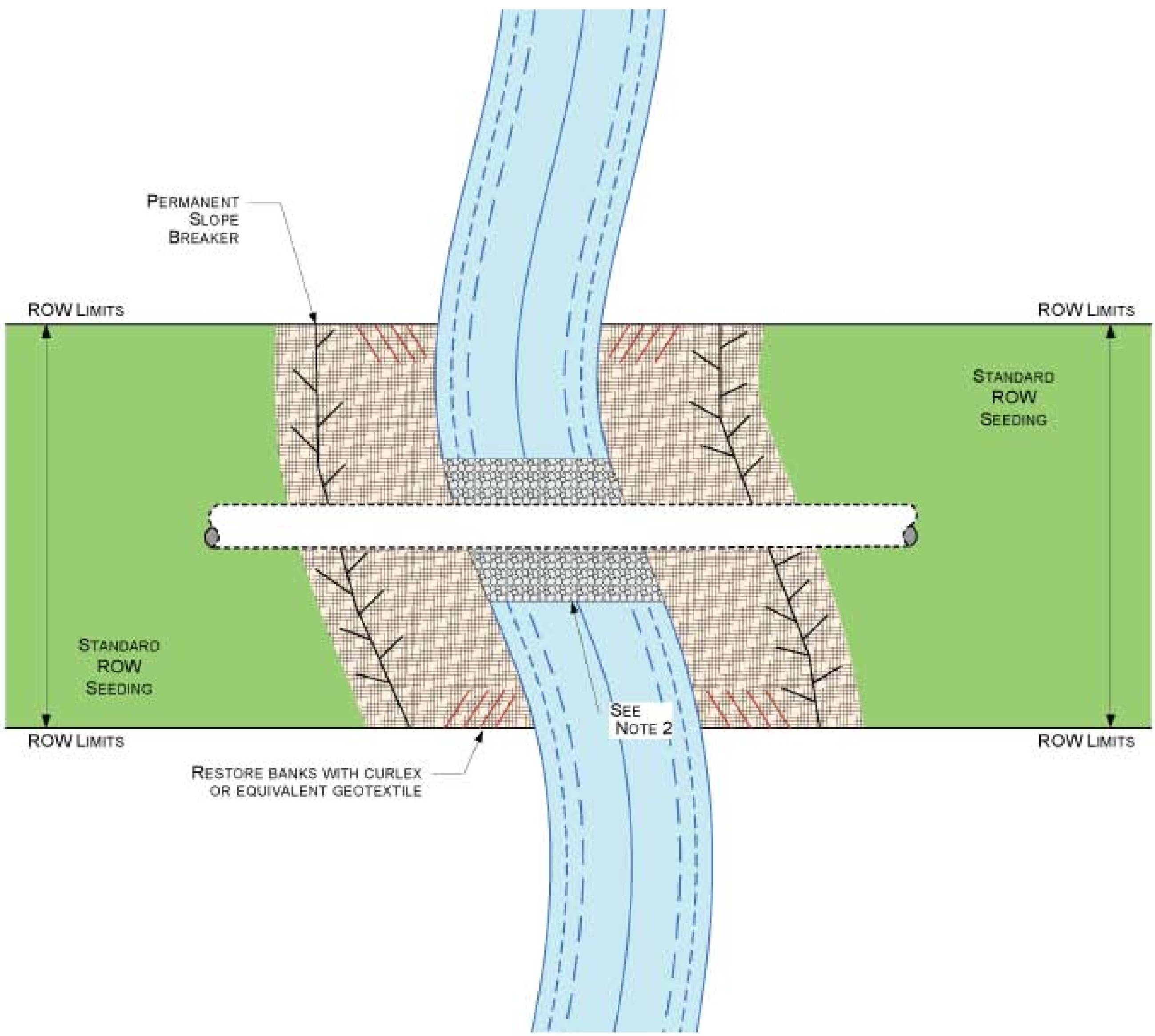
NOTES:

1. Match slopes as close as possible to adjacent ROW.
2. To reduce bottom scour, clean gravel or native cobble will be placed in the upper 1 foot of trench backfill.

Overland Pass Pipeline Project

Figure 4.5-1 Typical Incised Bank Stabilization - Profile View

STREAM BANK PLAN VIEW



Overland Pass Pipeline Project

Figure 4.5-2
Typical Incised Bank Stabilization - Plan View

Table 4.5-1 Locations Where Active Erosion or Channel Incising is Occurring

RP	Name	Stream Type
0.95	Hams Fork River	Perennial
1.08	Trib to Hams Fork	Perennial
12.88	Trib to Blacks Fork	Intermittent
15.82	Trib to Blacks Fork	Intermittent
21.95	Trib to Blacks Fork	Intermittent
25.41	Trib to Blacks Fork	Intermittent
35.49	Trib to Spider Creek	Intermittent
41.33	Blacks Fork	Perennial
55.72	Logan Draw	Intermittent
65.13	Trib to Bitter Creek	Intermittent
74.30	Trib to Sweetwater Creek	Intermittent
76.07	Trib to Bitter Creek	Intermittent
91.20	Trib to Black Butte Creek	Intermittent
107.30	Bitter Creek	Perennial
118.10	Trib to Bitter Creek	Intermittent
200.24	Trib to St. Mary's Creek	Intermittent
230.75	Trib to Bear Creek	Intermittent
242.21	Irrigation canal	Intermittent
329.20	Trib to Owl Creek	Intermittent
331.73	Trib to Owl Creek	Intermittent
334.42	Trib to Eastmen Creek	Intermittent
479.30	Trib to Nork Fork	Intermittent
513.26	Bluff Creek	Intermittent
515.62	Trib to Bluff Creek	Intermittent
542.57	North Fork Sappa Creek	Intermittent
679.40	Trib to Smokey Hill River	Intermittent
699.97	Trib to Cow Creek	Intermittent
715.35	Trib to Plum Creek	Intermittent
717.30	Plum Creek	Perennial

In addition to hydrostatic test water, water for dust control would be taken from the same sources (**Table 4.5-2**) or from surface water municipal supplies nearby. If existing surface water municipal supplies were used for dust control, these volumes would not be considered new depletions. Collectively, hydrostatic testing and dust control could use up to 39.5 acre-feet from surface water sources in the Colorado River Basin and up to 77.3 acre-feet from surface water sources in the Platte River Basin.

Potential impacts on surface water resources from hydrostatic testing withdrawals may include reductions in flow rates, reductions in streamflow presence and extent within the channels and associated habitats, and potential water quality effects. Water quality effects may include increased turbidity from pump installation activities, and changes in temperature and dissolved oxygen concentrations due to flow reductions.

Overland Pass has identified potential water sources to be used for filling each pipe test section and has been in consultation with the various agencies regarding water use. Overland Pass will continue these consultations, including those with the USFWS regarding water depletion and potential downstream impacts on threatened and endangered species if hydrostatic test water is removed from sensitive water resources. Based on these continuing consultations and other provisions in the proposed hydrostatic testing plan, potential impacts from surface water withdrawals are likely to present minimal potential for adverse effects. Effects that do occur would vary with flow conditions and agency guidance at the time of construction, and would be temporary in nature.

Table 4.5-2 Potential Water Sources for Construction of the Proposed Project

Approximate RP	Potential Source(s)	Volume for Dust Control		Volume for Hydrostatic Testing[1]	
		gallons	acre-feet	gallons	acre-feet
Colorado River Tributaries					
41.3	Blacks Fork River	6,920,000	21.2	2,447,856	7.5
59.3	Green River			3,529,144	10.8
	Subtotal		**21.2**		**18.3**
Platte River Tributaries					
195.5	North Platte River	6,920,000	21.2	6,777,341	20.8
277.1	Laramie River	3,100,000	9.5	2,502,362	7.7
412.4	North Sterling Ditch of the South Platte River			5,902,678	18.1
	Subtotal		**30.7**		**46.6**
Other Sources					
444.2 – 598.6	Private Wells[2]	3,100,000	9.5	7,992,552	24.5
718.0	Storage Ponds at ONEOK Bushton Plant	2,300,000	7.1	8,342,418	25.6
	Subtotal		**16.6**		**50.1**
TOTALS		**22,340,000**	**68.5**	**37,494,351**	**115.0**

[1]Source of Information: *Hydrostatic Test Plan* (Overland Pass 2006).

[2]Based on an analysis of the well location and relationship to groundwater and lack of connectivity to surface flow, none of this groundwater drains into the Platte River surface water tributaries.

Surface water depletions in the Colorado River and Platte River basins for hydrostatic testing or dust control purposes are an issue for federally listed species that occur in downstream portions of the Colorado River and Platte River basins. The USFWS requires consultation for any water withdrawals in these basins that could affect surface water quantity. Section 4.7.1.2 discusses the impacts of water depletions from the proposed project on federally listed species in the Colorado River and Platte River basins.

Overland Pass plans to discharge hydrostatic test water onto suitable upland areas or to surface waters. A splash pup would be used to minimize impacts on surface waters. A splash pup is a smaller section of pipeline welded at the end of the discharge line at a 90° angle. Use of a splash pup can be an effective means of minimizing erosion and dissipating energy to avoid increasing the turbidity of the waterbody and causing significant changes to the flow velocity of a river. Hydrostatic testing activities would be monitored by inspectors and the outflow rates adjusted as necessary to avoid erosion impacts. Discharge of hydrostatic test water would follow NPDES permit requirements for water quality, and discharge permits would be obtained from the respective states prior to discharge.

The discharge of large volumes of hydrostatic test water to surface water sources could temporarily affect the biological uses of the resource. If discharge rates are not carefully controlled, discharges into surface waters could cause erosion of the stream banks and stream bottoms, resulting in a temporary increase of sediment load and destruction of habitat. These discharges could potentially affect state-designated uses. Overland Pass would minimize the potential for these effects through the use of energy-dissipating devices that would disperse and slow the velocity of any discharges. Overland Pass would 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 granted written permission. Overland Pass would minimize the potential effects of hydrostatic testing on surface water resources by adhering to the measures in the *Construction, Reclamation, and Revegetation Plan* (**Appendix B**). The *Hydrostatic Test Plan* (**Appendix C**) addresses the procedures for hydrostatic test water appropriations and discharges. These measures and procedures include regulating the rate of withdrawal of hydrostatic test water to avoid adverse impact on downstream flows. Overland Pass would be testing only new pipe and no chemicals would be added to the water during hydrostatic testing, unless chemical additives are stipulated in the discharge permit. Overland Pass would acquire the necessary permits from state agencies before withdrawing hydrostatic test water, including specific approvals from applicable resource agencies.

If the source water is surface water, the hydrostatic test water would be tested for potential pollutants and then discharged to stable upland areas (surfaces with a gradient less than 10 percent) along the construction ROW. With respect to discharging hydrostatic test water, the text discussion in the proposed *Hydrostatic Testing Plan* (**Appendix C**) differs somewhat from the notes on drawings and the maps/photos of proposed discharge locations in the plan. As a result, impacts from erosion, sedimentation, turbidity, and transfer of water between waterbodies could occur. Additional mitigation measure WATER-8 is recommended in order to minimize the potential for these impacts.

Transfer of Disease and Nuisance Organisms

In-stream construction activities and hydrostatic testing could transport whirling disease and parasites or invasive organisms such as zebra mussels between drainages. The Proposed Action would cross waters in Wyoming where the whirling disease organism may be present (i.e., Green, North Platte, Medicine Bow, Laramie rivers). Whirling disease is present in all perennial streams in Colorado except Chief Creek (Walker 2006; Money 2006). There is no evidence that invasive aquatic fauna exist in the Colorado stream systems crossed by the pipeline. In addition, there is at least one drainage in Kansas that now contains zebra mussels, and other invasive species also are a possibility. Implementation of Overland Pass' proposed discharge provisions in the *Hydrostatic Test Plan* and equipment washing proposed at state lines for weed control will help control the transfer of such organisms.

Salt Loading to the Colorado River

By far, most of the salt contributed to the Colorado River originates from background geologic conditions and land uses over large areas. Water draining from irrigated agricultural fields, and runoff and erosion from marine shale outcrops are two examples of sources of salt loading. Based on construction and operation plans, Overland Pass would not contribute to salt loads in the Colorado River.

<u>Additional Mitigation</u>

WATER-1: To minimize impacts, all waterbodies (regardless of size and flow) and wetlands on federal lands shall have an approved crossing structure consisting of either a temporary culvert, rock fill, or equipment bridge. One pass of clearing equipment and equipment for installation of a bridge shall be allowed across the waterbody or wetland.

WATER-2: Power washing of equipment with water shall be required after equipment crosses perennial streams to avoid transfer of whirling disease, parasites, or nuisance organisms.

WATER-3: No chemical or biological additives shall be allowed during hydrostatic testing unless approved by the appropriate agency responsible for the NPDES permit.

WATER-4: When water is withdrawn from surface water sources (e.g., for dust control or hydrostatic testing), Overland Pass shall utilize a filter with a mesh size screen that would prevent entrainment and impingement of aquatic organisms.

WATER-5: Although the playas and ponds to be crossed have no perceptible flow, Overland Pass shall use construction techniques applicable for flowing waterbodies when playas and ponds are crossed.

WATER-6: During wet ditch crossings, streambed spoil shall be removed and subsequently restored to retain the natural bed materials of the streambed. Under no circumstances shall foreign substrate materials (e.g., introduced gravel) be used to back-fill a channel crossing, unless they are native to the immediate locale and mimic the natural bed material. This practice shall apply to both perennial, intermittent, and ephemeral channels on federal lands.

WATER 7: On federal land, Overland Pass shall reduce the total construction ROW width to 60 feet in riparian and wetland areas.

WATER 8: Overland Pass shall consult with appropriate state and federal agencies (USFWS and others) before discharging hydrostatic test waters directly into surface waterbodies. Agency recommendations shall be implemented prior to such direct discharges, which as Overland Pass proposes, would be made to the waterbody of origin where the surface water was withdrawn. Test water that is not discharged directly to surface waterbodies shall be discharged onto stable upland locations near the point of withdrawal, or sprayed on level or nearly level croplands as irrigation water. Irrigation water applications shall be done in coordination with landowners as proposed. Stable upland areas shall have slopes less than 10 percent, be minimally susceptible to sheet and rill erosion by having suitable soil and abundant vegetation, and be large enough to provide adequate infiltration while avoiding concentrated flow on land surfaces. Such areas shall be at least 200 feet away from active gullies or other channels. Hydrostatic test water shall not be disposed of via wells or other means of groundwater injection.

WATER-9: Prior to construction of the proposed open cut crossing at the Green River, Overland Pass shall further investigate the channel materials and flood hydrology conditions at the crossing location. Subsequently, the site-specific crossing plan shall be modified to ensure sufficient pipeline burial and crossing stability with regard to the anticipated total scour depth under conditions of the 100-year, 24-hour flood on the local-area watershed (between the crossing site and Fontenelle Reservoir) plus a corresponding flow release from Fontenelle Reservoir. The pool elevation at Flaming Gorge Reservoir may be approximated for appropriate seasonal conditions to account for the effects of reservoir backwater on flow conditions at the proposed crossing reach. Overland Pass shall use accepted methods and equations to estimate the anticipated scour depth and necessary factors of safety. Overland Pass shall then review its current proposed site-specific crossing plan for the Green River, and in coordination with the USFS, USFWS, and other agencies as appropriate, plan and implement any modifications necessary to:

a. Reasonably ensure that the pipeline would not be exposed during the design flood event, either through sufficient burial depth, selection and placement of well-graded backfill, or a combination of control methods;

b. Minimize erosion, turbidity, and sedimentation during and after construction;

c. Minimally obstruct fish passage during and after construction.

d. Reclaim the site (and all adjacent disturbed areas), such that:

   1. The channel bed and banks are stabilized using appropriate materials and construction techniques;

   2. Recreational aesthetics are maintained or improved; and

   3. All debris and spoils are disposed of appropriately.

Conclusion

Construction impacts to surface waters potentially could include increased turbidity sedimentation in streams resulting from in-stream construction; the potential for fuel spills; channel and bank modification, affecting channel morphology; reductions in flow volumes in streams where water is withdrawn for hydrostatic testing; and potential transmittal of whirling disease, zebra mussels, or other invasive aquatic species between watersheds. These surface water impacts would be mitigated by the implementation of Overland Pass' POD including the *Construction, Reclamation, and Revegetation Plan*, site-specific waterbody crossing plans, and the *Hydrostatic Test Plan*. Measures to minimize surface water impacts include the use of erosion control measures such as sediment barriers to prevent silt-laden water from entering wetlands and waterbodies; restoring original contours; revegetating disturbed areas; and appropriate setback distances for additional TWAs, storage of fuel and hazardous materials, and equipment storage from the edge of wetlands and waterbodies.

Implementation of the additional mitigation measures would further reduce impacts to surface waters. WATER-1 would reduce sediment impacts downstream of a crossing by limiting instream and bank disturbance from construction equipment. WATER-2 would prevent or minimize the transport of nuisance organisms from one waterbody to another. Measure WATER-3 would further protect instream water quality by ensuring that hydrostatic test discharges meet water quality standards. WATER-4 would reduce impacts on aquatic resources during water withdrawals associated with dust control and hydrostatic testing. WATER-5 would minimize construction impacts to playas and ponds. Implementation of WATER-6 would avoid alteration of the streambed substrate (i.e., roughness) that can affect sedimentation and erosion regimes, degrade the channel, and create fish barriers. WATER-7 would reduce the extent of construction impacts in riparian and wetland areas. WATER-8 would reduce erosion impacts from hydrostatic test water discharges, and WATER-9 would promote crossing stability at the Green River and help protect existing resources in the area.

Operation Phase

Issues

- Potential reductions in surface water quality from pipeline spills or leaks in small, medium, and large streams.

Analysis

Effects of a possible pipeline rupture at a stream crossing would have a short-term impact on surface water. In addition, accidental releases or leaks from the pipeline could impact surface water quality by introducing hydrocarbons into soil followed by surface runoff. The Risk Assessment (**Appendix J**) describes the physical, chemical, and toxicological properties of the NGLs that Overland Pass proposes to transport. NGL properties were evaluated to determine potential environmental effects in the event of a spill. NGLs primarily consist of gases that are liquefied by pressure. NGLs released into the environment would quickly volatilize and are only minimally water soluble. Potential impacts would be short-term and low magnitude due to the characteristics of NGLs and the localized extent of the affected area.

Surface water intakes were identified in **Table 4.5-2**. Valves would be placed in close proximity to perennial waterbodies crossed by the proposed pipeline. In the event of a pipe failure these valves would be closed to minimize the leakage and allow for repair of the pipe. The potential for a pipeline leak is discussed in **Appendix J**.

Additional Mitigation

No additional mitigation was identified.

Conclusion

The effects of a pipeline release of NGLs into a waterbody would have minimal, if any, impact on surface water quality.

4.5.1.2 Groundwater

Construction Phase

Issues

- Reduced availability of groundwater near wells pumped as water sources for hydrostatic testing, dust control, equipment washing, or other uses;
- Contamination of near-surface groundwater as a result of spills during refueling or storage and handling of lubricants, solvents, or other materials;
- Interference with existing groundwater movement and supply in areas of shallow groundwater or springs, as a result of trenching or blasting;
- Impacts to terrestrial resources, wetlands, and/or surface water from discharge of poor quality groundwater or wastes incidentally encountered during trenching, or from discharge of poor quality groundwater used for hydrostatic testing, dust control, or other project purposes; and
- Long-term interference with existing groundwater movement in areas of shallow groundwater or springs due to trench backfilling.

Analysis

As described in Section 3.5.1.2, groundwater occurs near the land surface at numerous locations along the proposed ROW. These areas primarily consist of alluvial aquifer zones that occur in relatively narrow bands along streams and rivers. Examples include the Hams Fork at Opal, Wyoming; the Medicine Bow River near Elk Mountain, Wyoming; Rock Creek at Arlington, Wyoming; streams in the vicinity of Laramie, Wyoming; the South Platte River near Merino, Colorado; and the South Fork of the Republican River near St. Francis, Kansas.

Elsewhere along the proposed ROW, water-bearing zones generally are greater than 50 feet below ground surface, and commonly are greater than 100 feet below the ground surface. Under these conditions, little or no impacts to groundwater resources would occur from project construction.

In areas of near-surface aquifers, the potential for contamination of groundwater during construction would be avoided or minimized by the implementation of the SPCC Plan, which is part of Overland Pass POD (Overland Pass 2006). Components of the plan include good housekeeping, containment requirements, and inspections at contractor yards; personnel training in spill prevention and response; readily available clean-up materials and containment equipment; and established protocols for spill response, clean-up, and reporting. In addition, locations for materials storage, equipment refueling, and maintenance would be restricted to protective distances from wells, waterbodies, and wetlands. These practices would avoid or minimize impacts to groundwater resources from activities undertaken during the construction sequence.

Dewatering

As stated in the project *Stormwater Pollution Prevention Plan* (SWPPP) (Overland Pass 2006), it could be necessary to dewater the trench where shallow groundwater was intercepted and impeded trenching or other activities in the construction sequence. Dewatering would be necessary to provide a safe working environment. According to the SWPPP, trench dewatering discharges would be directed into sediment control structures, such as filter bags placed in well-vegetated upland areas. Well vegetated upland areas typically would be located outside, but immediately adjacent to, the bladed construction ROW, but within the areas that were inventoried and analyzed in this document. On federal land, the approval to locate a dewatering structure outside the construction ROW would be made using a Level 1 variance. The duration of these discharges would depend on the length of time the trench was open in a particular locale. In areas of existing or potential subsurface drainage, installations such as trench breakers would be placed to minimize changes in the existing hydrologic conditions. If tile drains were encountered, they would be repaired to their pre-construction level of function.

Dewatering would cause temporary impacts to shallow groundwater resources over limited areas. The magnitude and importance of such impacts would be small, since trench excavation would be relatively shallow and trench backfill would not be likely to permanently obstruct groundwater drainage. After pipe installation and trench backfilling, near-surface groundwater levels and gradients eventually would be restored to approximate pre-construction conditions through natural seepage and re-saturation. Depending on site-specific conditions, this process could occur over a period of days to months. This would be an unavoidable short-term impact of construction.

Blasting

Blasting during construction could reduce groundwater yields to wells and could damage existing pump installations. To minimize adverse effects of blasting, a formal *Blasting Plan* has been developed for the project (Overland Pass 2006), and would be in effect prior to the start of construction. In accordance with the plan, the peak particle velocity during blasting would not exceed 1.5 inches per second at any aboveground structure, including water wells. If blasting were to occur within 200 feet of identified water wells or potable springs, Overland Pass has committed to conduct water flow performance and water quality testing before blasting. If the water well was damaged by blasting, either the well owner would be compensated for damages or a new well would be provided. In addition, Overland Pass would provide an alternative potable water supply to the landowner until repairs have occurred. Locations of water wells or systems within 200 feet of blasting activities have been identified by Overland Pass. These measures would avoid or minimize adverse impacts to groundwater supply locations from blasting activities.

Hydrostatic Testing

An additional impact of project construction on groundwater resources would occur from withdrawals made to supply hydrostatic testing water, dust control efforts, and equipment washing. Of these activities, the largest withdrawals would be for hydrostatic testing. The current *Hydrostatic Test Plan* (**Appendix C**) proposes to make groundwater withdrawals for this purpose between RP 444.2 and RP 598.6 (**Table 4.5-2**). This portion of the ROW extends from eastern Colorado (Washington County) into northwestern Kansas (Sheridan County). The South Platte River floodplain extends along the proposed pipeline route from approximately RP 413 to RP 416. Thus, the river alluvium is approximately 28 miles east of the potential well-water source area. Further eastward in the area of proposed groundwater sources, the major aquifer is the Ogallala Formation. For project purposes, there would be no discernible hydrologic connection between the proposed area of groundwater sourcing and the Colorado River tributaries, the North Platte, or the South Platte. There may be surface water/groundwater interactions along this stretch of the pipeline with respect to the alluvial deposits along the Arikaree River and the South Fork of the Republican River. The Saline and Solomon rivers and their tributaries have narrow alluvial deposits that provide relatively little water to wells. Depending on the well locations where withdrawals are made, slight drawdown effects may temporarily occur over short reaches of perennial streams within 0.5 mile or so of the source well. If such an effect occurs, it could create a minimal impact on streamflows.

Proposed total hydrostatic test withdrawals from groundwater are approximately 25 acre-feet. This is a relatively small volume in comparison to extensive agricultural withdrawals in the region. Based on water-use values (USDA 2006), an irrigated cornfield of approximately 130 acres uses approximately 230 acre-feet of water to produce a corn crop in northeastern Colorado. Approximately 300 acre-feet are required to produce a corn crop on 130 acres in western Kansas. The section proposed for the highest groundwater withdrawal volume (RP 512 through RP 562) would use approximately 2.6 million gallons (approximately 8 acre-feet) for hydrostatic testing. Additional pumping would be required for dust control, equipment washing, and other miscellaneous uses, but these volumes are expected to be less than those needed for hydrostatic testing. Little or no short-term impact to groundwater levels or availability would result from the proposed project uses, since supplies would be purchased from existing groundwater users, based on existing rights. The change in beneficial use (from agriculture or other existing use to a temporary industrial use) likely would create a short-term impact on land use. Mitigating these minor impacts by substituting streamflow or reservoir withdrawals for groundwater pumping would generate impacts to surface water and associated resources (e.g., fisheries and wildlife). These alternative impacts probably would be greater than the groundwater impacts offset by the supply substitution. No impacts to long-term groundwater resource availability or quality would result from the proposed withdrawals for project purposes.

Overland Pass has proposed measures in a *Hydrostatic Testing Plan* (**Appendix C**) to manage test water discharges. Compliance with approved requirements to control discharge and drainage would mitigate potential land and water resources impacts from groundwater discharges. However, many wells on the Great Plains intercept aquifers other than the Ogallala Formation or streamlain alluvial deposits. In addition, these common groundwater sources are absent in some locales. Because of this, other sources of groundwater could be needed for project uses. However, the water quality in alternative aquifer sources (such as some waterbearing zones in the Dakota Formation, Carlile Shale, Greenhorn Limestone, or Permian rocks) may not be suitable for surface discharge. When discharged on the surface, existing elevated concentrations of dissolved solids or other water quality constituents in these aquifers could create water quality impacts to vegetation, land use, or nearby wetlands or surface water.

Springs and Flowing Wells

The proposed alignment would be located several hundred feet away from springs that are known to occur in specific locales from RP 205 to RP 209 (east of Wolcott, Wyoming), and from RP 282 to RP 286 (southeast of Laramie, Wyoming). Due to topographic and geologic conditions, trenching would not be likely to affect these known seep or spring features. The backfilled trench is not likely to permanently obstruct groundwater drainage through alluvial deposits or other areas where groundwater is at relatively shallow depths, though it may act as a conduit to transport water unless proper trench plugs are installed.

The existence and locations of flowing wells has not been investigated for the project. This effort would need to be conducted in the field. Implementation of recommended mitigation measure GW-3 would minimize potential interruption of flowing wells.

<u>Additional Mitigation</u>

GW-1: Groundwater pumped and discharged aboveground for construction purposes shall meet agricultural water quality standards in the respective states and/or districts where it is discharged.

GW-2: When groundwater is observed during construction (e.g., sites requiring dewatering due to groundwater, saturated wetlands), permanent trench breakers shall be installed to prevent unintentional transport of groundwater by the pipeline trench.

GW-3: Overland Pass shall conduct additional field surveys prior to construction to ascertain the existence and location of any flowing wells within 500 feet of the construction ROW. If any flowing well occurs within this distance of the ROW, their general hydrogeologic setting shall be further investigated, the need for porous trench backfill shall be implemented as necessary to avoid the obstruction of groundwater flow to the well.

<u>Conclusion</u>

Potential impacts to groundwater resources from pipeline construction include damage to nearby wells, well yield, and pumps from blasting; contamination of shallow aquifers from fuel, lubricant, or hazardous material spills or leaks; temporary modification of shallow groundwater flow (where present) through trench dewatering and pipeline installation; and reduction in groundwater levels where wells are pumped for hydrostatic testing purposes. Impacts to groundwater resources would be minimized or avoided by use of standard construction practices and protection measures as described in Overland Pass' *Blasting Plan*, SPCC Plan, *Hydrostatic Testing Plan*, and *Construction, Reclamation, and Revegetation Plan*. All of these plans are included in Overland Pass' POD (Overland Pass 2006). The additional mitigation measure GW-1 would ensure that groundwater used for hydrostatic testing purposes is of sufficient quality so as to not impact terrestrial resources when discharged aboveground. GW-2 would prevent the unintentional transport of groundwater via the pipeline trench.

Operation Phase

Issue

- Potential reductions in groundwater quality from pipeline spills, leaks, or ruptures on shallow aquifers used for rural residential, livestock, and municipal water supplies.

Analysis

Spills/Leaks

If a pipeline leak occurred, released NGLs would vaporize. Gases would percolate up through the soil and sediments, and eventually dissipate into the atmosphere. Most, if not all of the NGL components would evaporate on the land surface or within the vadose (unsaturated) zone above the water table. Only approximately 2 to 4 percent of the NGL components would not readily volatilize at atmospheric pressure (**Appendix J**). A small portion of these could enter shallow groundwater depending on the location of the rupture or leak after eventually migrating through unsaturated materials. Because of their slight solubility in water, contamination from NGL components would be limited to a few parts-per-million. These concentrations would be further reduced by diffusion and natural attenuation, which would further reduce the risk to potential receptors (BLM 2005).

The potential exists for groundwater contamination and subsequent withdrawal to a use (e.g., domestic or municipal supply, livestock watering) if a catastrophic rupture occurs near a well that is pumping during or near the time of rupture. Emergency shutoff valves would limit the extent of contamination. Implementation of recommended additional mitigation measure GW-4 would minimize potential impacts from such an event.

Due to the geologic setting, operational impacts from the Proposed Action on the sole source aquifer in the Elk Mountain area are not expected to occur. Given the characteristics of NGLs and their transport conditions within the pipeline, it is unlikely that adverse impacts on groundwater and wells in the Casper Aquifer protection zone would occur. Furthermore, applicable USDOT regulations for hazardous liquids pipelines promote structural integrity, early leak detection, and rapid response (Section 3.12). These factors would provide further protection toward avoiding groundwater impacts.

Additional Mitigation

GW-4: If a pipeline rupture occurs within 500 feet of a groundwater supply source (well or spring), Overland Pass shall immediately notify the owner of the source, and shall comply with any mitigation and/or monitoring provisions reached through agreements with the source owner and appropriate regulatory agencies.

Conclusion

In the event of a pipeline rupture or spill, groundwater impacts from pipeline operation likely would be minimal due to the rapid volatilization of NGLs once released from pressure and their marginal solubility in water.

4.5.1.3 Floodplains, Wetlands, and Riparian Areas

Construction Phase

Issues

- Potential modifications in wetland productivity due to modifications in surface and subsurface flow patterns; and
- Modifications in wetland vegetation community composition and structure from construction clearing.

Analysis

Construction in wetlands primarily would result in temporary effects including the temporary loss of wetland vegetation, soil disturbance, and temporary increases in turbidity and fluctuations in wetland hydrology. To minimize these impacts on wetlands, Overland Pass would overlap its construction ROW along previously disturbed corridors for approximately 83 percent of the proposed pipeline route. No aboveground facilities would be located within wetlands.

Based on wetland field delineation data and a proposed 75-foot-wide construction ROW, the proposed pipeline route temporarily would affect 59.0 acres of wetlands (**Table 4.6-1**). Of that total disturbance, 0.7 acre occurs on federally managed land. TWAs would impact an additional 21.6 acres of wetlands, 0.2 acre of the total disturbance occurring on federally managed land.

Large riparian areas are associated with the North Platte River and Medicine Bow River crossings in Wyoming. Overland Pass proposes TWAs within these and other riparian areas.

To minimize environmental impacts to floodplains, wetlands, and riparian areas during the construction phase of the project, Overland Pass would implement the construction and mitigation procedures provided in the *Construction, Reclamation, and Revegetation Plan* (**Appendix B**), which include topsoil salvage and replacement, grading the construction ROW to restore pre-construction contours and drainage patterns, and limiting human disturbance/access. Following these construction procedures and mitigation measures would greatly increase the probability that emergent (PEM) wetland communities (representing 93 percent of all wetlands affected) would revegetate rapidly (within 3 years) (Van Dyke 1994; FERC 2004). Disturbance to PSS and PFO wetlands would result in a long-term impact as the recovery of these communities would take 5 to 10 years and 50 to 100 years for a mature forest, respectively.

Pipeline construction in wetlands could temporarily alter wetland surface and subsurface water flow patterns through trenching activities. This hydrologic impact would be localized and temporary until permanent trench breakers were installed and the trench was backfilled.

Additional Mitigation

Mitigation measures GW-1, GW-2, VEG-1, and WATER-7 describe mitigation measures to minimize impacts to riparian areas and wetlands.

Conclusion

Wetland herbaceous vegetation generally would begin to be re-established along the ROW within 2 to 3 years post-construction. Recovery of scrub-shrub wetlands would require up to a decade, and 50 or more years would be required for recovery of palustrine forested wetland communities. Impacts on wetland and riparian communities would depend on the individual vegetation community and site-specific soil and moisture conditions received post-construction.

Operation Phase

Issues

- Modifications in wetland and riparian vegetation community composition and structure from operational maintenance; and
- Potential for spills to adversely affect wetlands.

Analysis

Following construction, wetland and riparian vegetation would be allowed to regenerate to the original cover type, with the exception of 0.5 acre, which would be maintained as herbaceous vegetation within the permanent 10-foot-wide operational ROW to facilitate pipeline maintenance and monitoring. Trees greater than 15 feet in height would be removed from a 30-foot-wide strip centered over the pipeline. Wetland vegetation would be lost temporarily during construction; however, with the exception of scrub-shrub and forested wetlands that would be maintained in an herbaceous state, all wetland vegetation would be reestablished within 3 years following construction. The success of wetland revegetation would be monitored for the first 5 years after construction (in July, during the first, third, and fifth growing seasons) or until wetland revegetation is successful. No aboveground facilities would be located in wetlands or floodplains.

In the unlikely event of a pipeline release in a wetland or riparian area, NGL components would rapidly volatilize, thereby posing minimal impacts, if any.

Additional Mitigation

No additional mitigation was identified.

Conclusion

Pipeline operational ROW maintenance activities in wetlands and riparian areas would result in localized, short-term impacts as a result of periodic clearing of woody vegetation over the pipeline centerline. If NGLs were accidentally released into the environment, minimal impacts, if any, would be expected to wetland and riparian resources.

4.5.2 No Action Alternative

Under the No Action Alternative, the proposed project would not be constructed nor operated. No project-related disturbance would occur for water resources. Impacts to water resources would continue at present levels as a result of natural conditions and existing development in the project area.

4.5.3 Southern Energy Corridor – Copper Ridge Bypass Alternative

The effects of the Southern Energy Corridor – Copper Ridge Bypass Alternative on surface water and groundwater resources would be similar to impacts discussed for the Proposed Action. There would be two additional streams crossed by the Southern Energy Corridor – Copper Ridge Bypass Alternative (one Little Bitter Creek crossing and two Cedar Creek crossings). No hydrostatic test water withdrawals would occur in these streams. Overland Pass estimates this alternative would require approximately 300,000 gallons of additional water for hydrostatic testing (**Appendix E**).

The effects of this alternative on groundwater, floodplains, wetlands, and riparian resources would be similar to impacts described for the Proposed Action. Groundwater resources for this alternative are similar to the groundwater resources described for the Proposed Action.

4.6 Vegetation

4.6.1 Proposed Action

4.6.1.1 Vegetation Communities and Special Status Plant Species

Construction Phase

Issues

- Vegetation removal for facility construction with consequent reduction in wildlife habitat and increased risk of soil erosion.

Analysis

Construction and operation activities would affect vegetation communities in a variety of ways, from temporary herbaceous trampling and partial removal of aboveground plant cover to minimal long-term vegetation removal. Clearing, trenching, grubbing, blading, and vegetation trampling would occur within the proposed project areas. Impacts to vegetation communities associated with construction are classified as short-term or long-term. These short-term and long-term disturbance areas would be reclaimed and would provide forage and habitat for wildlife within 3 to 5 years following successful reclamation.

Construction of the proposed project would involve short-term impacts due to construction on approximately 4,759 acres of grasslands, 768 acres of shrublands, 2,472 acres of agricultural land, 60 acres of forested areas, and 81 acres of wetland vegetation as shown in **Table 4.6-1**. The majority of the pipeline ROW would be allowed to revert to pre-construction conditions.

The primary impact of the proposed project on vegetation would be the cutting, clearing, and/or removal of existing vegetation within the construction work area. The degree of impact would depend on the type and amount of vegetation affected and the rate at which the vegetation would regenerate after construction.

To minimize environmental impacts and ensure site stabilization and revegetation, Overland Pass would follow construction procedures detailed in its POD, including its *Construction, Reclamation, and Revegetation Plan* (**Appendix B**). The *Construction, Reclamation, and Revegetation Plan* describes methods that would be implemented to stabilize disturbed sites by reducing runoff and erosion; to reestablish a vegetation condition comparable to preconstruction conditions; to restore functional qualities of the area including wildlife habitat and livestock forage; and to prevent degradation of areas off the construction ROW. Additionally, Overland Pass would follow the measures outlined in the SPCC Plan and the SWPPP to minimize and mitigate potential impacts on wetlands.

Timely stabilization of the construction ROW and reseeding with an appropriate seed mix would minimize the duration of vegetation disturbance. The BLM would inspect the pipeline ROW on federal lands for a minimum of five years to ensure Overland Pass' compliance with revegetation standards established in Overland Pass' POD.

Long-term impacts could occur on short-grass prairie and sagebrush steppe, as well as native grasslands and shrublands. Reclamation efforts would re-establish vegetation along the ROW within 2 growing seasons, but full recovery of these habitats could take a minimum of 5 to 7 years (or longer for shrublands) due to poor soil and low moisture conditions.

Long-term construction impacts could occur on shrublands, such as sagebrush. Recovery of these habitats could take a minimum of 20 to 30 years due to poor soil and low moisture conditions.

Table 4.6-1 Acres of Land Affected by Construction and Operation of the Project[1]

Facility/State		Grassland		Shrubland		Agricultural Land		Forest Land		Wetlands[2]	
		Const.	Oper.[3]	Const.	Oper.[3]	Const.	Oper.[3]	Const.	Oper.[3]	Const.	Oper.[3]
Pipeline											
Wyoming	**Total**	2,397.0	0.0	409.8	0.0	28.8	0.0	45.4	30.3	55.9	0.5
	Federal	713.4	0.0	153.6	0.0	0.4	0.0	18.6	12.4	0.7	0.0
	Non-Federal	1,683.6	0.0	256.1	0.0	28.4	0.0	26.8	17.9	55.2	0.5
Colorado	**Total**	907.5	0.0	232.4	0.0	408.4	0.0	0.2	0.2	1.4	0.0
	Federal		0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0
	Non-Federal		0.0	232.4	0.0	407.9	0.0	0.2	0.2	1.4	0.0
Kansas[4]	**Total** 204.4		0.0	14.6	0.0	1,668.9	0.0	8.4	5.6	1.7	<0.1
	Federal 703.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Non-Federal	667.2	0.0	14.6	0.0	1,668.9	0.0	8.4	5.6	1.7	<0.1
	Pipeline Total	3,971.7	0.0	656.8	0.0	2,106.1	0.0	54.0	36.1	59.0	0.5
	Pipeline Federal	917.8	0.0	153.6	0.0	0.9	0.0	18.6	12.4	0.7	0.0
	Pipeline Non-Federal	3,053.9	0.0	503.2	0.0	2,105.2	0.0	35.4	23.7	58.3	0.5
Additional Temporary Workspace Areas											
Wyoming	**Total**	462.5	0.0	92.4	0.0	28.0	0.0	3.2	0.0	8.8	0.0
	667.2 Federal	138.4	0.0	43.2	0.0	0.0	0.0	1.5	0.0	0.2	0.0
	Non-Federal	324.1	0.0	49.1	0.0	28.0	0.0	1.8	0.0	8.6	0.0
Colorado	**Total**	106.2	0.0	16.7	0.0	43.4	0.0	0.0	0.0	5.1	0.0
	Federal	13.3	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0
	Non-Federal	92.8	0.0	16.7	0.0	42.7	0.0	0.0	0.0	5.1	0.0
Kansas[4]	**Total**	175.4	0.0	2.7	0.0	251.3	0.0	3.3	0.0	7.8	0.0
	Federal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Non-Federal	175.4	0.0	2.7	0.0	251.3	0.0	3.3	0.0	7.8	0.0
	Additional Temporary Workspace Areas Total	744.2	0.0	111.7	0.0	322.8	0.0	6.5	0.0	21.6	0.0
	Additional Temporary Workspace Areas Federal	151.8	0.0	43.2	0.0	0.8	0.0	1.5	0.0	0.2	0.0
	Additional Temporary Workspace Areas Non-Federal	592.4	0.0	68.5	0.0	322.0	0.0	5.0	0.0	21.4	0.0
Pipe Storage and Contractor Yards (Non-Federal Lands)											
Wyoming											
Opal Yard		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Blacks Fork Contractor Yard		8.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Thayer Junction Pipe Storage/Contractor Yard[5]			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Echo Springs Yards (2)		7.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rawlins Pipe Storage/Contractor Yard[5]			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Laramie Pipe Storage/Contractor Yard (2)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

0.0

Table 4.6-1 Acres of Land Affected by Construction and Operation of the Project[1]

Facility/State	Grassland		Shrubland		Agricultural Land		Forest Land		Wetlands[2]	
	Const.	Oper.[3]	Const.	Oper.[3]	Const.	Oper.[3]	Const.	Oper.[3]	Const.	Oper.[3]
Colorado										
Carr Contractor Yard	12.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Otis and Unnamed Pipe Storage/Contractor Yards[5] (4)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Kansas										
Bird City Pipe Storage Yard	0.0	0.0	0.0	0.0	2.5	0.0	0.0	0.0	0.0	0.0
Gem Pipe Storage/Contractor Yard	0.0	0.0	0.0	0.0	12.2	0.0	0.0	0.0	0.0	0.0
Hoxie and Unnamed Yards (4)	0.0	0.0	0.0	0.0	16.2	0.0	0.0	0.0	0.0	0.0
Rexford Pipe Storage/Contractor Yard	0.0	0.0	0.0	0.0	4.1	0.0	0.0	0.0	0.0	0.0
Hoisington Pipe Storage/Contractor Yard[5]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Conway Yard	0.0	0.0	0.0	0.0	2.1	0.0	0.0	0.0	0.0	0.0
Pipe Storage and Contractor Yards Total	27.7	0.0	0.0	0.0	37.1	0.0	0.0	0.0	0.0	0.0
Appurtenances (Valves, Pigging Facilities, and Tees)										
Wyoming **Total**		1.6	0.0	<0.1	0.0	0.1	0.0	0.0	0.0	0.0
Federal	0.0	0.2	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0
Non-Federal	3.0	1.4	0.0	<0.1	0.0	0.1	0.0	0.0	0.0	0.0
Colorado **Total**	1.0	0.6	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0
Federal	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Non-Federal	1.0	0.6	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0
Kansas[4] **Total**		0.4	0.0	<0.1	2.0	1.3	0.0	0.0	0.0	0.0
Federal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Non-Federal	1.0	0.4	0.0	<0.1	2.0	1.3	0.0	0.0	0.0	0.0
3.0 **Appurtenances Total**	5.0	2.6	0.0	<0.1	2.0	1.7	0.0	0.0	0.0	0.0
Appurtenances Federal	0.0	0.2	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	0.0
Appurtenances Non-Federal	5.0	2.4	0.0	<0.1	2.0	1.7	0.0	0.0	0.0	0.0
Aboveground Facilities (Non-Federal Lands)										
Wyoming										
Echo Springs Pump Station	3.7	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Echo Springs Meter Station 1.0	1.5	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Opal Meter Station[5]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Laramie Pump and Meter Station	5.2	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Aboveground Facilities Wyoming Total	10.4	3.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table 4.6-1 Acres of Land Affected by Construction and Operation of the Project[1]

Facility/State	Grassland		Shrubland		Agricultural Land		Forest Land		Wetlands[2]	
	Const.	Oper.[3]	Const.	Oper.[3]	Const.	Oper.[3]	Const.	Oper.[3]	Const.	Oper.[3]
Colorado										
Washington County Meter Station and Pigging Facility	0.0	0.0	0.0	0.0	1.2	0.2	0.0	0.0	0.0	0.0
Aboveground Facilities Colorado Total		0.0	0.0	0.0	1.2	0.2	0.0	0.0	0.0	0.0
Kansas										
WaKeeney Meter Station[7]		0.0	0.0	0.0	1.5	0.2	0.0	0.0	0.0	0.0
Bushton Meter Station and Pigging Facility[5] 0.0		0.0	0.0	0.0	1.2	0.2	0.0	0.0	0.0	0.0
Conway Meter Station and Pigging Facility[5]		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Aboveground Facilities Kansas Total	0.0	0.0	0.0	0.0	2.7	0.4	0.0	0.0	0.0	0.0
Aboveground Facilities Project Total	10.4	3.6	0.0	0.0	3.9	0.6	0.0	0.0	0.0	0.0
Project Total[6] 0.0	4,758.9	6.2	768.5	<0.1	2,471.8	2.3	60.5	36.0	80.6	0.5
Federal Lands Total[6] 0.0	1,069.6	0.2	196.8	<0.1	1.7	0.0	20.1	12.4	0.9	<0.1
Non-Federal Lands Total[6]	3,689.3	6.0	571.7	<0.1	2,470.2	2.3	23.6	23.6	79.7	0.5

[1]Const. – construction. Oper. – operation. Based on a 75-foot-wide construction ROW and 50-foot-wide permanent ROW. Does not include developed, commercial land, open water, or barren areas that do not display vegetation characteristics. 0.0
[2]Wetland totals may differ from **Table 3.5-7** where National Wetland Inventory map data were use to calculate wetland impacts.
[3]No permanent impacts would occur as part of pipeline construction as vegetation would be allowed to revert to pre-construction conditions with the exception of areas required for aboveground facilities, forested areas that would be maintained in an herbaceous state within the permanently maintained 50-foot-wide operational ROW, and a 10-foot-wide strip centered over the pipeline in paulstrine scrub-shrub and forested wetlands areas. In addition, if conditions require, non-forested vegetation would be cleared over the entire 50-foot-wide permanent ROW on an as-needed basis not to exceed once every 3 years. In wetlands and riparian areas, a 10-foot-wide corridor centered over the pipeline could be maintained annually in an herbaceous state. In addition, if conditions required, trees within a 25-foot-wide corridor centered over the pipeline could be selectively cut and removed from the ROW on an as-needed basis not to exceed once every 3 years.
[4]All lands crossed by the proposed pipeline in Kansas would be non-federal lands.
[5]Pipe storage/contractor yards or aboveground facility would be located on land (e.g., commercial/industrial) that does not display vegetation characteristics.
[6]The numbers in this table have been rounded for presentation purposes. As a result, the totals may not reflect the exact sum of the addends in all cases. Totals do not include 82.2 acres for access roads during pipeline operation.
[7]Does not include areas in agricultural land associated with the potential future WaKeeney Pump Station.

Impacts on agricultural vegetation communities would be short term in nature, as the vegetation would generally be reestablished within 2 years of restoration depending on climatic conditions. Overland Pass would not reseed cultivated agricultural areas unless requested by the landowner.

Clearing of forest and/or woodland vegetation within the construction ROW would result in long-term environmental change. Over time, natural growth would restore the unmaintained portions of the temporary construction ROW and TWAs back to a forested community. The rate of forest reestablishment would depend upon the type of vegetation, the length of growing season, and the natural fertility of the soils. Regrowth to the sapling-young tree stage could take 15 to 30 years, while regrowth of forests to mature conditions could take between 50 to 100 years depending on the species.

Riparian communities would be crossed by the project including large riparian areas associated with the North Platte River and Medicine Bow River crossings. Overland Pass proposes TWAs within riparian areas.

Wetland vegetation would be temporarily lost during construction; however, with the exception of scrub-shrub and forested wetlands that would be maintained in an herbaceous state, all wetland vegetation would be anticipated to be reestablished within 3 years following construction.

It would likely require 10 or more years following successful reclamation for sensitive plant communities, especially forested or wetland plant communities, to return to pre-disturbance condition. Successful reclamation of sagebrush communities could take in excess of 50 years, depending on the species of sagebrush, soil conditions, and the amount of precipitation received post-construction. The severity of these disturbances depends on the timing and duration of the disturbance activities and the sensitivity of the plant communities.

Additional Mitigation

VEG-1: To minimize impacts to waterbodies, wetlands, and riparian areas, Overland Pass shall set back TWAs a minimum distance of 50 feet from the edge of waterbodies, wetlands, or riparian areas, whichever distance would provide the greatest protection. The distance shall be measured from the water bank of the waterbody, the margin of a wetland, and the exterior edge of a riparian area. In addition, erosion and sediment control measures, including but not limited to, silt fence, straw bales, berms, water bars, and mulching shall be installed around each TWA to prevent soil movement into the nearby sensitive area. Riparian areas form a transition between permanently saturated wetlands and upland areas and are typically associated with waterbodies (see Glossary).

Conclusion

Herbaceous cover generally would begin to be re-established along the ROW within 2 years post-construction. However, full recovery of non-agricultural communities often would require more than 5 years, while recovery of agricultural and wetland communities would be expected more quickly. Impacts on vegetation communities would depend on the individual vegetation community, site-specific soil conditions, and the amount of precipitation received post-construction. Reduction of the construction ROW width to 60 feet in riparian woodlands and wetlands in WATER-7 would reduce the area of disturbance to this important vegetation type.

Implementation of the additional mitigation measure (VEG-1) would reduce impacts to wetlands and riparian communities by at least 20 percent on federal lands.

Operation Phase

Issues

- Permanent vegetation changes in the ROW and areas of aboveground facilities.
- Potential for spills to adversely affect vegetation, particularly threatened and endangered plant species.

Analysis

Operational impacts on vegetation primarily would be limited to areas required for operation of the pump stations, meter stations, and other aboveground appurtenances (approximately 6.2 acres of grassland and 2.3 acres of agricultural land). In addition, Overland Pass would permanently maintain a 50-foot-wide corridor in forested areas and a 10-foot-wide corridor in palustrine forested areas. This corridor would be kept in an herbaceous state by periodic mowing or brush clearing according to the guidelines outlined in the *Construction, Reclamation, and Revegetation Plan* (**Appendix B**). The degree of impact would depend on the frequency of vegetation maintenance conducted during operation and the type and amount of vegetation affected. Given the long recovery period for woodlands, maintenance of vegetation in the future would be nominal.

The Echo Springs Meter Station at RP 146.5 would be located on grasslands within the existing Echo Springs facility. During construction, 3.7 acres would be disturbed and 1.7 acres converted to operation of the meter station. The Echo Springs Pump Station would be located within a sagebrush steppe community and would affect a total of 1.5 acres of grassland temporarily and 0.1 acre of grassland permanently. The Laramie Pump and Meter Station (RP 271.7) would be new facilities. The Laramie Pump and Meter Stations would be located within a mixed grass prairie community and would affect a total of 5.2 acres of grassland temporarily and 1.8 acres of grassland permanently.

The Opal (RP 0.0) and Conway (RP 749.4) meter stations would be located within existing, previously disturbed commercial/industrial areas; therefore, no vegetation impacts beyond those already experienced at these sites would be anticipated during the construction and operation of these facilities. The Bushton Meter Station would impact 1.2 acres of agricultural land during construction and 0.2 acre during operation of the facility. The Washington County Meter Station (RP 447.8) and WaKeeney Meter Station (RP 606.0) would be new meter stations located in agricultural communities and would affect 2.7 acres of agricultural land temporarily and 0.4 acre of agricultural land permanently. If the WaKeeney Pump Station were built in the future, it is estimated that it would affect 3.7 acres of agricultural land during construction and 1.7 acres of agricultural land during operation.

Potential vegetation impacts could occur during maintenance operations along the ROW or at aboveground facilities. These activities would be dispersed along the length of the Project and would occur intermittently.

There is a small chance that the pipeline could accidentally leak, releasing NGL into the environment (Section 3.12). NGLs primarily consist of gas that is liquefied by pressure (e.g., propane). Consequently, in the unlikely event of a pipeline release, NGL components would rapidly volatilize, thereby posing minimal impacts to vegetation (**Appendix J**).

Additional Mitigation

No additional mitigation was identified.

Conclusion

Operational impacts on vegetation would be limited to areas required for operation of aboveground facilities affecting approximately 6.2 acres of grassland and 2.3 acres of agricultural land.

Maintenance activities along the proposed pipeline route would result in localized impacts of short duration (less than 14 days in most cases) and these impacts would be dispersed along the entire proposed pipeline route.

If NGLs were accidentally released into the environment, minimal impacts, if any, would be expected to soil resources.

4.6.1.2 Noxious Weeds and Invasive Plant Species

Construction Phase

Issues

- Potential expansion of noxious weeds and invasive plant populations along the pipeline ROW.

Analysis

The prevention of the spread of noxious weeds is a high priority to the communities in Wyoming, Colorado, and Kansas. Vegetation removal and soil disturbance during construction could create optimal conditions for the establishment of invasive, non-native species. Construction equipment traveling from weed-infested areas into weed-free areas could disperse invasive noxious weed seeds and propagates, resulting in the establishment of noxious weeds in previously weed-free areas.

To control the spread of noxious and invasive weeds along the pipeline corridor, Overland Pass would implement weed control measures in accordance with existing regulations and jurisdictional land management agency or landowner agreements and in accordance with its *Weed Management Plan* (**Appendix D**). Applicant-proposed mitigation measures include, but are not limited to, preconstruction surveys, vehicle cleaning stations, and certified weed-free straw bales, and certified weed-free seed mixes for restoration.

In order to accomplish weed prevention and control in the most appropriate and effective manner, Overland Pass has committed in their *Weed Management Plan* to monitor noxious weeds annually for 5 years following construction. In areas where weed infestations still required management, surveys and control measures would be implemented where problem areas still existed. Post-construction weed control measures may include the application of herbicide or mechanical, and/or alternative methods. The weed control measure chosen would be the best method available for the time, place, and species of weed as mutually agreed upon by Overland Pass and the appropriate regulatory agencies.

Landowners would be consulted regarding weed control status and implementation measures and encouraged to report concerns to Overland Pass. In the event noxious weed species become established in the ROW, Overland Pass would make good faith efforts to control weeds in the ROW and to work with adjacent landowners to prevent spread of the species to adjacent lands.

Additional Mitigation

VEG-2: Only certified weed-free straw bales shall be used to construct sediment control devices or used as mulch applications. Hay bales shall not be used for mulching or erosion control, except as approved on the PNG (see also SOIL-10).

VEG-3: Seed mixes shall be tested for viability to ensure that desirable seed viability exceeds 95 percent. Seed mixes shall have a certified content that contains 0 percent noxious weeds.

Conclusion

Despite efforts to prevent the spread of noxious weeds, it is possible that pipeline construction would increase the prevalence of noxious and invasive weeds along the ROW or that weeds would be transported into areas that were relatively weed-free. Implementation of Overland Pass' *Weed Management Plan* would minimize the spread of undesirable weed species. Mitigation measures VEG-2 and VEG-3 would minimize the introduction of undesirable weed species within the project area.

Operation Phase

Issues

- Future maintenance activities may cause the same effects discussed for construction.

Analysis

The potential impacts are the same as discussed for construction, but would pertain only to the aboveground facility areas and the permanent ROW.

Additional Mitigation

VEG-4: Overland Pass shall continue to monitor and control invasive plant species and noxious weeds along the ROW for the life of the project.

Conclusion

Despite efforts to prevent the spread of noxious weeds, it is possible that pipeline maintenance activities would increase the prevalence of noxious and invasive weeds along the ROW or that weeds would be transported into areas that were relatively weed-free. Implementation of VEG-4 would minimize the spread of undesirable weed species from operational impacts.

4.6.2 No Action Alternative

Under the No Action Alternative, the proposed project would not be constructed or operated. No project-related disturbance would occur to vegetation and impacts would continue at present levels as a result of natural conditions and existing development in the project area.

4.6.3 Southern Energy Corridor – Copper Ridge Bypass Alternative

Vegetation communities along the Southern Energy Corridor – Copper Ridge Bypass Alternative are comparable to those along the Proposed Action. The Southern Energy Corridor – Copper Ridge Bypass Alternative would be 4.8 miles longer than the Proposed Action, resulting in an additional 44 acres of temporary disturbance. Steep and side slope construction would result in 35 acres of TWAs along the Southern Energy Corridor – Copper Ridge Bypass Alternative, compared to 17 acres for the Proposed Action. These areas would be more susceptible to erosion and would be more difficult to reclaim.

4.7 Wildlife, Aquatic Resources, Special Status Species

4.7.1 Proposed Action

4.7.1.1 Wildlife

<u>Construction</u>

<u>Issues</u>

- Habitat reductions and fragmentation from construction clearing;
- Direct disturbance and loss of individuals from construction activities along the ROW and access roads; and
- Indirect effects consisting of displacement of individuals and loss of breeding success from exposure to construction noise, and from higher levels of human activity.

<u>Analysis</u>

Potential impacts on terrestrial wildlife species from the proposed project can be classified as short-term, long-term, and permanent. Short-term impacts consist of habitat removal, activities associated with project construction, and changes in wildlife habitats lasting less than 5 years. Long-term impacts would consist of changes to wildlife habitats lasting 5 years or more. Permanent impacts result from construction of aboveground facilities that convert natural habitat to natural gas operations. The severity of both short- and long-term impacts would depend on factors such as the sensitivity of the species impacted, seasonal use patterns, type and timing of project activities, and physical parameters (e.g., topography, cover, forage, and climate).

In total, surface disturbing activities would affect approximately 5,639 acres of wildlife habitat of which 1,183 acres would occur as a new greenfield ROW. The greenfield portions of the proposed pipeline route consist of 5 general vegetation communities: shrubland (approximately 633 acres), grassland (192 acres), agriculture (387 acres), woodland (29 acres), wetlands (15 acres), developed (8 acres), and no vegetation (13 acres).

Approximately 662 acres of the new greenfield ROW consists of forest land and shrubland habitats. These two habitat types require significant timeframes for restoration and impacts to these habitats are considered long-term. However, due to the linear nature of the project over a large geographic area, and its configuration next to existing disturbance, these acreages represent a minimal amount of available wildlife habitat on a regional basis.

Game Species

Direct impacts to big game species (elk, mule deer, pronghorn) would include the incremental loss of potential forage (native vegetation and previously disturbed vegetation) and would result in an incremental increase in habitat fragmentation within the proposed surface disturbance areas. However, as noted above, these incremental losses of vegetation would represent only a minimal amount of available habitat within the broader project region. The loss of native vegetation would be long term (greater than 5 years and, in some cases more than 50 years). In the interim, herbaceous species may become established within 3 to 5 years, depending on future weather conditions and management practices (e.g., livestock grazing) that would affect reclamation success in the project region. In most instances, suitable habitat adjacent to the disturbed areas would be available for wildlife species until grasses and woody vegetation were reestablished within the disturbance areas. However, assuming the adjacent habitats are at or near carrying capacity, and given the current drought conditions in the project region, displacement of wildlife species as a result of construction could cause some unquantifiable reduction in wildlife populations. Indirect impacts would result from increased noise levels and human presence during surface disturbance activities. Big game animals (especially pronghorn and mule deer) likely would decrease their use within 0.5 mile of surface disturbance activities (BLM 1995). However, this displacement would be short-term and animals would return to the disturbance area following construction activities. Vehicular activity associated with construction activities also would increase potential for collisions and possible big game mortality within the project area and on associated access routes.

Construction activities within big game crucial winter range would result in the incremental disturbance of approximately 338 acres of mule deer habitat, 718 acres of pronghorn habitat, and 99 acres of elk habitat. Approximately 140 acres of the identified habitat is crucial winter habitat for two species. Of the 1,141 acres of crucial winter habitat that would be impacted, 138 acres would occur as a new ROW. Big game crucial winter habitat with timing restrictions and disturbance acreage area is presented in **Table 4.7-1**. However, on a regional basis, these acreages of disturbance would represent a small percentage of the overall habitat within these areas. The effects of animal displacement, avoidance, and potential for collision are of greatest concern in the crucial winter habitat (WGFD 2005e).

Table 4.7-1 Big Game Crucial Winter Habitat with Timing Restrictions Affected by the Proposed Action

State/Range Type	Total Acres Impacted	Acres	
		Federal Lands	Non-Federal Lands
Wyoming			
Mule Deer Crucial Winter Habitat	338.2	80.0	258.2
Pronghorn Crucial Winter Habitat	669.5	198.2	471.3
Elk Crucial Winter Habitat	99.0	6.1	92.9
Colorado			
Pronghorn Crucial Winter Habitat	48.6	2.3	46.3

Multiple agencies have expressed concerns regarding big game species potentially falling into the trench and being injured or entrapped when attempting to jump over strung pipe (WGFD 2005e; BLM 2006b). In order to reduce potential impacts to wildlife from pipeline construction, Overland Pass has committed to installing trench plugs at a maximum interval distance of 0.5 mile, with a corresponding gap in the welded pipe left open at each trench plug. A 20-foot gap would be left at trench plugs in all spoil and topsoil stockpiles. Finally, Overland Pass has agreed to install a suitable ramp-up out of the trench with a 5-foot-wide path maintained across the trench plug.

Indirect impacts resulting from construction include increased noise levels and human presence during surface disturbing activities. Big game (especially pronghorn, elk, and mule deer) and more mobile small game animals likely would decrease their use within 0.5 mile of surface disturbance activities (Ward et al. 1980; Ward 1976). This displacement would be short-term and animals would return to the disturbance area following construction activities.

Nongame Species

Direct impacts to nongame species from surface disturbance activities would result in the incremental long-term loss of habitat and increased fragmentation until vegetation became reestablished. Potential impacts also would result in mortalities of less mobile or burrowing non-game species (e.g., small mammals, birds, reptiles, amphibians, invertebrates) as a result of crushing from vehicles and equipment. Other impacts would include the short-term displacement of some of the more mobile species (e.g., medium-sized mammals, adult birds) as a result of surface disturbance activities. Although the habitats adjacent to the proposed disturbance area may support some displaced animals, species that are at or near carrying capacity could suffer some increased mortalities.

Direct impacts to nesting raptors that are located within or adjacent to the proposed pipeline route, would include abandonment of a breeding territory or nest sites or the potential loss of eggs or young as a result of surface disturbance activities (e.g., ground disturbance, noise, human presence). These losses, if they were to occur, would reduce productivity for that breeding season. However, the degree of these potential impacts would depend on a number of variables such as the location of the nest site, the species' relative sensitivity, breeding phenology, and possible topographic shielding. Impacts to one golden eagle nest could result from the construction of a transmission line associated with this project. Potential impacts to nesting raptors from construction activities could be minimized through related mitigation measures identified in Additional Mitigation.

Migratory bird species that use the shrub-scrub habitat type for nesting in the project area include Brewer's sparrow, sage sparrow, and sage thrasher (Nicholoff 2003). Grassland is frequented by such migratory birds as the horned lark, lark bunting, and vesper sparrow (Beidleman 2000). Common migratory birds within the woodland community (mainly pinyon-juniper) include the gray flycatcher, Bewick's wren, chipping sparrow, and blue-gray gnatcatcher. Habitat fragmentation and "edge effects" are concerns for nesting migratory birds, resulting in overall changes in habitat quality, habitat loss, increased animal displacement, reductions in local wildlife and migratory bird numbers, and changes in species composition. However, the severity of these effects on migratory birds depend on factors such as sensitivity of the species, seasonal use, type and timing of project activities, and physical parameters (e.g., topography, cover, forage, and climate).

Because the majority of the project would be co-located with an existing ROW, new edge habitat would replace existing edge habitat. In addition, most of the pipeline would cross relatively open habitat types (e.g., grassland, agriculture, and shrubland) rather than fragmenting dense woodland habitat. As such, effects to migratory birds and their habitats from habitat fragmentation resulting from the proposed project would be low.

Overland Pass's proposed construction schedule would overlap with the breeding season for many migratory bird species. Potential impacts to migratory birds resulting from construction would be the same as those discussed above for raptor species.

EO 13186 requires federal agencies to avoid or minimize negative impact to migratory bird populations. The executive order also requires the federal agency to identify where unintentional "take" is likely to have a measurable negative effect on migratory bird populations. Effects to non-sensitive ground-nesting birds (which do not have significantly reduced populations) would not result in long-term or significant population-level effects, given the stability of local populations and the abundance of available habitat outside of the proposed ROW, and the linear nature of the project over a large geographic range. As a result, population-level impacts to migratory bird species would not be anticipated from the construction of the proposed project.

<u>Additional Mitigation</u>

WILD-1: The duration a trench is open shall be limited to 10 days from RP 0 to RP 110 on federal land administered by the BLM Kemmerer and Rock Springs field offices.

WILD-2: The pipeline and pipeline trench shall be inspected on a regular basis during construction and immediately prior to backfilling to identify entrapped animals. Wildlife found in trenches during construction shall be coaxed to the nearest ramp and either be encouraged to exit the trench, removed by hand, or trapped (if other methods are unsuccessful). If any animal in the trench is determined to be a special status species, only authorized individuals shall be allowed to remove it from the trench.

WILD-3: If construction occurs during migratory bird breeding seasons, Overland Pass shall consult with the BLM and the USFWS and prepare a plan to mitigate construction impacts to nesting migratory birds.

WILD-4: Overland Pass shall consult with the USFWS and BLM to develop mitigation measures to avoid or minimize blasting impacts on nesting birds. Prior to blasting, a report specifying the specific locations (by RP) where blasting would occur, known raptor and other migratory bird nest locations within the general vicinity of the blasting, and mitigation measures that would be implemented to minimize impacts on nesting birds shall be filed with the BLM for approval.

WILD-5: Overland Pass shall implement a mandatory employee education program for all construction personnel to minimize wildlife impacts and vehicle collisions during project construction.

WILD-6: Overland Pass shall comply with the spatial and timing buffers for raptors identified in the applicant-committed measures with the exception of lands administered by the PNG where the timing restriction component would extend from February 1-July 31.

Conclusion

Construction of the Overland Pass Pipeline would disturb wildlife habitat, displace individual animals, and contribute to habitat fragmentation by creating 128 miles of new greenfield ROW and expanding 622 miles of existing pipeline corridors. Impacts to wildlife would be mitigated by implementation of Overland Pass' POD (Overland Pass 2006), including the *Conservation Measure Plan*; *Construction, Reclamation, and Revegetation Plan* (**Appendix B**); SPCC Plan, *Traffic Management Plan*; and *Weed Management Plan* (**Appendix D**). Measures to minimize impacts to wildlife include co-location of the pipeline with existing ROWs where possible, use of a minimum construction ROW width and work space areas to reduce impacts to wildlife habitat, the use of trench plugs every 0.5 mile intervals or at game trail crossings (and a corresponding gap in the welded pipe string), limiting the amount of time and distance of open trench, avoidance of construction activities in elk, mule deer, and pronghorn wintering areas during seasonal closure periods, adherence to spatial and timing buffers for active raptor nests, and reclamation of disturbed areas.

The additional mitigation measures would further reduce impacts to wildlife. Mitigation measures WILD-1 and WILD-2 would further reduce direct impacts to wildlife by reducing the possibility of injury or death as a result of pipeline construction activities by limiting the duration of time the trench is exposed and by providing the means for wildlife to escape. If construction occurs during the breeding season, mitigation measure WILD-3 would avoid the potential take of active nests during actual construction. Mitigation measure WILD-4 would minimize indirect effects of blasting on nesting birds. Reduction of the construction ROW width to 60 feet in riparian woodlands and wetlands in WATER-7 would reduce the area of disturbance to this valuable wildlife habitat type, particularly since the clearing of riparian woodlands would result in a long-term impact. Mitigation measure WILD-5 and WILD-6 would further reduce the potential for wildlife disturbance and construction equipment and vehicle collisions with wildlife.

Operation Phase

Issues

- Habitat reductions and fragmentation from ROW maintenance during operations;
- Indirect effects consisting of displacement of individuals, and loss of breeding success from exposure to operational noise, and from higher levels of human activity; and
- Potential loss of individuals from exposures to spills.

Analysis

Direct impacts to wildlife species from maintenance activities associated with the Proposed Action would be the same as discussed above for construction. In order to reduce potential impacts to important wildlife resources as a result of maintenance activities on BLM-administered lands, Overland Pass would gain approval from the authorized BLM officer. The authorized BLM officer would coordinate with the appropriate BLM wildlife biologist(s) to determine if the activity would result in a direct impact to important wildlife resources.

Potential indirect impacts on general wildlife (big game, nesting birds, small game, etc.) could result from increased noise levels from the operation of the three proposed pump stations. The distance wildlife is displaced is strongly influenced by the level and timing of the human activity, topography, and the presence of vegetation (Lyon 1979), presumably due to noise attenuation and visual cover. Overall, reductions in bird population densities in both open grasslands and woodlands are attributed to a reduction in habitat quality produced by elevated noise levels (Reijnen et al. 1995, 1997). Reijnen et al. (1996) determined a threshold effect for bird species to be 47 dBA, while a New Mexico study in a pinyon-juniper community found that effects of gas well compressor noise on bird populations were strongest in areas where noise levels were greater than 50 dBA. However, moderate noise levels (40 to 50 dBA) also showed some effect on bird densities in this study (LaGory et al. 2001).

An additional indirect long-term impact to wildlife species would result from increased levels of human-wildlife interaction within the proposed project area. By expanding the existing ROWs, and creating 1,237 acres (136 miles) of new greenfield ROW, the project could add to the existing matrix of open areas, jeep trails, and cleared ROWs currently attracting OHV users.

Additional Mitigation

No additional mitigation was identified.

Conclusion

Impacts to wildlife from pipeline operations include the permanent habitat conversion of approximately 6.2 acres of grassland and 2.3 acres of agricultural land to aboveground facilities use. Maintenance and operation of the pipeline would result in localized impacts to wildlife related to noise and an increase in human-wildlife interactions. Maintenance and operation of one transmission line would result in impacts to one golden eagle nest. These impacts would be of short duration and the majority would be dispersed along the entire proposed pipeline route.

4.7.1.2 Aquatic Resources

Construction Phase

Issues

- Direct loss of individuals or effects on habitat from short-term disturbance to stream channels from construction equipment and trench dewatering;
- Direct loss of individuals or effects on habitat from short-term increases in sedimentation from open-cut pipeline crossings and erosion from adjacent disturbed lands;
- Potential fuel spills from equipment and toxicity to aquatic biota if fuel reached a waterbody;
- Local short-term reductions in habitat if surface water is affected by hydrostatic testing and dust control;
- Potential loss of aquatic organisms during pumping for hydrostatic testing;
- Potential loss of individuals from disease or invasive species if contaminated water or mud is transferred between watersheds; and
- Potential direct mortalities to amphibians from vehicle traffic.

Analysis

Fish

Crossings

Since Overland Pass has committed to horizontal directional drilling at one river crossing (South Platte River), construction-related impacts on aquatic biota and their habitat in this river would be minor. The HDD crossing of the river would minimize impacts to game and nongame fish species and invertebrates by avoiding instream construction activities. It is possible that mud from the directional drill could inadvertently enter the active stream. However, if mud seepage was detected, the drilling operation would be stopped immediately to reduce pressure within the bore hole. Corrective measures would be implemented to eliminate or minimize seepage (Overland Pass 2006). If any seepage enters the stream, increased turbidity or physical disturbance to the bottom substrate would be localized and short-term in duration (less than 1 day). If the HDD crossing method fails at the South Platte River and a decision is made to abandon this method, an open cut crossing would be completed. Impacts for this method are discussed below.

Open-cut trenching would be used at the other perennial streams, 33 of which contain 1 or more game fish species (**Table 3.7-4**). Details on construction procedures for stream crossings are provided in the *Construction, Reclamation, and Revegetation Plan* (**Appendix B**). Open-cut trenching could result in the following impacts to aquatic biota:

- Loss or alteration of in-stream habitat through direct disturbances from equipment;
- Loss of riparian vegetation along streambanks;
- Disruption of fish movement;
- Direct disturbance to spawning; and
- Water quality effects involving sedimentation or possible fuel spills.

In-stream Habitat

Construction methods for crossing waterbodies would be based on the presence or absence of water, flow conditions, and stream width. If a waterbody has no perceptible flow at the time of crossing, upland construction techniques would be used. Wet-ditch construction techniques (i.e., open cut) would be used for streams less than 30 feet wide. Construction would be completed within 24 to 48 hours. Since it is anticipated that all PNG intermittent crossings would be dry at the time of construction, upland techniques would be used. If water is present and does not subside within 48 hours, these streams would be crossed using a dry-ditch technique (flume or dam and pump). Dry-ditch methods also would be used for stream with perceptible flow and widths greater than 30 feet. Site-specific construction plans are being developed and will provide detailed crossing methods for ten waterbody crossing (Overland Pass 2006).

Trenching and backfilling within the trenchline would result in physical alteration of channel morphology including streambanks and bottom substrates. The impact duration and extent of impact largely would depend on the composition of soil materials within the trench and stream channel. Disturbance to channels with firm substrates consisting of gravels, cobble, or clay material would exhibit short-term sedimentation as a result of trenching activities. These types of substrates are present in most of the streams proposed for trenching. These types of soils on the streambanks also would be less prone to erosion. By implementing erosion control techniques as part of the *Construction, Reclamation, and Revegetation Plan*, suspended sediment levels would be localized and expected to return to pre-construction levels within several days. In contrast, disturbance to channels with silt or soft materials would result in a long-term alteration of bottom substrates and channel morphology. Examples of these types of perennial streams include the Hams Fork River, one of the Blacks Fork River crossings (RP 18.9), and Bitter Creek. Past trenching activities and placement of gravels in backfill at the Blacks Fork River crossing has resulted in long-term effects such as scouring of stream bottom materials, sedimentation, and erosion from unstable streambanks. Scouring in the Blacks Fork River also has contributed to decreased depth to the point that it limits fish movement through the area.

Within the FGNRA, the Green River also would be trenched, which would result in alteration of stream bottom habitat, increase in sedimentation and turbidity, and disturbance to streambank morphology and vegetation, as described in the water resource impacts (Section 4.5). The estimated disturbance to the channel bottom from trenching and placement of flume pipes across the width of the river would be approximately 22,500 square feet, based on a trench width of 75 feet and a channel width of 300 feet at the proposed crossing. The flume pipes would be used as a temporary bridge for equipment, as well as a means to maintain flow in the river. In-stream construction activities would require approximately two weeks. Impacts to aquatic habitat could continue beyond the construction period as a result of potential channel scouring or bank erosion. Additional impact information is provided in the Bank Cover, Water Quality Effects, Fish Movement, and Spawning sections.

Trenching also could result in possible mortalities to macroinvertebrates and small-size fish. Large-size fish are expected to move away from the construction area. Based on previous studies, macroinvertebrate communities typically recolonize disturbed areas in the spring and summer during the following year after disturbance (Waters 1995).

Overland Pass has proposed to use bridge structures for construction equipment on all waterbodies that are flowing and widths greater than 30 feet. Bridge structures would avoid impacts to aquatic habitat. However, equipment use in streams less than 30 feet wide with water present would alter or disturb bottom substrates and channel structure. Additional mitigation would be provided by measure WATER-1, which would require bridges for all waterbodies (regardless of size and flow) and wetlands. This measure would eliminate the effects of vehicle crossings on aquatic habitat.

Bank Cover

Vegetative cover along streambanks of a waterbody provides cover for fish, shading, bank stability, erosion control, and increased food and nutrient supply due to the deposition of insects and vegetative matter into the watercourse. Loss of bank during construction at stream crossings may reduce cover and shading in a relatively small stream segment (up to 50-foot width per bank). Given the relatively small width of disturbance associated with a pipeline crossing, the above potential impacts would be considered minor relative to an entire stream system. All waterbody banks would be restored to preconstruction contours or to a stable angle of repose, as approved by the EI.

The *Construction, Reclamation, and Revegetation Plan* (**Appendix B**) also indicates that TWAs would be located at least 50 feet from the water's edge of perennial and intermittent waterbodies on federally managed land and at least 10 feet away on non-federally managed land. Additional mitigation would be provided by measure VEG-1, which would require that the setback distance from TWAs would be 50 feet from riparian areas adjacent to waterbodies. This would reduce effects on riparian vegetation.

Direct Disturbance to Spawning

In-stream construction activities could displace spawning fish from preferred habitat and result in the utilization of lower quality spawning habitat. As shown in **Table 3.7-5**, spawning periods for coldwater fish species is March through May or September through November. Warmwater fish species generally spawn from May through July or August. Based on recommendations from WGFD and CDOW, the *Construction, Reclamation, and Revegetation Plan* would implement the following construction windows to minimize impacts on spawning fish. The construction period for coldwater fisheries would avoid peak spawning periods for trout species. The proposed construction window for warmwater fisheries (June 1 through November 30) could overlap with spawning periods for some species in June and July.

- Coldwater fisheries – June 1 through September 30;
- Warmwater fisheries – June 1 through November 30;
- Hams Fork and Blacks Fork Rivers and Bitter Creek – August 1 through September 30; and
- South Platte River – August 1 through November 30.

Trenching activities in the Green River would occur during an estimated two week period between mid-September and mid-October. In-stream disturbance would affect spawning movements for kokanee salmon and brown trout, as fish move through the construction area to reach spawning areas. Although flumes would be present at the crossing to maintain river flow, physical activity in the trench area at the upstream end of the flumes would likely affect fish movement. Additional mitigation (WILD-7) would be implemented to minimize effects on kokanee salmon by scheduling construction between October 16 and November 20. This schedule would minimize disturbance to the first run of kokanee salmon, which is usually completed by the end of September. WGFD's preferred construction period of August 1 through September 15 cannot be followed in 2007, based on the expected approval of the ROD. Alteration of bottom substrates also could affect eggs deposited by kokanee salmon and brown trout. Eggs could be crushed by flume pipes or trenching or indirectly affected by sedimentation in areas located downstream of the crossing. Additional off-site mitigation would be considered through discussions with the BLM, FGNRA, and WGFD.

Water Quality Effects

In-stream construction activities would result in short-term increases in total suspended solids (TSS) levels and turbidity in a section of the stream within and immediately downstream of the crossing. The estimated disturbance area would range from approximately 270 to 4,250 feet^2, depending on the width and soil type at the crossing. Other surface disturbance activities associated with TWAs and road improvements near streams also could contribute short-term sedimentation. The setback distance for TWAs would be 50 feet from the water's edge of perennial and intermittent streams on federally managed land and 10 feet from the water's edge on private land. This buffer is applicable to streams with flow at the time of construction. Additional mitigation measure VEG-1 would require that the setback distance from TWAs would be 50 feet from riparian areas adjacent to waterbodies, which would help reduce sediment input to streams. The extent of downstream movement of suspended sediment would depend on flow and channel configuration. Sedimentation and increased turbidity conditions could continue in the Green River for at least 4 weeks (2-week construction plus 2 or more weeks after construction is completed), as a result of the extensive area disturbed within the channel and the use of the TWA adjacent to the river. By constructing during the low flow period, movement of suspended sediment would be limited in downstream extent. Localized increases in sediment could affect fish by clogging gills or damaging gill membranes, reducing vision, contributing to susceptibility to disease from added stress, or burying eggs or larvae. Macroinvertebrates could be affected by direct mortalities from equipment or physiological effects from sediment covering the organisms.

Vehicle and equipment use within and adjacent to waterbodies also could pose a risk to aquatic biota from fuel or lubricant spills. If fuel reached a waterbody, aquatic species could be exposed to toxic conditions, depending on factors such as volume spilled, stream velocity, and channel morphology. Impacts could include direct mortalities or reduced health of aquatic organisms.

Interruption of Fish Movement

Most water crossing methods allow movement of fish across the ROW. However, some techniques such as dry-ditch crossing techniques, may block or delay normal movements. Trenching techniques in larger streams such as the Laramie River would maintain flow through the construction area using flumes. Long-term interruption of fish movement in a waterbody or a relatively short-term delay in spawning migration could result in adverse impacts. By adhering to the construction periods discussed above, impacts on spawning migrations would not be expected in most perennial streams. Exceptions would include the Hams Fork, Blacks Fork, and Green rivers, where fish movements could be affected by construction activities. As discussed in the in-stream habitat section, trenching could result in a barrier to fish movement in the Hams Fork and Blacks Fork rivers during low flow periods due to scouring. Construction in the Green River could affect kokanee salmon and brown trout spawning migrations as a result of placement of flumes and trenching activities in the river.

Transfer of Disease and Nuisance Organisms

Overland Pass' POD indicates that construction equipment would be washed at the state lines. In-stream construction activities could transport whirling disease and parasites or invasive organisms such as zebra mussels between drainages within each state. Whirling disease is present in a number of the streams that would be crossed (i.e., Green, North Platte, Medicine Bow, Laramie rivers in Wyoming and all perennial streams in Colorado except Chief Creek) (Walker 2006; Money 2006). Whirling disease and parasite infestations on fish could affect their overall health. Fish numbers could be reduced as a result of mortalities or effects on reproduction. Mitigation measure WATER-2 would be implemented, which would involve power washing of equipment at all perennial stream crossings to avoid transfer of whirling disease, parasites, or nuisance organisms.

Hydrostatic Testing and Dust Control

Hydrostatic testing and dust control would result in temporary reductions in surface water quantity and habitat for aquatic organisms. The *Hydrostatic Test Plan* (**Appendix C**) lists five streams, numerous private wells in Colorado and Kansas, and storage ponds at the ONEOK Bushton Plant as water sources for hydrostatic testing. The withdrawal location and volumes are provided in **Table 4.5-2**. The water would be withdrawn during the period November 1 and December 15, 2007. As discussed in Section 4.5, hydrostatic testing withdrawals would result in relatively small reductions in the Blacks Fork River, Green River, Laramie River, and South Platte River. Dust control could use up to 21.2 acre-feet of surface water from tributaries to the Colorado River and 30.7 acre-feet from tributaries to the Platte River. If the water sources for dust control are municipalities, these volumes would not be considered new depletions, since they are existing water supplies. Collectively, hydrostatic testing and dust control could use up to 39.5 acre-feet of surface water in the Colorado River Basin and up to 77.3 acre-feet in the Platte River Basin. On an individual stream basis, the water depletions would represent a relatively small reduction in habitat for aquatic biota. In addition, there would be conflicts regarding minimum flow requirements for the six streams, since minimum flows have not been established for fisheries in segments at or downstream of the proposed crossings.

Although the WGFD and CDOW do not have standards for pump mesh sizes, appropriate size mesh sizes would be used on pumps to minimize entrainment of fish species or nuisance organisms that may be present. Decisions on the mesh size would be based on early life stages that could be present at the time of water pumping. The discharge of hydrostatic test water would follow state permit requirements, which would minimize potential effects on aquatic biota. The water would be tested for potential pollutants and then discharged to stable upland areas along the construction ROW if the source was surface water. Water would be returned to each source after meeting water quality standards, or discharged to an upland site located at least 50 to 100 feet from the edge of a waterbody to avoid erosion or introducing nuisance organisms into streams (mitigation WATER-3). Specific discharge locations are provided in the *Hydrostatic Test Plan*. Energy dissipaters also would be used at the discharge points to prevent erosion.

Amphibians

<u>Construction</u>

Construction activity within the Proposed Action ROW would cross potential habitat for amphibian species in all three states. Potential habitat would consist of flooded areas, wetlands, streams, ponds, and lakes. Most of the frog and turtle species use these habitats throughout the year. Some of the toad species migrate from upland terrestrial areas to use aquatic habitats for breeding in the spring or summer. Vehicle traffic within the ROW and waterbody crossing could potentially affect breeding for these species. Construction activities within waterbodies could alter habitat used for eggs and rearing of young, as well as possibly causing direct mortalities. Vehicle activity also could cause increased sediment in the disturbance area. Toads also could be affected during movements between upland areas and water sources used for breeding (spring and summer). Vehicle traffic could crush individual toads during movements to and from waterbodies.

The implementation of mitigation (VEG-1) involving a 50-foot setback for TWAs on federally managed lands, as measured from the edge of riparian vegetation to perennial and intermittent streams, would eliminate direct disturbance to some of the potential breeding sites for this species.

Operation

Operational effects of maintenance activities are not expected to impact amphibians unless vehicles inadvertently crushed individual during movements to and from breeding sites or affected shallow burrow areas.

Additional Mitigation

WILD-7: The Green River crossing shall be constructed between October 16 and November 20, which would minimize impacts to the spawning movement of kokanee salmon (first run fish).

Conclusion

Aquatic resource impacts anticipated from pipeline construction at most stream crossings include a temporary increase in sedimentation to waterbodies crossed by the open-cut method; short-term disturbance to stream channels, aquatic habitat, bank cover, and spawning sites; potential short-term reductions in habitat from water withdrawals for hydrostatic testing and dust control; potential loss of aquatic organisms during pumping for hydrostatic testing, potential loss of individuals from invasive species or disease if contaminated water is transferred between watersheds, and potential fuel spills from construction equipment and toxicity to aquatic organisms if the fuel spill reached a waterbody. These impacts would be mitigated by the implementation of the POD, *Construction, Reclamation, and Revegetation Plan*, and site-specific waterbody crossing plans (designated for environmentally sensitive waterbody crossings). Measures to minimize aquatic resource impacts include erosion control and streambank stabilization measures, reducing the amount of time conducting instream construction activities, and workspace and refueling setbacks from waterbodies. Overland Pass would avoid bank and channel disturbance to the South Platte River by using the HDD crossing method. The remaining streams and rivers would be open-cut in accordance with Overland Pass' POD (Overland Pass 2006). Overland Pass would avoid construction of crossings during state agency coldwater and warmwater fisheries spawning periods. Open-cut crossings would cause short-term (usually 3 days or less) suspended sediment increases in stream and river channels. Long-term impacts to habitat and fish populations in the Hams Fork and Blacks Fork rivers as a result of scouring and channel disturbance. In addition, trenching at the Green River crossing would adversely affect spawning movements and eggs deposited by kokanee salmon and brown trout. Mitigation measure WILD-7 would be implemented to minimize effects of trenching at the Green River crossing on the late-run of kokanee salmon.

Application of the additional mitigation measures would further reduce impacts to aquatic resources. WATER-1 and VEG-1 would further reduce the amount of sediment input into waterbodies during construction. WATER-2 would reduce the risk of the inadvertent introduction of nuisance organisms, whirling disease, or parasites from one waterbody into another. WATER-4 would reduce impacts on aquatic resources during water withdrawals associated with dust control and hydrostatic testing. WATER-5 would minimize construction impacts to ponds and lakes (playas). Implementation of WATER-6 would avoid alteration of the streambed substrate (i.e., roughness) that can affect sedimentation and erosion regimes, degrade the channel, and create fish barriers.

Operation Phase

Issues

- Potential localized sedimentation and disturbance to habitat if maintenance activities were required at a stream crossing.

Analysis

Routine maintenance of the pipeline ROW would consist of periodic vegetation clearance once every three years. Vegetation removal adjacent to waterbodies would be limited to at least a 25-foot-wide riparian strip, as measured from the waterbody's mean high water mark. As a result, maintenance activities would not affect aquatic biota or their habitat.

Operational effects of a possible pipeline rupture at a stream crossing are limited to localized stream bottom disturbance. Since released product would be in a gaseous state and quickly volatilize, it would not be toxic to aquatic biota. Additional information on the fate of the NGLs and potential toxicity is provided in **Appendix J**. If a rupture occurred at a stream crossing, stream substrates could be dissipated from the rupture point. Macroinvertebrate mortalities could occur at the rupture point. Fish are expected to move away from the rupture area. Potential impacts would be short-term and low magnitude due to the localized extent of the affected area.

Additional Mitigation

No additional mitigation for project operation is required to further reduce impacts on aquatic biota and their habitat.

Conclusion

Routine operation and maintenance activities would have minor effects on aquatic resources. Minimal impacts, if any, would be expected to aquatic biota if NGLs were accidentally released into waterbodies.

4.7.1.3 Special Status Species

Construction Phase

Issues

- The construction issues for wildlife special status species are the same as listed for wildlife resources (Section 4.7.1).
- The construction issues for special status fish species are the same as listed for aquatic resources.
- Hydrostatic testing is an issue for federally listed species that occur in downstream portions of the Colorado River and Platte River basins. The USFWS requires consultation for any water withdrawals in these basins that could affect surface water quantity.
- The construction issues for special status plant species are the same as listed for vegetation resources (Section 4.6.1).

Analysis

The impact analysis for special status species focused on those species that were identified as potentially occurring within the project area. A total of 77 terrestrial species and 15 aquatic species have been identified as potentially occurring within the project area (**Table 4.7-2** and **Appendix G**). As required under Section 7 of the ESA, a draft BA was prepared for the project to determine whether the proposed action is likely to affect any federally listed species. Fifteen federally threatened and endangered species and two candidate species were analyzed in the BA. BLM- and USFS-sensitive species also were analyzed in the BR/BE. Impacts to special status species are summarized in **Table 4.7-3**, in the BA and in the BR/BE.

Table 4.7-2 Impacts for Special Status Species

Common Name	Scientific Name	Status[1]	Impact Potential[2]		
			Wyoming	Colorado	Kansas
Federally Listed Species					
Mammals					
Black-footed ferret	*Mustela nigripes*	FE; CO-E; WY-NSS1; KS-E	MA	MA	NE
Preble's meadow jumping mouse	*Zapus hudsonius preblei*	FT; CO-T	MA	MA	NE
Birds					
Bald eagle	*Haliaeetus leucocephalus*	FT; CO-T; WY-NSS2; KS-T	MA	MA	MA
Yellow-billed cuckoo	*Coccyzus americanus*	FC; BLM-WY; WY-NSS2	MA	NE	NE
Whooping crane	*Grus americanus*	FE; CO-E; KS-E	MA	MA	NE
Interior least tern	*Sterna antillarum athalassos*	FE; KS-E; CO-E	MA	MA	NE
Piping plover	*Charadrius melodus circumcinctus*	FT; CO-T; KS-T	MA	MA	NE
Lesser Prairie Chicken	*Tynpanuchus pallidicinctus*	FC	NE	NE	NE
Amphibians					
Wyoming toad	*Bufo baxteri*	FE, WY-NSS1	MA	NE	NE
Fish					
Bonytail	*Gilia elegans*	FE; CO E; USFS-R4S	MA	NE	NE
Colorado pikeminnow	*Plychocheilus lucius*	FE; CO-E	MA	NE	NE
Humpback chub	*Gilia cyphus*	FE; CO E; USFS-R4S	MA	NE	NE
Razorback sucker	*Xyrauchen texanus*	FE; CO-E; USFS-R4S	MA	NE	NE
Pallid sturgeon	*Scaphirhynchus albus*	FE; KS-E	MA	MA	NE
Plants					
Colorado butterfly plant	*Gaura neomexicana spp. Coloradensis*	FT	MA	MA	NE
Blowout penstemon	*Penstemon haydenii*	FE	MA	NE	NE
Ute ladies' tresses	*Sprianthes diluvialis*	FT ; USFS-R4S	MA	MA	NE
Western prairie fringed orchid	*Platanthera praeclara*	FT	MA	MA	NE
BLM Sensitive Species					
Mammals					
Fringed myotis	*Myotis thysanodes*	BLM-WY; WY-NSS2; USFS-R2S	MI	MI	NI
Long-eared myotis	*Myotis evotis*	BLM-WY; WY-NSS2	MI	MI	NI
Spotted bat	*Euderma maculatum*	BLM-WY; WY-NSS2	MI	MI	NI
Townsend's big-eared bat	*Plecotus townsendii*	BLM-WY; WY-NSS2; CO-SOC; KS-SINC	MI	MI	MI
Pygmy rabbit	*Brachylagus idahoensis*	BLM-WY	MI	NI	NI
Swift fox	*Vulpes velox*	CO-SOC; USFS-R2S; BLM-WY	MI	MI	MI
White-tailed prairie dog	*Cynomys leucurus*	BLM-WY	MI	MI	NI
Black-tailed prairie dog	*Cynomys ludovicianus*	BLM-WY; USFS-R2S; CO-SOC	NI	MI	MI
Idaho pocket gopher	*Thomomys idahoensis*	BLM-WY	MI	NI	NI
Wyoming pocket gopher	*Thomomys clusius*	BLM-WY	MI	NI	NI
Birds					
Burrowing owl	*Athene cunicularia*	USFS-R2S; BLM-WY; CO-T	MI	MI	MI
Brewer's sparrow	*Spizella breweri*	BLM-WY; USFS-R2S	MI	MI	NI
Ferruginous hawk	*Buteo regalis*	CO-SOC; BLM-WY; USFS-R2S; KS-SINC	MI	MI	MI
Loggerhead shrike	*Lanius ludovicianus*	BLM-WY; USFS-R2S	MI	MI	MI
Mountain plover	*Charadrius montanus*	BLM-WY; CO-SOC; USFS-R2; KS-SINC	MI	MI	MI
Long-billed curlew	*Numenius americanus*	CO-SOC; BLM-WY; USFS-R2S; KS-SINC	MI	MI	MI
Northern goshawk	*Accipiter gentiles*	BLM-WY	MI	NI	NI
Golden eagle	*Aquila chrysaetos*	BLM-WY; KS-SINC	MI	MI	MI
Peregrine falcon	*Falco peregrinus*	KS-E; BLM-WY	MI	NI	MI
Sage sparrow	*Amphispiza belli*	BLM-WY	MI	NI	NI
Sage thrasher	*Oreoscoptes montanus*	BLM-WY	MI	MI	NI

Table 4.7-2 Impacts for Special Status Species

Common Name	Scientific Name	Status[1]	Impact Potential[2]		
			Wyoming	Colorado	Kansas
Trumpeter swan	*Cygnus buccinators*	BLM-WY; WY-NSS2	MI	NI	NI
White-faced ibis	*Plegadis chihi*	BLM-WY	MI	MI	MI
Greater sage-grouse	*Centrocercus urophasianus*	CO-SOC; BLM-WY; WY-NSS2	MI	NI	NI
Reptiles					
Midget faded rattlesnake	*Crotalus viridis concolor*	BLM-WY; CO-SOC	MI	NI	NI
Amphibians					
Western boreal toad	*Bufo borealis boreas*	CO-E; BLM-WY; WY-NSS2	MI	MI	NI
Great Basin spadefoot toad	*Spea intermontana*	BLM-WY	MI	NI	NI
Spotted frog	*Ranus pretiosa*	BLM-WY	MI	NI	NI
Northern leopard frog	*Rana pipiens*	BLM-WY; USFS-R2S; CO-SOC	MI	MI	NI
Fish					
Bluehead sucker	*Catostomus discobolus*	BLM-WY; WYGF-NSS1	MI	NI	NI
Flannelmouth sucker	*Catostomus latipinnis*	BLM-WY; WYGF-NSS1	MI	NI	NI
Leatherside chub	*Gila copei*	BLM –WY; WYGF-NSS1	MI	NI	NI
Roundtail chub	*Gila robusta*	BLM-WY; WY-NSS1;	MI	NI	NI
Plants					
Laramie columbine	*Aquilegia laramiensis*	BLM -WY	MI	NI	NI
Nelson's milkvetch	*Astragalus nelsonianus*	BLM-WY	MI	MI	NI
Trelease's racemose milkvetch	*Astragalus racemosus var. treleasei*	BLM-WY	MI	NI	NI
Cedar Rim thistle	*Cirsium aridum*	BLM-WY	MI	NI	NI
Ownbey's thistle	*Cirsium ownbeyi*	BLM-WY	MI	NI	NI
Large-fruited bladderpod	*Lesquerella macrocarpa*	BLM-WY	MI	NI	NI
Prostrate bladderpod	*Lesquerella prostrata*	BLM-WY	MI	NI	NI
Gibbens' beardtongue	*Penstemon haydenii*	BLM-WY	MI	NI	NI
Tufted twinpod	*Physaria condensata*	BLM-WY	MI	NI	NI
Persistent sepal yellowcress	*Rorippa calycina*	BLM -WY	MI	NI	NI
Laramie false sagebrush	*Sphaeromeria simplex*	BLM -WY	MI	NI	NI
Green River greenthread	*Thelesperma caespitosum*	USFS- R4S; BLM -WY	MI	NI	NI
USFS Sensitive Species					
Birds					
Cassin's sparrow	*Aimophilia cassini*	USFS-R2S	MI	MI	MI
McCown's longspur	*Calcarius mccownii*	USFS-R2S	MI	MI	NI
Chestnut-collard longspur	*Calcarius ornatus*	USFS-R2S	MI	MI	NI
Northern harrier	*Cirus cyaneus*	USFS-R2S	MI	MI	MI
Grasshopper sparrow	*Ammodramus savannarum*	USFS-R2S	MI	MI	NI
Black tern	*Childonias niger*	USFS-R2S; KS-SINC	MI	MI	MI
Plants					
Dwarf milkweed	*Asclepias uncialis*	USFS-R2S	NI	MI	NI
Prairie moonwort	*Botrychium campestre*	USFS-R2S	NI	MI	NI
Wyoming feverfew	*Parthenium alpinum*	Former USFS-R2S	NI	MI	NI
State Status Species					
Mammals					
Northern pocket gopher	*Thomomys talpoides*	CO-SOC	MI	MI	NI
Franklin's ground squirrel	*Spermophilus franklinii*	KS-SINC	NI	NI	MI
Long-legged myotis	*Myotis volans*	WY-NSS2	MI	MI	NI
Pallid bat	*Antrozous pallidus*	WY-NSS2; KS-SINC	MI	MI	NI
Eastern spotted skunk	*Spilogale putorius*	KS-T	NI	NI	MI
Birds					
Snowy plover	*Charadrius alexandrinus*	KS-T; CO-SOC	MI	MI	MI
Black rail	*Laterallus jamaicensis*	KS-SINC	NI	NI	MI
Short-eared owl	*Asio flammeus*	KS-SINC	MI	MI	MI
Bobolink	*Dolichonyx oryzivorus*	KS-SINC	MI	MI	MI
Reptiles					
Glossy snake	*Arizona elegans*	KS-SINC	NI	MI	MI
Western hognose snake	*Heterodon nasicus*	KS-SINC	MI	MI	MI
Common garter snake	*Thamnophis sirtalis*	CO-SOC	MI	MI	MI
Eastern hognose snake	*Heterodon platirhinos*	KS-SINC	MI	MI	MI
Yellow mud turtle	*Kinosternon flavescens*	CO-SOC	NI	MI	MI

Table 4.7-2 Impacts for Special Status Species

Common Name	Scientific Name	Status[1]	Impact Potential[2]		
			Wyoming	Colorado	Kansas
Amphibians					
Northern cricket frog	*Aeris crepitans*	CO-SOC	NI	MI	MI
Plains leopard frog	*Rana blairi*	CO-SOC	NI	MI	MI
Fish					
Plains minnow	*Hybognathus placitus*	CO-E; KS-SINC	NI	MI	NI
Brassy minnow	*Hybognathus hankinsoni*	CO-T; KS-SINC	NI	MI	NI
Orangethroat darter	*Etheostoma spectable*	CO SOC	NI	MI	NI
Stonecat	*Noturus flavus*	CO SOC	NI	MI	NI
Suckermouth minnow	*Phenacobius mirabilis*	CO-E	NI	MI	NI
Invertebrates					
Cylindrical papershell	*Anodontoides ferussacianus*	KS-SINC	NI	NI	MI

[1] Status Definitions:
KS-SINC*= Kansas Species in Need of Conservation*
WY-NSS1*= Wyoming Critically Imperiled Species*
WY-NSS2*= Wyoming Imperiled Species*
BLM-WY *= Wyoming BLM sensitive.*
USFS-R2S *= USFS Region 2 sensitive species*
USFS-R4S *= USFS Region 4 sensitive species*
PNG= *Pawnee National Grassland*
[2] *Impact Definitions:*
MA*= indicates that this federally listed species may be affected by the proposed action.*
NE*= indicates that no effect to this federally listed species would result from the proposed action.*
MI*= BLM Sensitive Species, USFS Listed Species, or State Status Species may be impacted by the proposed action.*
NI*= No impact to this BLM Sensitive Species, USFS Sensitive Species, or State Status Species would result from the proposed action.*

As part of Overland Pass' POD, applicant-committed protection measures have been developed for the project in a *Conservation Measures Plan* to prevent or minimize direct impacts on special status species (Overland Pass 2006). The Overland Pass *Conservation Measure Plan* includes measures that would be implemented if federally listed species, species of concern, or a BLM-sensitive species were identified along the proposed pipeline route during project-specific surveys. In coordination within the BLM, the *Conservation Measure Plan* includes protection measures that would prevent or minimize potential impacts to federally listed species, such that the proposed project would not be likely to adversely affect these species. For special status species, the *Conservation Measure Plan* includes measures that would prevent or minimize impacts, such that the proposed project would not be likely to result in a loss of viability, nor cause a trend toward federal listing or a loss of species viability range wide.

Wildlife Species

Direct impacts would include the incremental long-term loss or alteration of potential breeding and/or foraging habitats, and increased incremental habitat fragmentation until native vegetation has become reestablished. Acres of special status wildlife species habitat that would be directly impacted by construction activities are included in **Table 4.7-3**. Potential impacts also could result in mortalities of less mobile or burrowing species as a result of crushing by vehicles and equipment, and the potential abandonment of a nest site or territory and the loss of eggs or young. Other impacts would include short-term displacement of some of the more mobile species from the disturbance areas as a result of increased noise and human presence. However, based on Overland Pass' committed environmental protection measures as defined in their POD and *Conservation Measure Plan*, in combination with additional mitigation measures identified below for special status wildlife species, potential impacts to special status wildlife resources would be low.

Table 4.7-3 Acres of Suitable Habitat Directly Impacted by Construction Activities for Special Status Wildlife Species

Common Name	Scientific Name	Status[1]	Acres of Suitable Habitat Directly Impacted by Construction Activities		
			Wyoming	Colorado	Kansas
Federally Listed Species					
Mammals					
Black-footed ferret	*Mustela nigripes*	FE; CO-E; WY-NSS1; KS-E	Reproduction/Foraging: 399	Reproduction/Foraging: 17	No Impact
Preble's meadow jumping mouse	*Zapus hudsonius preblei*	FT; CO-T	Reproduction/Foraging: 3	Reproduction/Foraging: <1	No Impact
Birds					
Bald eagle	*Haliaeetus leucocephalus*	FT; CO-T; WY-NSS2; KS-T	Nesting: No Impact Foraging: 3	Nesting: No Impact Foraging: 4	Nesting: No Impact Foraging:<1
Yellow-billed cuckoo	*Coccyzus americanus*	FC; BLM-WY; WY-NSS2	Nesting: No Impact Foraging: 5	No Impact	No Impact
Whooping crane	*Grus americanus*	FE; CO-E; KS-E	Downstream Impacts[2]	Downstream Impacts[2]	No Impact
Interior least tern	*Sterna antillarum athalassos*	FE; KS-E; CO-E	Downstream Impacts[2]	Downstream Impacts[2]	No Impact
Piping plover	*Charadrius melodus circumcinctus*	FT; CO-T; KS-T	Downstream Impacts[2]	Downstream Impacts[2]	No Impact
Lesser Prairie Chicken	*Tynpanuchus pallidicinctus*	FC	No Impact	No Impact	No Impact
BLM Sensitive Species					
Mammals					
Fringed myotis	*Myotis thysanodes*	BLM-WY; WY-NSS2; USFS-R2S	Roosting: No Impact Foraging: 2,974	Roosting: No Impact Foraging: 1,563	No Impact
Long-eared myotis	*Myotis evotis*	BLM-WY; WY-NSS2	Roosting: No Impact Foraging: 2,974	Roosting: No Impact Foraging: 1,563	No Impact
Spotted bat	*Euderma maculatum*	BLM-WY; WY-NSS2	Roosting: No Impact Foraging: 2,974	Roosting: No Impact Foraging: 1,563	No Impact
Townsend's big-eared bat	*Plecotus townsendii*	BLM-WY; WY-NSS2; CO-SOC; KS-SINC	Roosting: No Impact Foraging: 2,974	Roosting: No Impact Foraging: 1,563	Roosting: No Impact Foraging: 2,372
Pygmy rabbit	*Brachylagus idahoensis*	BLM-WY	Reproduction/Foraging: 392 known occupany[3] 1758 suitable habitat	No Impact	No Impact
Swift fox	*Vulpes velox*	CO-SOC; USFS-R2S; BLM-WY	Reproduction/Foraging: 667	Reproduction/Foraging: 1,316	Reproduction/Foraging: 2,336
White-tailed prairie dog	*Cynomys leucurus*	BLM-WY	Reproduction/Foraging: 399 known occupancy[3] 1758 suitable habitat	Reproduction/Foraging: No Impact	No Impact

Table 4.7-3 Acres of Suitable Habitat Directly Impacted by Construction Activities for Special Status Wildlife Species

Common Name	Scientific Name	Status[1]	Acres of Suitable Habitat Directly Impacted by Construction Activities		
			Wyoming	Colorado	Kansas
Black-tailed prairie dog	*Cynomys ludovicianus*	BLM-WY; USFS-R2S; CO-SOC	Reproduction/Foraging: No known occupancy[3] 667 suitable habitat	Reproduction/Foraging: 17 known occupancy[3] 1,316 suitable habitat	Reproduction/Foraging: No known occupancy[3] 2,336 suitable habitat
Idaho pocket gopher	*Thomomys idahoensis*	BLM-WY	Reproduction/Foraging: 565	No Impact	No Impact
Wyoming pocket gopher	*Thomomys clusius*	BLM-WY	Reproduction/Foraging: 1,109	No Impact	No Impact
Birds					
Burrowing owl	*Athene cunicularia*	USFS-R2S; BLM-WY; CO-T	Nesting/Foraging: 399 known occupancy[3] 667 suitable habitat	Nesting/Foraging: 17 known occupacy[3] 1,316 suitable habitat	Nesting/Foraging: No known occupancy[3] 2,336 suitable habitat
Mountain plover	*Charadrius montanus*	BLM-WY; CO-SOC; USFS-R2; KS-SINC	Nesting/Foraging: 28 known occupancy[4] 598 suitable habitat	Nesting/Foraging: No known occupancy[4] 1,864 suitable habitat	Nesting/Foraging: No known occupancy[5] 2,336 suitable habitat[5]
Brewer's sparrow	*Spizella breweri*	BLM-WY; USFS-R2S	Nesting/Foraging: 1,758	No Impact	No Impact
Ferruginous hawk	*Buteo regalis*	CO-SOC; BLM-WY; USFS-R2S; KS-SINC	Nesting: No Impact Foraging: 2,914	Nesting: No Impact Foraging:1,568	Nesting: No Impact Foraging: 2,372
Loggerhead shrike	*Lanius ludovicianus*	BLM-WY; USFS-R2S	Nesting/Foraging: 2,140	Nesting/Foraging: 228	Nesting/Foraging: 15
Long-billed curlew	*Numenius americanus*	CO-SOC; BLM-WY; USFS-R2S; KS-SINC	Nesting/Foraging: 696	Nesting/Foraging: 913	Nesting/Foraging: 669
Northern goshawk	*Accipiter gentiles*	BLM-WY	Nesting: No Impact Foraging: 5	No Impact	No Impact
Golden eagle	*Aquila chrysaetos*	BLM-WY; KS-SINC	Nesting: No Impact Foraging: 2,914	Nesting: No Impact Foraging:1,568	Nesting: No Impact Foraging: 2,372
Peregrine falcon	*Falco peregrinus*	KS-E; BLM-WY	Nesting: No Impact Foraging: 24	No Impact	No Impact
Sage sparrow	*Amphispiza belli*	BLM-WY	Nesting/Foraging: 1,758	No Impact	No Impact
Sage thrasher	*Oreoscoptes montanus*	BLM-WY	Nesting/Foraging: 1,758	Nesting/Foraging: 228	No Impact
Trumpeter swan	*Cygnus buccinators*	BLM-WY; WY-NSS2	Nesting/Foraging: 4	No Impact	No Impact
White-faced ibis	*Plegadis chihi*	BLM-WY	Nesting/Foraging: 6	Nesting/Foraging: 4	Nesting/Foraging: <1
Greater sage-grouse	*Centrocercus urophasianus*	CO-SOC; BLM-WY; WY-NSS2	Nesting/Foraging: 1,758	No Impact	No Impact
Reptiles					
Midget faded rattlesnake	*Crotalus viridis concolor*	BLM-WY; CO-SOC	Reproduction/Foraging: 91	No Impact	No Impact

Table 4.7-3 Acres of Suitable Habitat Directly Impacted by Construction Activities for Special Status Wildlife Species

Common Name	Scientific Name	Status[1]	Acres of Suitable Habitat Directly Impacted by Construction Activities		
			Wyoming	Colorado	Kansas
USFS Sensitive Species					
Birds					
Cassin's sparrow	*Aimophilia cassini*	USFS-R2S	Nesting/Foraging: 639	Nesting/Foraging: 907	Nesting/Foraging: 667
McCown's longspur	*Calcarius mccownii*	USFS-R2S	Nesting/Foraging: 123	Nesting/Foraging: 619	No Impact
Chestnut-collard longspur	*Calcarius ornatus*	USFS-R2S	Nesting/Foraging: 639	Nesting/Foraging: 619	No Impact
Northern harrier	*Cirus cyaneus*	USFS-R2S	Nesting/Foraging: 639	Nesting/Foraging: 907	Nesting/Foraging: 667
Grasshopper sparrow	*Ammodramus savannarum*	USFS-R2S	Nesting/Foraging: 639	Nesting/Foraging: 907	No Impact
Black tern	*Childonias niger*	USFS-R2S; KS-SINC	Nesting/Foraging: 58	Nesting/Foraging: 5	Nesting/Foraging: 2
State Status Species					
Mammals					
Northern pocket gopher	*Thomomys talpoides*	CO-SOC	Reproduction/Foraging: 639	Nesting/Foraging: 907	No Impact
Franklin's ground squirrel	*Spermophilus franklinii*	KS-SINC	No Impact	No Impact	Reproduction/Foraging: 8
Long-legged myotis	*Myotis volans*	WY-NSS2	Reproduction: No Impact Foraging:45	Reproduction: No Impact Foraging: <1	No Impact
Pallid bat	*Antrozous pallidus*	WY-NSS2; KS-SINC	Reproduction/Foraging: 2,974	Reproduction/Foraging: 1,563	No Impact
Eastern spotted skunk	*Spilogale putorius*	KS-T	No Impact	No Impact	Reproduction/Foraging: 669
Birds					
Snowy plover	*Charadrius alexandrinus*	KS-T; CO-SOC	Nesting/Foraging: 58	Nesting/Foraging: 5	Nesting/Foraging: 2
Black rail	*Laterallus jamaicensis*	KS-SINC	No Impact	No Impact	Nesting/Foraging: 2
Short-eared owl	*Asio flammeus*	KS-SINC	Nesting/Foraging: 691	Nesting/Foraging: 909	Nesting/Foraging: 669
Bobolink	*Dolichonyx oryzivorus*	KS-SINC	Nesting/Foraging: 52	Nesting/Foraging: 1	Nesting/Foraging: 2
Reptiles					
Glossy snake	*Arizona elegans*	KS-SINC	No Impact	Reproduction/Foraging: 679	Reproduction/Foraging: 1,193
Western hognose snake	*Heterodon nasicus*	KS-SINC	No Impact	Reproduction/Foraging: 619	Reproduction/Foraging: 561
Common garter snake	*Thamnophis sirtalis*	CO-SOC	Reproduction/Foraging: 56	Reproduction/Foraging: 1	Reproduction/Foraging: 2

Table 4.7-3 Acres of Suitable Habitat Directly Impacted by Construction Activities for Special Status Wildlife Species

Common Name	Scientific Name	Status[1]	Acres of Suitable Habitat Directly Impacted by Construction Activities		
			Wyoming	Colorado	Kansas
Eastern hognose snake	*Heterodon platirhinos*	KS-SINC	No Impact	No Impact	Reproduction/Foraging: 563

[1]Status Definitions:

KS-SINC= Kansas Species in Need of Conservation
WY-NSS1= Wyoming Critically Imperiled Species
WY-NSS2= Wyoming Imperiled Species
BLM-WY = Wyoming BLM sensitive.
USFS-R2S = USFS Region 2 sensitive species
USFS-R4S = USFS Region 4 sensitive species
PNG= Pawnee National Grassland

[2]While these species are not impacted within in the states crossed by the Proposed Action, Platte River water depletions could cause downstream impacts.

[3] These acreages do not reflect occupied habitat on private lands

[4]As noted during 2006 suitable habitat surveys

[5]Kansas impact acreage derived from vegetation data. Suitable habitat surveys were not completed in Kansas.

MIS Species

Temporary habitat reductions for MIS species would occur in the following habitat types: sagebrush, shortgrass prairie, cliff and rock outcrops, and midgrass prairie. A corresponding reduction in populations of these species would be minimized by the availability of suitable habitat in the vicinity of the project area. Species that are at or near carrying capacity could suffer some increased mortalities. Additional impacts to MIS species are discussed by habitat association in **Tables 4.7-3** and **4.7-4**, below and in the BR. This project meets the objectives of Forest Plans for the PNG and the ANF-FGNRA for MIS species.

Aquatic Resources

The impact analysis for sensitive fish and amphibian species is generally the same as discussed for aquatic resources. Impacts are applicable to streams that contain sensitive fish species, as listed below by state. Species potentially occurring in these streams are discussed in Section 3.7.1.1. Potential habitat consisting of flooded areas, wetlands, streams, and playas/ponds also occurs in Wyoming and Colorado for special status amphibian species (**Table 3.7-4**).

- Wyoming – Hams Fork River, Blacks Fork River, Green River, and Bitter Creek;
- Colorado – South Platte, Chief Creek, North Fork Republican River, and Arikaree River; and
- Kansas – Smokey Hill and South Fork Republican rivers.

Since Overland Pass has committed to directional drilling at one waterbody (South Platte River) that contain special status fish species, construction-related impacts on special status fish species and their habitat would be minor at this river crossing. It is possible that mud from the directional drilling could inadvertently enter the active stream along the drilling route. However, if mud seepage is detected, the drilling operation would be stopped immediately to reduce pressure within the bore hole. Corrective measures would be implemented to eliminate or minimize seepage. If any seepage enters the stream, increased turbidity or physical disturbance to the bottom substrate would be localized and short-term in duration (less than 1 day).

Table 4.7-4 Impacts for Management Indicator Species

Habitat Association	Species	Project-related Impacts
Sagebrush	Sage grouse	Sagebrush is a minor component on FGNRA forest service lands located within the project area. Potential impacts to sage grouse are identified in Section 4.7.1.3 and in the BR.
Cliffs and Rock Outcrops	Golden eagle	Direct impacts to marginal rock cliff habitats occurring in the FGNRA would occur as a result of the proposed project. Impacts to raptors and passerines potentially nesting in this habitat type would be direct (loss of foraging habitat) and indirect (human activity, noise). This species is discussed further in the BR.
Shortgrass prairie	Mountain Plover;	Shortgrass prairie is the major component of USFS lands located within the proposed project area. Potential impacts to raptors are identified above under non-game species, while mountain plover impacts are discussed in Section 4.7.1.3. Both of these species are discussed in the BR.
	Ferruginous Hawk	
Midgrass prairie	Ferruginous Hawk Lark Bunting	Midgrass prairie is a minor component of the USFS lands located within the proposed project area. Impacts to raptors and migratory birds are discussed above under non-game species.
Prairie dog towns	Black-tailed prairie dog; Western burrowing owl	Prairie dog towns and western burrowing owl would be impacted throughout the USFS lands located within the project area in the PNG. These impacts are discussed in Section 4.7.1.3 and in the BR.
Prairie woodlands	Mule deer	No USFS lands located within the project area contain prairie woodlands.
Various habitats economic	Mule deer; Elk	This habitat type doesn't occur on USFS lands located within the proposed project.

Open-cut trenching would be used at the other perennial streams that contain one or more special status fish species. Details on construction procedures for stream crossings are provided in the Overland Pass *Construction, Reclamation, and Revegetation Plan* (**Appendix B**). Open-cut trenching could result in the same types of impacts as discussed for aquatic resources. Impact issues would result from trenching in the Hams Fork River and one of the Blacks Fork River crossings (RP 18.9), which would adversely affect habitat for special status fish species. Trenching also could adversely affect habitat for flannelmouth sucker and roundtail chub. Mitigation measures SSS-9 would be implemented for the Bitter Creek crossing, which would involve a dry crossing method, if perceptible exists at the time of construction.

To avoid impacts on spawning fish, the following construction windows would be followed.

- Hams Fork and Blacks Fork Rivers and Bitter Creek – August 1 through September 30; and
- South Platte River – August 1 through November 30.

The proposed construction period of June 1 through November 30 for the North Fork Republican River could potentially affect stonecat spawning, which occurs in June through August. Stonecat is a Colorado special concern species. Construction could physically disrupt spawning behavior or displace stonecat from their spawning areas. Mitigation measure SSS-10 would be implemented, which would schedule construction to avoid the spawning periods (May 31 through August 1). The construction period of mid-September through mid-October in the Green River would not be an issue for special status fish species, since none use this section of the river for spawning.

Hydrostatic testing and dust control would affect surface flows in the Colorado River and Platte River basins. Four federally listed fish species occur in the Colorado River Basin (Colorado pikeminnow, razorback sucker, humpback chub, and bonytail). The Platte River Basin supports federally listed fish (pallid sturgeon) and bird species (Section 4.7.1). As listed in **Table 4.5-2**, the total estimated surface water use would be 39.5 acre-feet in the Colorado River Basin and 77.3 acre-feet in the Platte River Basin. These water withdrawals would represent an adverse effect on listed fish species in both basins.

The USFWS has required mitigation for surface water depletions in the Upper Colorado River and Platte River basins, as summarized below.

- Upper Colorado River Basin – The Recovery Implementation Program for Endangered Fish Species in the Upper Colorado River Basin (Recovery Plan) was established in 1988 to mitigate for water depletions to federally listed fish species. Water users are required to make a one-time payment to the Recovery Plan. The current fee (2007 fiscal year) is $17.24/acre-foot. In 1995, an intra-USFWS Opinion determined that the fee for depletions of less than 100 acre-feet (annual average) would no longer be required. Payments for larger depletions basically provides mitigation for the projects with small depletions such as estimated for the Proposed Action (39.5 acre-feet)
- Platte River Basin – The Platte River Recovery Implementation Program was approved in 2006 to provide a basin-wide approach by the Department of Interior and the states of Wyoming, Colorado, and Nebraska to benefit endangered species in the Platte River. The purpose of the program is to provide land, water, and scientific monitoring and research to evaluate benefits from the program. The program's long-term objective is to provide sufficient water to and through the central Platte River habitat area to assist in improving and maintaining habitat for target species using incentive-based projects. The USFWS determines the depletion for the projects in the Platte River Basin by dividing the estimated water withdrawal (77.3 acre-feet for the project) by the life of the project (30 years assuming the timeframe of the ROW grant). This represents an estimated depletion of 2.6 acre-feet. Depletions less than 25 acre-feet do not require a fee.

Appropriate size mesh sizes would be used on pumps to minimize entrainment of early life stages of special status fish species that may be present in the Hams Fork, Blacks Fork, Green, and South Platte rivers (mitigation WATER-4). Decisions on the mesh size would be made based on early life stages that could be present at the time of water pumping.

Plant Species

A total of 18 special status plant species have been identified as potentially occurring within the project area (**Tables 4.7-2** and **4.7-5** and **Appendix G**). Special status plant species may be directly impacted by surface disturbing activities such as clearing, trenching or trampling. The primary impact of the proposed project on vegetation would be the cutting, clearing, and/or removal of existing vegetation within the construction work area. However, based on Overland Pass' commitment to follow construction procedures detailed in its POD and *Construction, Restoration, and Revegetation Plan* (**Appendix B**), potential impacts to special status plant species would be low. Acres of special status plant species habitat that would be affected by construction activities are included in **Table 4.7-5**.

Table 4.7-5 Acres Impacted by Construction Activities for Special Status Plant Species

Common Name	Scientific Name	Status[1]	Acres Impacted by Construction Activities		
			Wyoming	Colorado	Kansas
Federally Listed Species					
Colorado butterfly plant	*Gaura neomexicana* spp. *coloradensis*	FT	No Impact	No Impact	No Impact
Blowout penstemon	*Penstemon haydenii*	FE	No Impact	No Impact	No Impact
Ute ladies' tresses	*Sprianthes diluvialis*	FT ; USFS-R4S	No Impact	No Impact	No Impact
BLM Sensitive Species					
Laramie columbine	*Aquilegia laramiensis*	BLM -WY	No Impact	No Impact	No Impact
Nelson's milkvetch	*Astragalus nelsonianus*	BLM-WY	3.4	No Impact	No Impact
Trelease's racemose milkvetch	*Astragalus racemosus var. treleasei*	BLM-WY	No Impact	No Impact	No Impact

Table 4.7-5 Acres Impacted by Construction Activities for Special Status Plant Species

Common Name	Scientific Name	Status[1]	Acres Impacted by Construction Activities		
			Wyoming	**Colorado**	**Kansas**
Cedar Rim thistle	*Cirsium aridum*	BLM-WY	No Impact	No Impact	No Impact
Ownbey's thistle	*Cirsium ownbeyi*	BLM-WY	No Impact	No Impact	No Impact
Large-fruited bladderpod	*Lesquerella macrocarpa*	BLM-WY	No Impact	No Impact	No Impact
Prostrate bladderpod	*Lesquerella prostrata*	BLM-WY	No Impact	No Impact	No Impact
Gibbens' beardtongue	*Penstemon haydenii*	BLM-WY	No Impact	No Impact	No Impact
Tufted twinpod	*Physaria condensata*	BLM-WY	No Impact	No Impact	No Impact
Persistent sepal yellowcress	*Rorippa calycina*	BLM -WY	No Impact	No Impact	No Impact
Laramie false sagebrush	*Sphaeromeria simplex*	BLM -WY	No Impact	No Impact	No Impact
Green River greenthread	*Thelesperma caespitosum*	USFS- R4S; BLM -WY	No Impact	No Impact	No Impact
USFS Sensitive Species					
Dwarf milkweed	*Asclepias uncialis*	USFS-R2S	No Impact	No Impact	No Impact
Prairie moonwort	*Botrychium campestre*	USFS-R2S	No Impact	No Impact	No Impact
Sandhill goosefoot	*Chenopodium cycloides*	USFS-PNG	No Impact	No Impact	No Impact
Wyoming feverfew	*Parthenium alpinum*	Former USFS-R2S	No Impact	1.1	No Impact

[1] Status Definitions:

BLM-WY = Wyoming BLM sensitive.
USFS-R2S = USFS Region 2 sensitive species.
USFS-R4S = USFS Region 4 sensitive species.
PNG= Pawnee National Grassland.

Additional Mitigation

Prebles Meadow Jumping Mouse

SSS-1: If crossing of suitable habitat for Prebles meadow jumping mouse occurs during the breeding season (June or July), captured adults shall be released at the trap site and followed to attempt to determine if they have young in a nest. If a nest is located within the ROW, a decision shall be made to move the ROW and avoid the nest or delay the crossing until late July when the young should be mobile and able to be trapped and moved from the immediate area.

SSS-2: In suitable habitat for Prebles meadow jumping mouse, the width of the ROW shall be reduced to 60 feet.

Migratory Birds

Sage Grouse

SSS-3: The ROW width shall be reduced to 60 feet within 2 miles of identified sage grouse leks.

SSS-4: Construction and maintenance shall not occur within 2 miles of a sage grouse lek from March 1 through July 15, between the hours of 8 p.m. to 8 a.m. from RP 42.9 to RP 110.4 on lands administered by the BLM Rock Springs Field Office.

Mountain Plover

SSS-5: Construction and maintenance shall not occur within 656 feet of identified mountain plover concentration areas between April 1 and June 30.

SSS-6: If an active mountain plover nest is observed, planned development activities shall be delayed at least 37 days from the date the nest is observed or 1 week post hatching.

Midget faded Rattlesnake

SSS-7: In midget faded rattlesnake habitat identified during survey efforts (WEST 2006b), construction on south- and east-facing slopes shall be avoided by a distance of 100 feet and by a distance of 500 feet on north-end west-facing slopes. Avoidance of these habitat areas would require re-routing of the proposed pipeline route.

Eastern Spotted Skunk

SSS-8: Trees felled and brush cleared within 200 feet of the proposed Big Creek crossing (RP 670) shall be piled in a stack(s) adjacent to the existing riparian area to restore/increase habitat for the eastern spotted skunk.

Flannelmouth Sucker and Roundtail Chub

SSS-9: If there is perceptible flow within Bitter Creek at the time of crossing, Overland Pass shall use a dry crossing method (dam-and-pump or flume method) to protect the flannelmouth sucker populations.

Stonecat

SSS-10: Per the recommendation of the CDOW (Swigle 2006c), Overland Pass shall avoid construction across the North Fork of the Republican River between May 31 and August 1 to avoid direct impacts to spawning and young stonecat.

<u>Conclusion</u>

Wildlife Species

Impacts to special status wildlife species would be avoided or minimized through implementation of Overland Pass' POD, *Conservation Measure Plan*, *Special Status Species Survey Plan*, and committed measures (Overland Pass 2006). Additional mitigation measures WILD-3 and SSS-1 through SSS-8 would further minimize potential impacts to the Prebles meadow jumping mouse, migratory birds, sage grouse, mountain plover, eastern spotted skunk, and midget faded rattlesnakes. These protective measures would prevent or minimize potential impacts to special status wildlife species, such that the proposed project would not be likely to result in a loss of viability, nor cause a trend toward federal listing or a loss of species viability rangewide.

Aquatic Resources

Impacts to special status fish species in eight streams (Bitter Creek, South Platte River, Chief Creek, North Fork Republican River, Republican River, Arikaree River, Smokey Hill River, and South Fork Republican River) would be minimized through implementation of Overland Pass' *Construction, Reclamation, and Revegetation Plan* (**Appendix B**) and other POD-related plans. These plans would minimize effects on habitat for special status fish species as a result avoiding spawning periods, controlling sediment from disturbed areas, and reclaiming streambanks. Additional mitigation would include a requirement for bridges at all flowing stream crossings (WATER-2) and establishing a setback distance from riparian vegetation (VEG-1). Mitigation measure SSS-10 would further minimize impacts to the stonecat in the North Fork of the Republican River by avoiding construction across the river during spawning periods. Mitigation measure SSS-9 (dry ditch method if flowing) also would be implemented in Bitter Creek to minimize impacts to flannelmouth sucker and roundtail chub. Collectively, these protection measures would minimize potential impacts to special status fish species such that the proposed project likely would not result in a loss of viability, nor cause a trend toward federal listing or loss of species viability rangewide.

Trenching in the Hams Fork River and the Blacks Fork River at RP 18.9 would result in long-term adverse impacts to habitat for special status fish species. Scouring also could affect fish movements during low flow periods. As a result of these impacts, population levels could decrease for one or more of the special status fish species (flannelmouth sucker, bluehead sucker, and roundtail chub) in the Hams Fork and Blacks Fork rivers. Potential population declines could contribute to a loss of viability or trend toward listing one or more of these fish species.

Construction activity within the ROW could directly affect special status amphibian species in flooded areas, wetlands, streams, or ponds in Wyoming and Colorado. Vehicles could cause mortalities or alter aquatic habitat used by these species. Mitigation measure VEG-1 (setback from waterbodies and riparian vegetation) would minimize effects on amphibian habitat. The project likely would not result in a loss of viability, nor cause a trend toward federal listing or loss of species viability rangewide.

Plant Species

Impacts to special status plant species would be avoided or minimized through implementation of Overland Pass' POD, *Conservation Measure Plan*, *Special Status Species Survey Plan*, and committed measures (Overland Pass 2006). These protective measures would prevent or minimize adverse impacts on special status plant species, such that the proposed project would not be likely to result in a loss of viability, either locally or rangewide.

Operation Phase

Issues

- The issues associated with operations would be similar to the issues described for wildlife, aquatic, and vegetation resources; and

- Potential localized sedimentation and disturbance to habitat if maintenance activities were required at a stream crossing.

Analysis

Wildlife Species

Both normal and abnormal (e.g., spill event and clean up) operations would have negligible effects on special status wildlife resources. Impacts to special status wildlife and plant species from maintenance activities would be the same as those discussed above. Direct impacts would include the incremental long-term habitat loss or alteration of potential breeding and/or foraging habitats until native vegetation has become reestablished. Potential impacts also could result in mortalities of less mobile or burrowing species as a result of crushing by vehicles and equipment, and the potential abandonment of a nest site or territory and the loss of eggs or young. Other impacts could include short-term displacement of some of the more mobile species from the disturbance areas as a result of increased noise and human presence. In order to reduce potential impacts to special status wildlife species as a result of maintenance activities on BLM-administered lands, Overland Pass would gain approval from the authorized BLM officer. The authorized BLM officer would coordinate with the appropriate BLM wildlife biologist(s) to determine if the activity would result in a direct impact to special status wildlife resources. If applicable, appropriate mitigation measures identified above in Section 4.7.1 would be implemented in order to minimize potential impacts to special status wildlife resources.

Aquatic Resources

Operational effects of maintenance activities at a stream crossing are limited to localized stream bottom disturbance. In the unlikely event of a pipeline leak at a stream crossing, released product would transition into a gaseous state and quickly volatilize. It would not be toxic to aquatic biota (**Appendix J**). If a rupture occurred at a stream crossing, fish are expected to move away from the rupture area. Potential impacts would be short-term and low magnitude due to the localized extent of the affected area.

Additional Mitigation

No additional mitigation was identified.

Conclusion

Routine maintenance and operation of the pipeline would result in minimal impact, if any, to special status species. Maintenance activities along the proposed pipeline route would result in localized, dispersed impacts of short duration along the proposed pipeline route. If NGLs were accidentally released into waterbodies due to a pipeline leak, minimal impacts, if any, would be expected to special status species.

4.7.2 No Action Alternative

4.7.2.1 Wildlife

Under the No Action Alternative, the proposed project would not be constructed or operated. No project-related disturbance would occur other than actions already authorized on federal land by the BLM. Impacts to wildlife would continue at present levels as a result of natural conditions and existing development in the project area.

4.7.2.2 Aquatic Species

Under the No Action Alternative, the proposed project would not be constructed or operated. No project-related disturbance would occur in drainages other than actions already authorized on federal land by the BLM. Impacts to aquatic resources in the various drainages would continue at present levels as a result of natural conditions and existing development in the project area.

4.7.2.3 Special Status Species

No project-related disturbance would occur in special status species habitat other than actions already authorized on federal land by the BLM. Impacts to special status species and their habitat would continue at present levels as a result of natural conditions and existing development in the project area.

4.7.3 Southern Energy Corridor – Copper Ridge Bypass Alternative

4.7.3.1 Wildlife

Vegetation composition along the Southern Energy Corridor – Copper Ridge Bypass Alternative is similar to the corresponding portion of the Proposed Action. Consequently, the impacts of this alternative would be similar to those discussed for the Proposed Action. However, this alternative contains more pronounced elevation relief than that present in the corresponding section of the Proposed Action, therefore, increased impacts to cliff associated species would potentially occur as a result of the implementation of this alternative.

No additional big game crucial winter habitat would be impacted by this alternative.

4.7.3.2 Aquatic Resources

The effects of this alternative would be similar to impacts discussed for the Proposed Action. The only difference is that two additional streams would be crossed by the Southern Energy Corridor – Copper Ridge Bypass Alternative, consisting of one Little Bitter Creek crossing and two Cedar Creek crossings. Aquatic resources in these streams consist of nongame fish species and macroinvertebrates. No hydrostatic test water withdrawals would occur in these streams.

4.7.3.3 Special Status Species

The impacts of this alternative would be similar to those discussed for the Proposed Action. Increased impacts to special status cliff obligate species potentially would result from the implementation of this alternative. No additional perennial streams with special status aquatic species would be crossed by the Southern Energy Corridor – Copper Ridge Bypass Alternative.

4.8 Land Use and Aesthetics

4.8.1 Proposed Action

4.8.1.1 Agricultural Lands

Construction Phase

Issues

- Construction interference with planting and harvesting annual crop and livestock management (access to pasture and water);
- Reduced crop productivity because of soil mixing and compaction (see Soils);
- Potential damage to field drainage tiles, terraces in contoured fields, surface irrigation systems and buried irrigation systems (center pivots); and

Analysis

Rangeland, used for livestock grazing, would be the most predominant land use affected by the proposed project. The effects of construction on rangeland are expected to be minor and short term. During construction, Overland Pass would leave gaps between strung sections of pipe approximately every 0.5 mile, at major game crossing trails or livestock trails to water sources, wherever there is a feature crossing (e.g., waterbody, road, utility), or where identified by the EI to allow livestock to pass between long, continuous sections prior to lowering in. Additionally, ramps would be installed to allow for the escape of livestock should they fall into the trench. These measures would mitigate potential impacts to livestock during pipeline construction.

The primary impacts on agricultural land during construction would include the loss of crops within the work area and the potential for reduced yield of future crops. Agricultural land in the construction area generally would be taken out of production for one growing season. Preconstruction herbaceous and shrub communities are anticipated to reestablish within one or two growing seasons after construction. Overland Pass would implement the *Construction, Reclamation, and Revegetation Plan* (**Appendix B**) to ensure timely and appropriate revegetation.

Severely compacted agricultural areas resulting from construction activities would be decompacted. While few, if any, drain tiles would be encountered along the proposed pipeline route, Overland Pass would replace/repair any drain tiles, as well as irrigation systems, damaged by construction activities in accordance with the *Construction, Reclamation, and Revegetation Plan*.

The construction techniques proposed by Overland Pass are largely sufficient to minimize impacts and restore surface contours. However, agricultural lands that rely on flood irrigation may have overland flow of water disrupted by the pipeline trench, even after compaction and restoration (Section 3.8).

Overland Pass should avoid agricultural properties that rely upon flood irrigation. The majority of agricultural lands are on private land. While the BLM has no regulatory authority to require additional mitigation on private land, private landowners can request mitigation as part of their easement negotiations.

Additional Mitigation

No additional mitigation was identified.

Conclusion

Overland Pass would implement measures described in the *Construction, Reclamation, and Revegetation Plan* to mitigate impacts on rangeland and agricultural land affected by construction activities. Additionally, Overland Pass would implement the measures described in other plans within its POD specific to federal lands (Overland Pass 2006).

Preconstruction activities would include measures to mitigate impacts on existing and future drain tiles and irrigation systems, livestock exposed to open trenches, and the introduction or spread of noxious weeds. Overland Pass would be responsible for ensuring successful revegetation of soils disturbed by project-related activities. On federal lands, reclamation would be considered successful if the ROW had 80 percent of the species composition and cover of undisturbed, adjacent vegetation. Follow-up inspections of all disturbed areas would be done for 5 years (in July of the first, third, and fifth growing seasons) to evaluate revegetation and erosion control success. In agricultural areas, revegetation would be considered successful if crop yields are similar to adjacent undisturbed portions of the same field. Revegetation efforts on federal lands would continue until the above standards are fulfilled.

On private lands, Overland Pass would construct the pipeline and aboveground facilities in accordance with federal regulations and standard industry practices. However, some of the mitigation measures that are stipulated for federal lands would not be required on private lands unless specified by the land owner in the easement agreement with Overland Pass. As a result, Overland Pass may not elect to install soft plugs within the pipeline trench every 0.5 mile, which could result in livestock and wildlife injuries and fatalities. Federal revegetation standards would not be enforced on private lands, so long-term impacts on rangeland could occur. Windbreak trees would be removed, and the restoration of windbreaks would depend upon individual agreements with land owners.

Operation Phase

Issues

- Potential interference with farm field cultivation and harvest.
- Same issues identified for construction, but on a smaller scale.

Analysis

Following construction, rangeland uses would be allowed to continue within the permanent ROW. Temporary fences would be removed, the ROW restored to its pre-construction condition, and livestock would be able to graze and roam freely over the permanent ROW. No long-term impacts to rangeland are expected.

Once construction was completed, the majority of agricultural land uses would be able to continue within the permanent, operational ROW. However, where aboveground facilities were sited on agricultural land, the land use would be permanently changed from agricultural to developed land. Some activities within the permanent ROW, such as planting of tree and shrubs would be prohibited.

Following cleanup and reseeding of the construction ROW in agricultural areas, the affected areas would typically regenerate quickly. Vegetation would generally be reestablished within 2 years of restoration, depending on climatic conditions.

Additional Mitigation

No additional mitigation was identified.

Conclusion

During operations, the ROW would revegetate and largely would revert to former uses. Most agricultural crops would be permitted to grow in the ROW. With the exception of forest land removed from the permanent ROW (accounting for less than 1 percent of land) and placement of aboveground facilities, the majority of previous land uses would continue unencumbered.

While the pipeline would be constructed with a minimum of 30 inches of cover in most areas (per 49 CFR Part 195), there is no federal regulation mandating minimum depth of cover during operations. It is possible that the soil over the pipeline would erode over time, leaving the pipe with less soil cover and, in some cases, possibly exposed. This could pose a safety hazard in agricultural areas where plowing occurs. Consequently, Overland Pass would conduct visual surveillance of the ROW to monitor and correct pipeline burial depth as necessary.

4.8.1.2 Transportation

Construction Phase

Issues

- Interference with local traffic;
- Potential damage to roads and highways from open cuts; and
- Potential damage to roads and bridges from heavy loads.

Analysis

Interference with Traffic

The existing transportation system could be temporarily impacted by commuting construction workers and other construction activities. Overland Pass anticipates that approximately 250 to 750 construction personnel would be required to complete the project, which would be divided into 5 construction spreads, each consisting of approximately 50 to150 workers, depending on the length of each construction spread. Construction personnel would consist of Overland Pass' employees, contractor employees, construction inspection staff, and environmental inspection staff. The majority of these workers would commute to the construction ROW and/or yards early in the morning and return in the evening during non-peak traffic hours. The impacts would be minimal because of the work schedule and the predominantly rural locations where the pipeline would be constructed. Since the existing rural roadway systems are not at capacity, additional vehicles associated with construction would not cause significant traffic congestion problems.

Temporary traffic increases would occur during construction on several primary public roads in Wyoming. I-80 would be utilized to access the project area from Green River to Cheyenne. From Opal to Green River, State Highway 30 would provide primary access to the project area. State Highways that would experience significant, temporary increases in traffic include 789, 130, and 287. These roads would provide construction crews with access to lodging and the construction area access roads.

In Colorado, traffic increases would be significant during construction on I-25 and I-76 between Fort Collins and Greeley. Significant, temporary increases also would occur on State Highways 287, 85, 34, and 71, which would provide access to the entire northeast portion of the project area and lodging facilities for construction crews.

Traffic increases would be significant during construction on I-70 from the Colorado border to the Hays area of Kansas. Significant, temporary traffic increases also would occur on State Highways 83, 283, 147, and 183. These roads would provide access to lodging for construction crews and county roads (section line roads) to be utilized as access roads for the project area.

Up to approximately 7 pipe-stringing trucks would be making up to 2 or 3 round-trips per day on each construction spread from the 12 proposed pipe storage yards to reach access roads to the construction ROW. It is also expected that water trucks and transport trucks would make 12 or more trips per day on average to deliver materials and equipment to the construction ROW. Once a vehicle leaves a pipe yard, the exact route taken would vary depending on the current location of construction activity and the construction spread it was serving.

The proposed pipeline route would cross the FGNRA at Cordwood and Davis Bottoms, near Green River, Wyoming. The pipeline could temporarily disrupt public access to this area during construction. Short-term impacts would reduce public access to the area, during which time the public would have the opportunity to access the river corridor further down the Green River.

The Project could directly but temporarily affect dispersed recreationalists on public land within the PNG including hikers, birdwatchers, off-highway vehicle (OHV) users at the main OHV area, mountain bikers, and hunters as construction passes through the area. Short-term impacts would include reduced access across the construction ROW; increased noise, dust, and heavy equipment emissions; and fewer opportunities to view wildlife.

Construction would interrupt recreational floating and fishing traffic to the Rochelle Easement along Carbon County Road 347, the primary access to the North Platte River in proximity to I-80. In general, these impacts would be short-term and limited to the period of active construction, which typically would be limited to several days to several weeks in any one area. Overland Pass would work with land managers to mitigate construction impacts such as timing and obtaining the required permits or authorizations.

Road Damage

Overland Pass has identified 2,577 miles of access roads that could be used during construction. The use of dirt roads, particularly farm and ranch roads and two-track trails, by construction vehicles and equipment could result in road deterioration even without rain events. Overland Pass proposes to perform road maintenance to maintain roads in their existing condition where there is evidence that the roads have been previously graded. This maintenance would only occur within the existing footprint of the road (i.e., the road would not be widened). “Maintenance” is defined for this project as, “blading or filling activities that would be required to maintain the roads’ current condition prior to use.” Mud would not be bladed off the existing road grade.

As needed in rangeland, permanent cattle guards or steel gates would be installed across access roads to:

- avoid safety hazards;
- replace a permanent existing cattle guard when damaged or destroyed by construction activities;
- fulfill the BLM’s Authorized Officer’s requirements;
- provide temporary cattle guards or a metal gate on all fences crossed by temporary roads;
- provide temporary or permanent cattle fencing; and
- allow access by heavy equipment where needed.

Overland Pass’ construction contractor would determine if existing cattle guards can support trucks and other equipment prior to crossing the guards. The construction contractor would be responsible for either strengthening the cattle guard or using another access route.

Where there is no evidence of previous grading or the existing road requires widening, road improvement would be allowed only after Overland Pass completes required cultural resources and biological surveys, and associated agency consultations. Roads would be used and improved only with permission of the landowner. Access roads used for construction that require grading would be restored to their preconstruction condition, at the discretion of the landowner.

Erosion control, revegetation, and restoration measures outlined in Overland Pass' *Construction, Reclamation, and Revegetation Plan* would be implemented when applicable to improvements to existing access roads.

Additional Mitigation

LAND-1: Permits required for installation of the pipeline underneath existing public roads and, as needed, to transport equipment shall be obtained prior to construction. For open-cut road crossings, Overland Pass shall attempt to:

- Maintain at least one lane of traffic open with detours around construction;
- Provide plating over the open portion of the trench; or
- Use other suitable methods when open cutting a road.

LAND-2: If a construction method requires a road to be closed for up to 24 hours, Overland Pass shall develop a detour for public traffic to bypass the construction area. Overland Pass shall provide a detour for vehicle traffic on CR 437 along the North Platte River for the duration of the open cut river crossing.

LAND-3: Overland Pass shall require the construction contractor to post caution signs on roads, where appropriate, to alert motorists of pipeline construction and warn them of slow traffic. Traffic control measures such as traffic control personnel, warning signs, lights, and barriers shall be used during construction to ensure safety and to minimize traffic congestion.

LAND-4: Pipe trucks transporting pipe joints and low boys hauling heavy equipment shall travel with flashing yellow caution lights in accordance with state law. The construction contractor shall employ traffic control personnel as required by State DOT safety requirements for use on paved roads during equipment crossings to ensure safe passage of local traffic.

LAND-5: Construction vehicles shall follow posted speed limits on rural county roads and highways and follow a 25 mph speed limit on the project roads. Speeds shall be reduced to 10 mph below posted limits on highways when traveling at night.

LAND-6: Overland Pass shall implement the following measures to reduce traffic congestion and roadside parking hazards:

- Project personnel shall exercise caution when commuting to and from the construction area to minimize the potential for accidents, and local speed limits shall be enforced.
- Overland Pass shall provide the construction contractor with an equipment yard to be used as a primary parking area for employee personal vehicles. Personal vehicles shall not be allowed within the construction ROW or along roadsides near the ROW. The construction contractor shall provide buses for transporting workers that do not require personal vehicles to the work site from the yard.

LAND-7: Overland Pass shall require its construction contractor to comply with local load weight restrictions when using existing public roads and crossing public bridges to prevent road and bridge damage.

LAND-8: The construction contractor shall be directed to remove soil left on the road surface by equipment crossings. At the end of each workday, mats or other appropriate measures (e.g., sweeping) shall be used to reduce deposition of mud and soils on public roads and highways.

LAND-9: Where culverts are required to improve a Class-B access road at stream crossings, these culverts shall be of adequate size to accommodate storm runoff as required by federal, state, or county road permits, and of sufficient strength to support construction and maintenance equipment. All temporary culverts shall be removed from the stream crossing after construction.

Conclusion

Overall, the number and frequency of construction vehicle trips on major highways would be low on any particular roadway at any one time because construction activities would move sequentially along the construction ROW. Travel by vehicles on the ROW on a regular basis (e.g., 90 pickups, 12 buses, 25 welding rigs) would be distributed along the length of the proposed pipeline route over time as the pipe was installed and construction activity progresses to a different part of the ROW.

During pipeline construction, little or no disruption of traffic would result at road crossings that are bored or drilled. The open-cut construction method would be used across lightly traveled gravel roads and unimproved dirt roads. Disruptions in normal access to recreational facilities would be short-term, and alternative access points would be posted.

Overland Pass has developed a *Traffic and Transportation Management Plan* to describe how they would comply with federal policy and standards relative to planning, location, improvement, maintenance, and operation of roads for the project. Impacts would be mitigated by posting signs during construction to indicate to construction personnel and the public, which roads are being utilized at any given time. The *Traffic and Transportation Management Plan* is included as part of the POD (Overland Pass 2006).

Operation Phase

Issues

- Same issues as construction, but on a smaller scale.

Analysis

The Overland Pass *Traffic and Transportation Management Plan* describes compliance measures relative to planning, location, improvement, maintenance, and operation of roads for the project. As a part of its permanent aboveground facilities, Overland Pass would construct short permanent access roads from existing public roads to access pump station and meter station sites. These roads would be wholly contained within the ROW, or constructed within parcels that Overland Pass has identified for the construction of aboveground facilities.

Operation and maintenance of the pipeline facilities would not significantly affect traffic flow on any of the paved roads or highways. Required periodic maintenance and inspection procedures would involve a low frequency of light vehicle movement on and off roadways. No impact would be expected from this activity.

Additional Mitigation

No additional mitigation was identified.

Conclusions

No impacts to traffic would be expected from pipeline operation.

4.8.1.3 Residential / Commercial

Construction Phase

Issues

- Interference with residence/business access; and
- Potential damage to residential landscapes.

Analysis

While the proposed pipeline route has been designed to maximize co-location with existing ROWs and to minimize impact to the environment, area residents, and local businesses, based on aerial photography, Structures are located within 50 feet of the Overland Pass construction ROW (**Table 4.8-1**). None of the structures appear to be occupied residences. Overland Pass would determine whether these structures are residences prior to construction. Where construction would cross roads that access private residences and no alternative entrances exist, measures would be implemented to maintain passage for landowners during construction. If residential property was crossed, turf, ornamental shrubs, and specialized landscaping would be restored in accordance with the landowner's request or, alternatively, the landowner would be compensated.

Table 4.8-1 Structures Within 50 Feet of the Construction Work Area for the Proposed Action

State/County	Reference Point	Description of Building	Approximate Distance from Pipeline Centerline[1]	Direction from Pipeline Centerline
Wyoming				
Lincoln	18.5	Structure	Within 50 feet	SW
Lincoln	22.5	Structures (2)	Within 25 feet	W
Sweetwater	39.6	Structure	Within 50 feet	S
Carbon	146.5	Structure	Within 50 feet	S
Sweetwater	163.2	Structure	Within 50 feet	N
Carbon	189.8	Structure	Within 50 feet	N
Carbon	247.6	Structure	Within 50 feet	S
Albany	268.1	Structure	Within 50 feet	SW
Albany	286.2	Structure	Within 50 feet	SW
Colorado				
Weld	386.1	Structure	Within 50 feet	N
Weld	399.1	Structure	Within 50 feet	SW
Logan	411.8	Structure	Within 50 feet	S
Logan	414.0	Structure	Within 50 feet	S
Logan	414.4	Structure	Within 50 feet	S
Washington	430.9	Structure	Within 50 feet	NE
Washington	446.5	Structure	Within 50 feet	S
Washington	447.7	Structure	Within 50 feet	N
Yuma	456.3	Structure	Within 50 feet	S
Yuma	465.8	Structure	Within 50 feet	SW
Yuma	470.4	Structure	Within 50 feet	S
Yuma	484.6	Structure	Within 50 feet	S
Kansas				
Cheyenne	513.6	Structure	Within 50 feet	S
Cheyenne	528.7	Structure	Within 50 feet	SW
Rawlins	545.6	Structure	Within 50 feet	NE
Sheridan	577.4	Structure	Within 50 feet	N
Sheridan	587.4	Structure	Within 50 feet	NE
Sheridan	595.4	Structure	Within 50 feet	N
Sheridan	607.2	Structure	Within 50 feet	NE
Gove	608.8	Structure	Within 50 feet	N
Trego	626.1	Structure	Within 50 feet	S
Trego	635.3	Structure	Within 50 feet	N
Ellis	656.8	Structure	Within 50 feet	N

Table 4.8-1 Structures Within 50 Feet of the Construction Work Area for the Proposed Action

State/County	Reference Point	Description of Building	Approximate Distance from Pipeline Centerline[1]	Direction from Pipeline Centerline
Ellis	659.8	Structure	Within 50 feet	S
Barton	690.2	Structure	Within 50 feet	N
Barton	691.0	Structure	Within 50 feet	SW
Barton	698.8	Structure	Within 50 feet	S
Barton	705.5	Structure	Within 50 feet	SW
Rice	717.5	Structure	Within 50 feet	E
Rice	738.3	Structure	Within 50 feet	S
Rice	743.4	Structure	Within 50 feet	N

[1]Includes area affected by construction ROW and additional TWAs.

Additional Mitigation

LAND-10: Overland Pass shall notify landowners prior to the start of construction adjacent to a residence.

LAND-11: Overland Pass shall maintain traffic flow and emergency vehicle access on roadways with traffic control personnel or detour signs where necessary.

LAND-12: Overland Pass shall backfill and restore in residential areas as soon as possible, and fence off or plate sections of trench left open near residences at the end of the construction day.

LAND-13: Overland Pass shall periodically inspect road surfaces near residences and, if necessary, clean street surfaces and wet exposed soil to prevent generation of fugitive dust.

Conclusions

Overland Pass would implement the procedures identified in their *Traffic and Transportation Management Plan* which would limit traffic, noise, and dust impacts to area residences and businesses. Implementation of additional mitigation measures would minimize construction impacts particularly where residents are located near the ROW.

Operation Phase

Issues

- Same issues as construction, but on a smaller scale.

Analysis

Impacts to residents during operations would be minimal due to the infrequent and temporary nature of operational activities.

Most developed land uses would be able to continue following construction. However, some activities, such as the building of new commercial or residential structures would be prohibited on the permanent ROW.

Additional Mitigation

No additional mitigation is identified.

Conclusion

To ensure public safety and pipeline integrity, commercial and residential structures would not be allowed on the permanent ROW.

4.8.1.4 Utilities

Construction Phase

Issues

- Buried utility crossings – water lines, fiber optic lines, natural gas and product lines; and
- Offsets from other utilities (overhead electric transmission lines, other pipelines).

Analysis

The Proposed Action has been designed to maximize co-location with existing ROWs and to minimize impact to the environment, area residents, and local businesses. Where Overland Pass' facilities would be co-located with an existing pipeline ROW, the proposed pipeline centerline generally would be located 50 feet from the existing pipeline's centerline. In most cases, Overland Pass' proposed 75-foot-wide construction ROW would overlap the area disturbed by the previous construction of these existing pipelines. Co-locating the proposed pipeline ROW with existing ROWs would reduce the amount of new disturbance associated with this project.

While co-location of pipelines reduces the amount of new disturbance on the landscape, there are safety considerations that detract from being built too close together. Depending on a number of factors, transmission pipelines generally are constructed between 25 to 60 feet apart. Overland Pass generally would offset 50 feet from existing pipelines. The Southern Star pipeline, which Overland Pass is co-located with for a substantial length of the proposed pipeline route, has indicated their preference for 50-foot or more separation between pipelines.

Additional Mitigation

No additional mitigation was identified.

Conclusion

With the exception of the PNG, the proposed pipeline centerline generally would be located 50 feet from existing pipeline centerlines, where possible. Based on SOIL-4, the offset from an existing pipeline would be reduced to 30 feet on the PNG, thereby reducing new surface disturbance. Potential impacts would be limited to construction and would be short-term.

Operation Phase

Issues

- Same issues as construction, but on a smaller scale.

Analysis

Following construction, Overland Pass would maintain a 50-foot-wide permanent ROW for operation of the pipeline facilities. Overland Pass would participate in the state's one-call programs to ensure maintenance activities do not harm other underground utilities.

Additional Mitigation

No additional mitigation was identified.

Conclusion

Co-location with existing pipeline ROWs would help consolidate and minimize impacts associated with utilities.

4.8.1.5 Aesthetics

Construction Phase

Issues

- New aboveground facilities (pump stations, valves) and new pipeline ROWs may modify natural landscapes viewed from special management areas and public locations; and
- Construction noise to nearby residences.

Analysis

Visual Resources

Public lands that would be affected by the proposed pipeline are comprised mostly of lands managed by the BLM. The BLM has a VRM standard for each resource area that would be crossed by the proposed pipeline route. BLM-owned public lands are managed so that the quality of scenic and visual resources is maintained. Overland Pass would adhere to these BLM requirements.

Visual impacts associated with the construction ROW and additional TWAs would include the removal of existing vegetation and the exposure of bare soils, as well as earthwork and grading scars associated with heavy equipment tracks, trenching, blasting, rock formation alteration or removal, and machinery and tool storage. Other visual effects could result from the removal of large individual trees that have intrinsic aesthetic value; the removal or alteration of vegetation that currently could provide a visual barrier; or landform changes that could introduce contrasts in visual scale, spatial characteristics, form, line, color, or texture.

Visual impacts would be greatest where the proposed pipeline route paralleled or crossed roads, trails, or prominent off-site observation points, and where the pipeline ROW could be seen by passing motorists or recreationalists. The duration of visual impacts would depend on the type of vegetation or land formation that was cleared or altered. The impact of vegetation clearing would be shortest on rangeland consisting of short grasses and hay fields, where the reestablishment of vegetation following construction would be relatively fast (generally 3 to 5 years). The impact would be greater on shrub rangeland, which could take several years to regenerate. The greatest potential visual impact would result from the removal of large trees, which would take longer than other vegetation types to regenerate and would be prevented from reestablishing on the permanently maintained 50-foot-wide ROW. Topographic alterations such as sidehill cuts that could be necessary to construct the pipeline would be restored during ROW restoration. The visibility of such alterations would diminish over time as the affected areas aged and began to blend with the surrounding landscape.

To minimize construction impacts on visual resources, Overland Pass aligned the proposed pipeline route, where feasible, adjacent to existing pipeline ROWs or other transportation corridors. In areas where ROW co-location was not possible for engineering and/or construction reasons, Overland Pass aligned the proposed pipeline route to avoid aesthetic features to the extent possible.

The proposed pipeline route would be co-located with another pipeline (Southern Star) across the PNG. Construction adjacent to the pipeline ROW would result in an incremental and visible widening of the existing previously disturbed corridor. The visibility of this impact would diminish after the ROW is restored and revegetated. Impacts on the PNG are expected to be short-term in nature, as the vegetation would generally be reestablished within 3 to 5 years of restoration depending on climatic conditions.

The proposed pipeline would cross approximately 2.0 miles of the FGNRA within ANF. Visual impacts would be within established requirements. Aboveground facilities would be painted earth tones with matte finish.

Noise

Noise associated with construction of the proposed Overland Pass pipeline and aboveground facilities would be intermittent. Neighbors in the vicinity of the construction areas may hear the construction noise, but the overall impact would be temporary. Nighttime noise due to construction would normally be absent since most, if not all, construction would be limited to daytime hours. Estimated construction equipment noise is presented in **Table 4.8-2**.

Table 4.8-2 Estimated Construction Equipment Noise From the Proposed Overland Pass Aboveground Facilities

Equipment Type	Noise at 50 feet (dBA)
Heavy Equipment	85
Air Compressors	84
Welders	67
Concrete Truck	71
Miscellaneous Trucks (Pick-ups, etc.)	65

Source: USEPA 1974.

Additional Mitigation

No additional mitigation was identified.

Conclusion

The proposed pipeline would be buried and the topographical contours would be returned to their preconstruction condition. Therefore, visual impacts associated with construction and operation of the proposed pipeline facilities would be within BLM VRM management objectives.

Operation Phase

Issues

- New aboveground facilities (pump stations, meter stations, pigging facilities, valves) and new pipeline ROWs may modify natural landscapes viewed from special management areas and public locations;
- Additional pump stations in the future would increase aesthetic impacts;
- Same issues as construction, but on a smaller scale;
- Operational noise/smells to nearby residences; and
- Proximity of the pipeline to public gathering places.

Analysis

Visual Resources

Overland Pass proposes to construct pump stations, meter stations, valves, and pigging facilities at various locations along the proposed pipeline route. These aboveground structures would be permanent and would remain in operation throughout the life of the pipeline. The impacts on visual resources from each individual facility would depend on the pre-construction condition and the visibility from the surrounding area. To the extent possible the pump stations would be constructed adjacent to existing commercial/industrial facilities that already experience a visual impact, and the meter stations would be constructed in association with a pump station where applicable or placed within an area to minimize visual impacts. Visual impacts from the operation of the aboveground facilities would be low.

The most substantive long-term visual impacts as a result of aboveground facilities would be limited to valves or pigging facilities located on federally managed land. The landscape of much of the proposed pipeline route is gently rolling with vegetation limited to shrubs or grasses. The views are long – up to many miles. Successful revegetation would blend the belowground portions of the pipeline with its surroundings. However, aboveground improvements would be very noticeable in this landscape. Aboveground facilities would meet the prudent operational requirements of the pipeline owners and operators and also would be compatible with the surrounding landscape. This would entail the selection of ground surfacing, building surfacing, fencing, signing, and color selection and finish.

Noise

During operation, noise impacts associated with the proposed pump and meter stations would be limited to the vicinity of the facility. Estimated noise levels from aboveground facilities are listed in **Table 4.8-3**.

Table 4.8-3 Estimated Sound Levels from Pump Stations

Distance from Pump Station	Estimated Sound Level from Echo Springs and Laramie Pump Stations (dBA)
0.25 mile	41
0.5 mile	33
1 mile	24
2 miles	15

Based on aerial alignment sheets, no occupied residences appear to be located within 50 feet of the proposed project area. The Echo Springs (RP 146.5), Laramie (RP 271.7), and future WaKeeney Pump Stations would be located in rural areas with few noise sources in the immediate vicinity. No NSAs are located within 1 mile of the Echo Springs and Laramie pump stations, there would be one NSA within 2,550 feet from the future WaKeeney Pump Station, if the station were built (**Figure 3.8-1**). Given the far distances and relatively rural area, noise levels in areas where people are located would not differ from background noise.

Additional Mitigation

VISUAL-1: Downward shield lighting or low profile lighting, and motion sensors shall be used at all facilities to minimize nighttime visual effects.

VISUAL-2: MLVs located on the PNG shall be painted in earth tones with a matte finish and the site shall not be graveled. In addition, fences around the MLVs on the PNG shall be barbed wire similar to livestock fences in the area.

Conclusion

Visual impacts would be mitigated by locating the aboveground facilities in areas already used by other pipelines and by using agency-approved paint colors.

No noise impacts would occur from most aboveground facilities due to their rural and isolated locations. However, if the WaKeeney Pump Station were constructed in the future, noise impacts could occur to the closest NSA. The level of noise would likely be greater than existing background noise at this location.

4.8.2 No Action Alternative

Under the No Action Alternative, the proposed project would not be constructed or operated. No project-related disturbance would occur other than actions already authorized on federal land by the BLM. Impacts to aesthetic resources would continue at present levels as a result of natural conditions and existing development in the project area.

4.8.3 Southern Energy Corridor – Copper Ridge Bypass Alternative

The effects of this alternative would be similar to impacts discussed for the Proposed Action.

4.9 Cultural Resources

4.9.1 Proposed Action

Construction Phase

Issues

- Construction of the Overland Pass Pipeline and its associated facilities could affect NRHP-eligible properties such as prehistoric or historic archaeological sites, districts, buildings, structures, and objects;
- Previously undiscovered cultural resources, including burials and associated funerary objects, could be discovered and adversely affected during ground-disturbing activities associated with project construction;
- Unauthorized artifact collection and vandalism; and
- Introduction of visual or auditory elements that diminish the integrity of the property's significant historic feature.

Analysis

Section 106 of the NHPA requires that federal agencies take into account the effect of an undertaking on historic properties and provide the ACHP an opportunity to comment. Historic property, as defined by the regulations implementing Section 106, means "any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the NRHP maintained by the NPS." The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization that meet the National Register criteria. Potential impacts to historic properties are assessed using the "criteria of adverse effect" (36 CFR 800.5[a][1]), as defined in the implementing regulations for the NHPA. "An adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association." The analysis of impacts using these criteria is limited to those resources that are listed in the NRHP or have been recommended as eligible.

Those areas in which impacts are planned or are likely to occur are referred to as the "area of potential effect" or APE. Specifically, the APE is defined as the geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of NRHP-eligible cultural resources, if any such resources exist. Additionally, the APE is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking (36 CFR 800.16[d]).

The APE should include:

- All alternative locations for all elements of the Proposed Action;
- All locations where the Proposed Action may result in disturbance of the ground;
- All locations from which elements of the Proposed Action (e.g., pump stations or land disturbance) may be visible or audible;
- All locations where the Proposed Action may result in changes in traffic patterns, land use, public access, etc.; and
- All areas where there may be indirect as well as direct effects.

Only those cultural resources located in the APE were reviewed to determine if any would be subject to impacts that could affect their eligibility for the NRHP based on NRHP criteria for evaluation.

Project impact or effects include not only the physical disturbance of a historic property, but also may include the introduction, removal, or alteration of various visual or auditory elements, which could alter the traditional setting or ambience of the property. In consultation with Kansas, Colorado, and Wyoming SHPOs; USFS; and Native American Tribes; BLM would determine whether construction of the proposed project would affect any properties listed on, or eligible for listing on, the NRHP. The BLM has developed protective measures to minimize adverse effects on important cultural resource values. Protective measures are used in response to the proposed actions of BLM programs involving surface disturbance. These measures include, but are not limited to, cultural resource inventories, evaluation of cultural resources located during inventory, assessment of a site's setting where applicable, BMPs, and mitigation of potential adverse impacts on important cultural resources. See **Appendix H** for a detailed description of standard protective measures and BMPs.

If a property would be adversely affected, mitigation would be proposed. Mitigation may include, but would not be limited to, one or more of the following measures: 1) avoidance through the use of realignment of the proposed pipeline route, relocation of temporary extra workspace, or changes in the construction and/or operational design; 2) data recovery, which may include the systematic professional excavation of an archaeological site; or 3) Historic American Buildings Survey (HABS)/Historic American Engineering Record (HAER) or other agreed upon historic recordation process.

Avoidance through project redesign is the preferred method of mitigation. However, when avoidance is not feasible, data recovery, HABS/HAER documentation, or any other agreed upon mitigation measure would be implemented prior to construction. Based on the Class III inventory reports for Wyoming, Colorado, and Kansas, it is determined that there would be adverse effects to historic properties as a result of project construction.

The potential for the discovery of unanticipated cultural resources during construction activities exists within proposed disturbance areas and could result in adverse effects. Unanticipated discoveries would result in displacement or loss (either complete or partial) of the cultural resource involved. Displacement of cultural resources adversely affects the potential to understand the context of the site and limits the ability to extrapolate data regarding prehistoric settlement and subsistence patterns. However, mitigation of impacts from discoveries is often accomplished through data recovery excavations.

Prior to BLM authorization of the project, Overland Pass would submit a cultural resources unanticipated discoveries plan to the BLM for review which outlines the way in which cultural resources would be treated and the responsibilities of the project proponent. This plan would be reviewed by the BLM archaeologist and submitted to the SHPOs for concurrence. If any previously unknown cultural resources are discovered during construction, all construction activities would cease within the vicinity of the discovery, and the BLM would enact the cultural resources unanticipated discoveries plan.

If construction or other project personnel discover what they believe to be human remains, funerary objects, or items of cultural patrimony, construction would cease within the vicinity of the discovery and the BLM Authorized Officer and local law enforcement officials would be notified of the find. Construction would not resume in the area of the discovery until the BLM Authorized Officer has issued a notice to proceed. Treatment of any discovered human remains and associated funerary objects would be handled in accordance with the provisions of NAGPRA and/or applicable Wyoming, Colorado, and Kansas laws.

<u>Additional Mitigation</u>

ARCH-1: To minimize unauthorized collecting of archaeological material or vandalism to known archaeological sites, Overland Pass and their contractors, and all construction personnel, shall attend mandatory training and be educated on the significance of cultural resources and the relevant federal regulations intended to protect them.

Conclusion

Potential adverse effects to identified NRHP-eligible sites would be mitigated prior to pipeline construction. Unanticipated discoveries of cultural resources would be protected as described in the cultural resources unanticipated discoveries plan prepared for the proposed project. Therefore, all impacts to NRHP-eligible cultural resources from project construction would be mitigated.

Operation Phase

Issues

- Issues would be similar to those identified for construction.

Analysis

Maintenance activities would result in localized impacts that would be dispersed along the entire proposed pipeline route. Maintenance activities would occur within areas previously disturbed by construction.

Additional Mitigation

No additional mitigation was identified.

Conclusion

Potential adverse effects to identified NRHP-eligible sites would be mitigated prior to pipeline construction. Unanticipated discoveries of cultural resources would be protected as described in the cultural resources unanticipated discoveries plan prepared for the proposed project. Therefore, all impacts to NRHP-eligible cultural resources would be mitigated.

4.9.2 No Action Alternative

Under the No Action Alternative, the proposed project would not be constructed. As a result, none of the potential impacts to cultural resources as identified for the Proposed Action would occur. However, additional knowledge of local or regional prehistory of the project area that would have been obtained through data recovery would not be collected.

4.9.3 Southern Energy Corridor – Copper Ridge Bypass Alternative

At this time, a Class III cultural resources inventory of the Southern Energy Corridor – Copper Ridge Bypass Alternative has not been completed. A Class I inventory of previously recorded sites within the project area resulted in the identification of nine sites within 100 feet of the proposed Southern Energy Corridor – Copper Ridge Bypass Alternative centerline and five sites located within 100 feet of the segment of the proposed pipeline centerline that would be eliminated if the bypass were chosen. All of the five sites located along the proposed pipeline route are recommended as not eligible for the NRHP. Of the nine previously recorded sites identified along the Southern Energy Corridor – Copper Ridge Bypass Alternative corridor, two are recommended as not eligible for the NRHP, five are unevaluated, one is eligible for the NRHP with SHPO concurrence, and one is an NRHP-eligible linear feature; however, the segment of the linear feature identified within 100 feet of the proposed bypass centerline is unevaluated. Therefore, compared to the Proposed Action, there potentially would be more impacts to cultural resources if the Southern Energy Corridor – Copper Ridge Bypass Alternative were chosen. Potential impacts to cultural resources and measures to protect them would be the same as described for the Proposed Action.

4.10 Native American Concerns

4.10.1 Proposed Action

Construction Phase

Issues

- Protection of sites with cultural, traditional, or religious importance to the tribes.

Analysis

The BLM Rawlins Field Office invited tribal officials from the 22 identified Native American tribes to participate in two informational meetings and three field visits. The purpose of the meetings and subsequent field tours was to discuss the Proposed Action, visit selected archaeological sites that were thought to have traditional, cultural, or religious importance to the tribes, solicit any concerns the tribes may have regarding tribal resources in the Proposed Action area, and, in general, discuss the Native American consultation process.

During the field visits, tribal representatives expressed concerns specifically for all cultural resources that would be directly impacted by the proposed pipeline route and its construction. Additional concerns included protection of cultural sites during construction through the use of tribal monitors, what laws each state has for protection of burials on private and state lands, mitigation of potential impacts, and inadvertent discoveries.

Potential impacts to NRHP-eligible cultural resources, TCPs, or places of cultural, traditional, or religious importance to the tribe as a result of the Proposed Action, as well as measures to avoid or mitigate potential adverse effects to these resources, would be the same as those described in Section 4.9.

Native American consultation regarding potential impacts to NRHP-eligible cultural resources, TCPs, or places of cultural, traditional, or religious importance currently is taking place between the BLM Rawlins Field Office and tribal representatives. No surface disturbance would occur within or immediately adjacent to the boundary of a potentially NRHP-eligible property or place of tribal importance prior to completion of all consultation required by law. Any such data recovery or mitigation plan would be reviewed and approved by the BLM and Wyoming, Colorado, and Kansas SHPOs. Tribal representatives would be asked to participate in the development of any such data recovery or mitigation plan.

Additional Mitigation

No additional mitigation is recommended.

Conclusion

Potential impacts to NRHP-eligible cultural resources, TCPs, or places of cultural, traditional, or religious importance to the tribe as a result of the Proposed Action would be the same as those described in Section 4.9.

The BLM intends to continue consultation throughout the environmental review and construction phase of the Proposed Action. Renewed contacts with some or all of the tribes may result from unanticipated discoveries.

Operation Phase

Issues

- Issues would be related to maintenance activities and would be similar to those identified for construction.

Analysis

Maintenance activities would result in localized impacts that would be dispersed along the entire proposed pipeline route. Maintenance activities would occur within areas previously disturbed by construction.

Additional Mitigation

No additional mitigation was identified.

Conclusion

Potential impacts to identified NRHP-eligible sites, TCPs, or places of traditional, cultural, or religious importance to the tribes as a result of the Proposed Action would be the same as those described in Section 4.9.

The BLM intends to continue consultation throughout the environmental review and construction phase of the project. Renewed contacts with some or all of the tribes may result from unanticipated discoveries.

4.10.2 No Action Alternative

Under the No Action Alternative, the proposed project would not be constructed. As a result, none of the potential impacts to NRHP-eligible cultural resources, TCPs, or places of traditional, cultural, or religious importance to the tribes as identified for the Proposed Action would occur.

4.10.3 Southern Energy Corridor – Copper Ridge Bypass Alternative

If the Southern Energy Corridor – Copper Ridge Bypass Alternative were chosen, Native American consultation would follow the same protocol as the Proposed Action. Potential impacts to NRHP-eligible sites, TCPs, or places of traditional, cultural, or religious importance to the tribes, and measures to avoid or mitigate potential impacts, would be addressed as described above for the Proposed Action.

4.11 Social and Economic Conditions

4.11.1 Proposed Action

4.11.1.1 Population, Employment, and Income

Construction Phase

Issues

- Changes in local population and employment during construction.
- Monetary compensation for easement and damages to land and property.

Analysis

Overland Pass proposes to begin construction in July 2007. Construction would last 5 to 6 months and is anticipated to be complete with the pipeline in service by the fourth quarter of 2007. Overland Pass anticipates a peak workforce of approximately 600 construction personnel consisting of Overland Pass employees, contractor employees, construction inspection staff, and environmental inspection staff. The proposed pipeline is planned to be built in five spreads, with construction activity occurring simultaneously in each spread. Overland Pass anticipates 50 to 75 construction and inspection personnel associated with each spread, plus an additional 20 persons for activities such as pipe unloading. The construction of the aboveground facilities would require an additional 50 to 75 workers. During construction, personnel would work during daylight hours, 6 to 7 days per week depending on schedule constraints. **Table 4.11-1** outlines Overland Pass's proposed construction schedule and workforce requirements by spread for the proposed pipeline route.

Table 4.11-1 Pipeline Construction Workforce

Spread Number	RP Range	Associated Aboveground Facilities	Counties / States	Estimated Workforce
1	0.0 – 147	1 Pump Station (Echo Springs) 2 Meter Stations (Opal and Echo Springs)	Lincoln, Sweetwater, and Carbon counties, Wyoming	75 to 150
2	147 - 281	1 Pump Station (Laramie) 1 Meter Station (Laramie)	Sweetwater, Carbon, and Albany counties, Wyoming	75 to 150
3	281 – 438	NA	Albany and Laramie counties, Wyoming Larimer, Weld, Morgan, Logan, and Washington counties, Colorado	50 to 100
4	438 – 591	1 Meter Station (Washington County)	Washington and Yuma counties, Colorado Cheyenne, Rawlins, Thomas, and Sheridan counties, Kansas	50 to 100
5	591 – 749.4	3 Meter Stations (WaKeeney, Bushton, and Conway)	Sheridan, Gove, Trego, Ellis, Russell, Barton, Ellsworth, Rice, and McPherson counties, Kansas	75 to 150

Overland Pass, through its construction contractors and subcontractors, would attempt to hire temporary construction staff from the local population, if the local population offers skilled workers in fields related to pipeline construction. At peak workforce, Overland Pass anticipates that up to approximately 20 percent of the total construction workforce could be hired locally (currently residing in Wyoming, Colorado, and Kansas). The remaining portion of the workforce (approximately 80 percent) would include non-local personnel. Based on the specialized nature of the position, environmental inspection staff would most likely consist entirely of non-local employees.

The Overland Pass Pipeline would be constructed in predominantly rural and sparsely populated areas. The proposed pipeline route would cross approximately 124 miles of federal land, which represents approximately 16 percent of the total land affected by the project. Overland Pass expects the impacts to socioeconomic resources along the proposed pipeline route to be similar on federally owned land as on non-federal land. Therefore, Overland Pass' proposed mitigation measures for socioeconomic resources would be the same, regardless of land ownership.

Overland Pass would acquire pipeline ROW easements from landowners and provide landowners with monetary compensation for the conveyance of those easements. Agreements between Overland Pass and the landowner would specify compensation for damage to property during construction, loss of use during construction, loss of renewable and nonrenewable or other resources, and allowable uses of the permanent ROW after construction. If an easement could not be negotiated with the landowner, the property could be condemned. In this case, the property owner would still be compensated by Overland Pass, but the amount of compensation would be determined by the courts. Overland Pass has stated that they would make every effort to negotiate in good faith to avoid using this authority and would condemn only as a last resort.

The effect that a pipeline easement may have on property values has been factored into the negotiations between the parties during the easement acquisition process. The easement acquisition process is designed to provide fair compensation to the landowner for the right to use the property for initial pipeline construction and subsequent operation and maintenance. Appraisal methods used to value land are based on objective characteristics of the property and any improvements. The impact a pipeline could have on the value of a tract of land depends on many factors, including the size of the tract, the values of adjacent properties, the presence of other utilities, the current value of the land, and the current land use. Because approximately 83 percent of the proposed pipeline route would parallel existing pipelines corridors, construction of the proposed pipeline is not expected to change the general use of the land. On tracts proposed to be crossed where pipelines do not currently exist however, the terms and conditions of the easement would preclude construction of aboveground structures on the permanent ROW for safety as well as maintenance purposes.

Additional Mitigation

No additional mitigation identified.

Conclusion

Construction of the proposed pipeline and ancillary facilities would temporarily increase the populations of the communities in the vicinity of the project by an average of 90 to 100 people per spread. Additionally, landowners would be compensated for the temporary loss of the use of their land during construction as well as for damages caused during construction.

Operation Phase

Issues

- Changes in local population and employment during operations.

Analysis

Overland Pass estimates that 5 to 20 permanent employees would be required to oversee the operation and maintenance of the pipeline, including the pumping stations. These employees would most likely be non-local, as they would have specialized responsibilities or have current employment with Overland Pass. No additional personnel would be hired to operate and maintain the pumping stations as these facilities would be constructed to operate automatically. Any specific operation and maintenance task that could not be completed by the existing staff would be completed on a contractual and as-need basis.

Additional Mitigation

No additional mitigation identified.

Conclusion

If approved, Overland Pass would obtain pipeline ROW easements from landowners in return for monetary compensation. Compensation would be based on fair market value of the land. Landowners may negotiate for the loss of use of their property, such as the reimbursement of crops lost due to construction activities. Because landowners would be compensated for the value of their property, no long-term impacts are anticipated.

4.11.1.2 Infrastructure

Construction Phase

Issues

- Increased demands on local infrastructure (emergency and fire protection services, hospitals, rental housing) during construction.

Analysis

Overland Pass' construction workforce is described in Section 4.11.1.1. Approximately 80 percent of the workforce would be non-local. Due to the relatively short period of construction activity in any given area, it is anticipated that most non-local workers would not be accompanied by their families during their work tenure. Consequently, it is expected that most project workers would use temporary housing, such as hotels/motel, RV parks, and campgrounds. Some workers likely would rent furnished apartments and homes, due to the constrained availability of other accommodations, though this is generally less preferable because landlords and property management companies prefer extended term commitments. Most of the temporary workers would seek housing in the more populated, service-oriented towns located within a reasonable commuting distance to the work site. As the more convenient options fill, workers would seek alternatives, driving further, looking at smaller communities, even using campgrounds in nearby parks, which typically have limits on the length of occupancy. Furthermore, some individuals may desire to relocate during the term of the project as the active construction area in each spread moves along the proposed pipeline route. The net effect of these factors is that the temporary housing demand would be dynamic.

Considering the various types of temporary housing available according to the year 2000 statistics provided, it appears likely that the local housing market would be able to handle the influx of temporary workers during construction for the proposed project for some of the proposed pipeline route, but in the more rural areas (especially along Spreads 4 and 5), it would be more difficult for local housing markets to fill the temporary housing needs due to the more limited availability of temporary housing in close proximity to construction work sites. Construction workers in these areas likely would drive further to find housing in nearby small towns or rely more heavily on RV parks and campgrounds.

Caution should be taken in relying too heavily on housing data from the year 2000 census as a basis for analysis, particularly in the areas along the proposed pipeline route where the cumulative impacts of the energy boom has heavily impacted the region, and the housing situation likely has changed significantly in the past six years. Housing values, rents, and camping rates have risen dramatically in the region in recent years, particularly along the I-80 corridor through Wyoming and in Larimer and Weld counties in Colorado. It is likely that many of the more rural areas and/or those areas further from major interstate highways (e.g., areas along Spread 4 and some of Spread 5) have not seen the investment in new construction of rental units and hotels/motels necessary to accommodate the multiple pipeline construction crews working in the area because the demand for such accommodations is seen as short-term; once the energy boom is over, the demand for such facilities would drop significantly.

Other construction-related impacts on local services would include increased demand for emergency services and medical care, local police assistance during construction at road crossings to facilitate traffic flow, and permits for vehicle load and width limits. In general, the degree of impact on local services would vary from community-to-community, depending on the number of non-local workers and accompanying family members that temporarily reside in each community, the duration of their stay, and the size of the community. Although these factors are too indeterminate and variable to accurately predict the magnitude of impact, the effects would be short-term.

In the more remote locations along the proposed pipeline route, such as southern Wyoming and northern Colorado, where the nearest trauma center may be as far as 30 to 50 miles away, response times to highway or construction-related accidents could be lengthy given communication, dispatch, and travel time considerations. Overland Pass has developed an on-site ERP to identify emergency response personnel and the logical sequence of actions to be taken in the event of an emergency during construction and operation of the proposed pipeline project. Overland Pass has committed to working with the local law enforcement, fire departments, and emergency medical services to coordinate effective emergency response.

Additional Mitigation

No mitigation is proposed based on understanding of current conditions.

Conclusion

There would be a temporary increase in local housing demand due to the construction of the project. Effects would be localized as construction crews moved along the length of each construction spread.

Operation Phase

Issues

- Increased demand on local infrastructure during operations.

Analysis

Overland Pass estimates that 5 to 20 permanent employees would be required to oversee the operation and maintenance of the pipeline, including the pumping stations. These employees most likely would be non-local, as they would have specialized responsibilities or have current employment with Overland Pass. No additional personnel would be hired to operate and maintain the pumping stations as these facilities would be constructed to operate automatically. Any specific operation and maintenance task that could not be completed by the existing staff would be completed on a contractual and as-need basis.

The limited number of permanent employees associated with the proposed project would have little or no impact on the long-term housing market and negligible long-term impacts on public services.

Additional Mitigation

No additional mitigation was identified.

Conclusion

No impacts to local infrastructure, including housing, are anticipated during operations due to the small number of permanent employees needed to operate the pipeline.

4.11.1.3 Fiscal Relationships

Construction Phase

Issues

- Short-term fiscal benefits (local purchases and sales taxes).
- Long-term fiscal benefits (payroll taxes).

Analysis

Taxes that may apply, other than property taxes levied by various state, county, or local taxing jurisdictions, would include taxes on gross receipts from the sales of goods and services. These taxes and fees vary by region or locality and would be received only during the construction period (5 to 6 months). Additionally, Overland Pass would make local materials purchases, and pay sales tax for the lease and/or rental of office space, construction equipment, and the storage space for construction equipment.

Construction field offices would include, but not be limited to, the four ROW offices located in Green River and Cheyenne, Wyoming; Sterling, Colorado; and Hays, Kansas. Each ROW office would employ between 5 and 10 persons and operate until the end of the project.

Overland Pass estimates that local purchases made by personnel associated with the construction of the project primarily would include consumables, fuel, and miscellaneous construction-related materials (e.g., office supplies). The costs estimated for the entire project related to materials would be:

- Fuel costs (diesel fuel and gasoline for equipment):
  - Diesel fuel = $5.2 million
  - Gasoline = $1.7 million
- Miscellaneous lumber, consumables, and office supplies = $12.2 million

Construction personnel would be lodged locally during construction of the project. Based on the estimated workforce and duration of the construction period, Overland Pass estimates that approximately $12.2 million would be spent locally on lodging, including RV parks, and food, including restaurants (NRG 2006).

Payroll taxes also would be collected from the workers employed on the project. Overland Pass anticipates that total payroll for temporary employees on the project would be $43.3 million (approximately $17.6 million in Wyoming, $10.4 million in Colorado, and $15.3 million in Kansas). This would temporarily increase the tax revenue for the states; however, on a state-wide basis, the increase is anticipated to be minimal. Payroll taxes from the permanent employees would comparatively have no effect on state, county, or local tax revenues.

Additional Mitigation

No additional mitigation was identified.

Conclusion

The construction of the project would provide monetary benefits to local economies through employment, local purchases, lodging, payrolls, and sales taxes.

Operation Phase

Issues

- Long-term fiscal benefits (property taxes).

Analysis

Overland Pass would be required to pay property and ad valorem[1] taxes to the state governments of Wyoming, Colorado, and Kansas. The states would then distribute those payments to counties based upon the number of miles crossed by the proposed pipeline route in each county. For the first year of operation, Overland Pass estimates that $10 million ($1.5 million in Wyoming, $990,000 in Colorado, and $7.5 million in Kansas) would be generated in property and ad valorem local taxes[2].

Additional Mitigation

No additional mitigation was identified.

Conclusion

Operation of the Overland Pass Pipeline would result in long-term fiscal benefits totaling $10 million in the first year of operation.

4.11.1.4 Environmental Justice

Construction Phase

Issues

- Potential for disproportionate project effects on low-income or minority populations.

Analysis

Based on a review of the minority population and income status of communities crossed by and in the proximity of the proposed pipeline route, it has been determined that Green River, Rawlins, Laramie, and Little America, Wyoming, have the most significantly high minority populations on the proposed pipeline route. The minority populations of concern in Green River, Rawlins, and Little America are Hispanic. The Hispanic populations account for 1,204 people in Green River (10.2 percent of the total population) and 1,793 people in Rawlins (21.0 percent of the total population). The total population of Little America, Wyoming, is significantly smaller than these other two cities (only 56 people), but 25 of these (or 44.6 percent) are Hispanic. The minority population of concern in Laramie is Asian or Pacific Islander with 2.0 percent of the total population or 544 out of a total population of 27,204. All other minority populations identified along the proposed pipeline route based on the percentage of the population when compared to the population in the state, where not significant when raw numbers were considered. For example, Eckley, Colorado, was identified as having a Native American minority population 1.5 times greater than that of the surrounding area (the State of Colorado); however, when looking at the overall population, this percentage only accounts for 5 people in a total population of 278.

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[1] Ad Valorem and Property Taxes are synonyms and can be used interchangeably. Ad Valorem is Latin meaning "According To Value" which is the basis of property tax calculations. An Ad Valorem tax is based on the principle that the amount of tax paid is determined by the fair market value of the Real and Personal Property owned. This valuation is performed by state or local (county) government officials, depending on the type of entity being taxed. The tax collection process is performed on the local (county) level.

[2] Colorado construction work in progress is 100 percent tax exempt until the project becomes operational. Materials, supplies and inventory are granted a permanent 100 percent property tax exempt status.

Many of the communities crossed or in the proximity of the proposed pipeline route have been identified as having low income populations when compared to the percent of families below the poverty level in the respective state, particularly in Colorado (all 3 communities) and Kansas (8 of 10 communities). For each of the low income communities in Colorado and Kansas, the median family income is at least $10,000 less than that of their respective states ($55,883 for Colorado and $49,624 for Kansas). Conversely, the median family incomes in most of the communities crossed by or in the proximity of the proposed pipeline route in Wyoming are very near (within $4,000) or above the median family income of the state ($45,685). The one community in Wyoming where this is not the case is Little America which has a median family income of only $18,750, but the percent of the population below the poverty level for this community is 0 percent according to the 2000 Census statistics.

Additional Mitigation

None proposed based on understanding of current conditions.

Conclusion

Although several of the counties that would be affected by the project have higher percentages of minorities and higher poverty levels than the states in which they are located, the potential adverse impacts that could be associated with construction of the pipeline would not disproportionately affect minorities or those living below the poverty level. The proposed project would be expected to create economic benefits for local communities, regardless of race, by generating employment opportunities and local expenditures by workers. Completion of the project also would result in an increase of state and local property tax revenues that would benefit local communities.

Operation Phase

Issues

- Issues are the same as construction.

Analysis

No additional analysis necessary.

Additional Mitigation

No additional mitigation was identified.

Conclusion

The operation of the pipeline would not disproportionally affect areas containing minorities or those living below the poverty level.

4.11.2 No Action Alternative

Should the No Action Alternative be selected for this project, Overland Pass would not need to acquire pipeline ROW easements. Thus, landowners would not receive monetary compensation for the conveyance of those easements. Additionally, there would be no potential for damage to property during construction, no loss of use of land during construction, and no potential for loss of renewable and nonrenewable or other resources due to the construction of the proposed pipeline.

Under the No Action Alternative, there would be no influx of approximately 600 construction personnel. Therefore, there would be no increase in the demand for housing or emergency police and/or medical services. Additionally, there would be no impact on local traffic during construction.

Should the No Action Alternative be selected, there would be no increase in short- or long-term fiscal gains by states, counties, and local governments from the payment of property taxes, payroll taxes, or taxes on gross receipts from the sales of goods and services. Minimally this would include the loss of approximately:

- $10 million or more annually in property taxes ($1.5 million in Wyoming, $990,000 in Colorado, and $7.5 million in Kansas).
- $43.3 million in payroll taxes ($17.6 million in Wyoming, $10.4 million in Colorado, and $15.3 million in Kansas).
- $19.1 million in sales (and associated sales taxes) of materials and supplies during construction (miscellaneous lumber, consumables, and office supplies).
- $12.2 million (and associated taxes) on lodging, including RV parks, and food, including restaurants.

Under the No Action Alternative, there would be no impact on minority or low-income populations in communities along the proposed pipeline route.

4.11.3 Southern Energy Corridor – Copper Ridge Bypass Alternative

The Southern Energy Corridor – Copper Ridge Bypass Alternative would direct the pipeline route in an area of Sweetwater County, Wyoming, that does not currently cross or is within the proximity of any communities. Consequently, any socioeconomic impacts for the Proposed Action with the Southern Energy Corridor – Copper Ridge Bypass Alternative would be the same as those for the Proposed Action.

4.12 Public Safety

4.12.1 Proposed Action

4.12.1.1 Hazardous Materials and Wastes

<u>**Construction Phase**</u>

<u>Issues</u>

- Storage and handling of hazardous materials.
- Previously contaminated sites.

<u>Analysis</u>

Overland Pass would dispose of construction wastes in accordance with Overland Pass' SPCC Plan (Overland Pass 2006). Construction debris would not be placed in or adjacent to waterways and construction trash would be removed from the ROW each day. Overland Pass would comply with applicable state and local waste disposal, sanitary sewer, or septic system regulations.

Soil contamination along the proposed pipeline route may result from at least two sources: material spills during construction and trench excavation through pre-existing contaminated areas. A variety of potentially hazardous chemicals associated with equipment operation, welding, and coating of pipe would be used during construction. Impacts from spills would typically be minor because of the low frequency and volumes of these occurrences.

Pipeline construction would necessitate the storage and use of vehicle and equipment fuels, lubricants, and hazardous materials. Overland Pass' SPCC Plan addresses procedures to ensure the proper handling and storage of these materials. The plan also addresses inadvertent spills resulting from construction of the pipeline and lists federal and state emergency notification personnel that would be contacted in the unlikely event the project encounters previously unidentified contamination. Should a spill occur, Overland Pass would clean it up in accordance with its SPCC Plan.

The proposed pipeline would not intercept any known areas of soil or groundwater contamination. A review of USEPA Region 8 Superfund Site Status Summaries for Wyoming and Colorado and Region 7 Site Status Summaries for Kansas as well as the CERCLIS database shows no Superfund sites intersected by the proposed pipeline route (USEPA 2006b). One site listed in the CERCLIS Database, the Pole Mountain Former Target and Maneuver Area, is currently managed by the USFS as a recreational area and is located approximately 350 feet from the proposed centerline at approximate RP 294.6. This site is not listed on the NPL, but could potentially contain unexploded munitions. According to USFS personnel the project should not impact the live munitions associated with the site on the south side of I-80, as the actual firing range was sited several miles to the north east along Highway 30 (north of I-80).

Overland Pass would cross the impaired waterbodies located in Wyoming and Kansas (**Table 3.5-3**) using the conventional open-cut method and adhering to the measures contained in its *Construction, Reclamation, and Revegetation Plan* (**Appendix B**). These measures include, but are not limited to, installing and maintaining sediment barriers to prevent silt-laden water from entering wetlands and waterbodies, restoring original contours, and revegetating disturbed areas. Overland Pass would cross the South Platte River, an impaired waterbody, using the HDD method.

The proposed project could cross areas where groundwater quality has been impacted, but which were not identified in the regulatory review or which are not otherwise known. Because excavations associated with the project would be generally less than 8 feet deep, the potential to encounter groundwater in the pipeline trench is low, except where the pipeline crosses or approaches surface water bodies. Therefore, the potential to encounter pre-existing contaminated groundwater is low.

If contaminated or suspect soils (e.g., hydrocarbon contamination) were identified during trenching operations, Overland Pass would suspend work in the area of the suspected contamination until the type and extent of the contamination was determined. The type and extent of contamination, the responsible party, and local, state, and federal regulations would determine the appropriate cleanup method(s) for these areas.

Additional Mitigation

No additional mitigation was identified.

Conclusion

Contamination from spills or leaks of fuels, lubricants, coolants, and solvents from construction equipment could occur, but the impacts typically would be minor due to the low frequency and volumes of these occurrences. There are currently no known contaminated sites crossed by the proposed pipeline route or affected by aboveground facilities. If spills or unanticipated contaminated soils were encountered, Overland Pass would address the issue by adhering to the procedures identified in its SPCC Plan.

Operation Phase

Issues

- Potential for pipeline leak, fire, or explosion.

Analysis

Potential for Leaks

The transportation of NGL by pipeline involves some risk to the public in the event of an accident and subsequent release of NGLs. NGL consists primarily of ethane, butane, isobutene, and propane. These compounds are liquid when pressurized, but would immediately volatize if released from the pipeline. These compounds are relatively non-toxic, but are classified as simple asphyxiates, possessing a slight inhalation hazard. If breathed in high concentration, oxygen deficiency can result in serious injury or death. NGLs are highly flammable but require an ignition source to ignite. NGLs released into the environment would rapidly disperse in the air.

The USDOT classifies NGL as a hazardous liquid. The pipeline and aboveground facilities associated with the pipeline must be designed, constructed, operated, and maintained in accordance with the USDOT Minimum Federal Safety Standards in 49 CFR Part 195. The regulations are intended to ensure adequate protection for the public and to prevent pipeline and facility accidents and failures. Part 195 specifies material selection and qualification, minimum design requirements, and protection from internal, external, and atmospheric corrosion.

The USDOT Minimum Federal Safety Standards in 49 CFR Part 195 are intended to ensure adequate protection for the public and to prevent hazardous liquid pipeline and associated facility accidents and failures. Part 195 specifies material selection and qualification, minimum design requirements, and protection from internal, external, and atmospheric corrosion. Overland Pass would design, construct, and operate the pipeline in accordance to federal regulations. Important features to ensure the safe operation of the pipeline include:

- Hydrostatic testing verify the pipeline’s integrity prior to operations;
- Corrosion protection by using high integrity FBE coating and cathodic protection;
- Internal inspection of the pipe using “smart pigs” designed to detect irregularities on the internal and external surfaces of the pipe;

- SCADA system to continuously monitor the pipeline and the pressure of its contents;
- Participation in state “one call” programs;
- Use of remotely activated valves at key locations; and
- Thicker wall pipe used in residential areas.

To enhance public safety, Overland Pass has committed to installing heavier walled pipe at locations where existing cities and multiple homes are within 0.5 mile of the proposed pipeline (**Table 4.12-1**). The heavy-wall pipe section would extend 0.5 mile beyond the populated area.

Table 4.12-1 Locations Where Heavier Wall Pipe Would Be Installed

Location	RP	Distance
Storage / industrial site near Wamsutter, Wyoming	RP 138.2 to RP 139.2	1.0 mile
Laramie, Wyoming Area	RP 275.2 to RP 277.3	2.1 miles
Laramie, Wyoming Area	RP 281.0 end of highway crossing to RP 282.0	1.0 mile
Raymer, Colorado	RP 386.6 to RP 387.9	1.3 miles
WaKeeney, Kansas	RP 623.8 to RP 626.6	2.8 miles
Susank, Kansas	RP 692.0 to RP 693.0	1.0 mile
Mitchell, Kansas	RP 733.9 to RP 735.0	1.1 miles

Upon obtaining the necessary permits for its project, finalizing the proposed pipeline route, and prior to construction, Overland Pass would determine if its proposed pipeline could affect these locations. If appropriate, these locations would be incorporated into an Integrity Management Plan specific to Overland Pass as required by the USDOT to ensure pipeline safety.

While pipelines are one of the safest means of transporting large volumes of NGLs (Section 2.8.4.1), pipeline accidents can occur. Based on historical accident data gathered by the OPS (2006), leading cause of pipeline incidents was caused by outside forces, primarily the damage caused by mechanical equipment, such as bulldozers and backhoes. To minimize the hazards posed by outside forces, the pipeline would be constructed in rural areas and Overland Pass would participate in the “one call” system. Although some localized areas of geological instability (e.g., landslides) occur along the proposed pipeline route, modern pipelines are fairly robust to these types of stressors and geological hazards are not expected to pose a major threat to the pipeline. The pipeline would routinely be inspected and if outside force damage were suspected (whether through outside force or ground movement), internal inspection tools (i.e., “geo pigs” and “smart pigs”) would be used to verify the pipeline’s integrity.

Corrosion is another major factor that contributes to pipeline leaks. To minimize corrosion, the pipeline would be constructed with FBE coated pipe and cathodic protection would be installed. As required by federal regulations, the pipeline ROW would be routinely inspected with internal inspection tools to identify anomalies such as dents and scrapes caused by outside forces, deformities caused by earth movement, and internal and external corrosion. Overland Pass would ensure pipeline integrity and public safety by repairing pipeline damage as required by federal regulations.

Overland Pass would use SCADA and other monitoring systems to continuously monitor the pipeline for indications of abnormal events. In the unlikely event of a pipeline accident, Overland Pass would be able to remotely activate its motorized block valves, thereby isolating the affected segment within minutes of detection. Overland Pass would have local personnel available to respond immediately to an emergency and expects that these first responders would be on-site within a 1-hour timeframe.

Prior to operating the pipeline, Overland Pass would develop an ERP that identifies emergency personnel and the logical sequence of actions that would be taken in the event of an emergency involving the Overland Pass system facilities. The ERP would establish emergency shutdown procedures, communication coordination, and clean-up responsibility to minimize hazards that could result from a NGL pipeline emergency, such as liquid leaks, explosions, and fires. Key elements of the plan would include procedures for:

- Receiving, identifying, and classifying emergency events, gas leakage, fires, explosions, and natural disasters;
- Establishing and maintaining communications with local fire, police, and public officials, and coordinating emergency response;
- Eemergency shutdown of systems and safe restoration of service;
- Making personnel, equipment, tools, and materials available at the scene of an emergency; and
- Protecting people first and then property, and making them safe from actual or potential hazards.

The ERP would include incident and emergency notification lists; emergency communication procedures; emergency preparedness, such as training topics; and emergency response procedures associated with natural and construction-related hazards.

As discussed in **Appendix J**, release of NGLs into the environment does not pose a major threat to water quality or soil contamination. Rather the greatest hazard would be the danger of fires and explosions. Overland Pass wild develop an *Integrity Management Plan* to minimize environmental impacts including those specific to HCAs occurring within the proposed project area.

Fire, Explosion, Injuries, and Fatalities

NGLs are flammable liquids. While the probability of an accident is low, there is the potential for a fire. Based on OPS historical data (2005), less than 20 percent of NGL pipeline accidents have resulted in fires and 7 percent have resulted in explosions. Fires and explosions could result in property damage, injuries, and fatalities. The OPS data show an overall decreasing trend in the total number of accidents related to hazardous liquid pipelines since 1990 (OPS 2005).

As part of its safety program, Overland Pass would consult with local responders regarding the potential hazards posed by the NGL pipeline; however, NGLs do not pose a unique fire hazard and would not require specialized training. If a fire or explosion were to occur, Overland Pass' local emergency responders and local fire departments likely would be among the first to respond. In many cases, firefighters may elect to allow the fire to extinguish itself, focusing on containment of the fire and protection of nearby property.

Additional Mitigation

No additional mitigation was identified.

Conclusion

Overland Pass would comply with these federal pipeline safety regulations, including 49 CFR Part 195. Compliance with federal pipeline safety regulations would ensure that the Overland Pass pipeline was designed, constructed, operated, and maintained in a safe manner.

The potential for a pipeline incident with the potential for injuries, fires, and explosions along the pipeline would be low. Overland Pass' accident prevention program includes participation in one-call programs and corrosion protection measures. Use of the SCADA system and other monitoring capabilities would help to rapidly identify pipeline problems and minimize the potential for impacts. As required by federal regulations, Overland Pass would finalize their ERP prior to operations. This ERP would define the steps to be taken in the event of a release, so that impacts to humans and the environment would be minimized. Additional mitigation at sensitive resource areas would not be necessary because of the rapid volatilization of NGLs.

4.12.1.2 Emergency Response

Construction Phase

Issues

- Worker safety.

Analysis

The hazards associated with pipeline construction would be typical of that on most construction sites where heavy equipment is operated. Hazards could include driving hazards (including winter conditions and big game collisions), explosives, fires, and natural disasters.

The potential for construction accidents was exemplified by a recent incident in Wyoming. On November 11, 2006, an existing 36-inch natural gas pipeline owned by Western Interstate Company was struck by a bulldozer operated by construction crews building the Kinder Morgan Entrega Natural Gas Pipeline. The incident occurred outside of Cheyenne, Wyoming and the resulting explosion killed one construction worker. The cause of the accident is still under investigation.

Accidents such as this occasionally occur, though most do not result in fatalities. As discussed in Section 4.12.1.1, third-party excavation damage (e.g., the cause of the Entrega pipeline accident) is a leading cause of pipeline incidents. To prevent these types of accidents, pipeline operators participate in accident prevention programs, such as the one call programs, which identifies the location of underground utilities. The ongoing investigation will determine why the Entrega pipeline was struck and whether the one call system was correctly implemented.

To minimize risk to workers, Overland Pass would follow pipeline construction industry standard practices and BMPs to mitigate potential construction-related incidents.

Additional Mitigation

No additional mitigation was identified.

Conclusion

Adherence to Overland Pass' POD, pipeline construction industry standard practices, and BMPs would minimize potential construction-related incidents.

Operation Phase

Issues

- Emergency response to a pipeline leak, fire or explosion.

Analysis

Overland Pass would meet or exceed federal pipeline safety requirements (49 CFR Part 195), and these procedures and programs would increase public safety, maintain the integrity of the pipeline, and minimize the potential pipeline incidents related to third-party encroachments.

As discussed above, Overland Pass' ERP establishes initial written emergency shutdown procedures, communication coordination, and clean-up responsibility to minimize hazards, such as liquid leaks, explosions, and fires. Overland Pass would provide the appropriate training to local emergency service personnel before the pipeline is placed in service.

Once the pipeline is constructed and pipeline operations commence, Overland Pass intends to re-define its organizational management structure outlined in the ERP and amend the plan so that it meets the minimum federal safety requirements.

Additional Mitigation

No additional mitigation is identified.

Conclusion

Overland Pass anticipates a 1-hour response time in most instances with the assistance of local emergency response teams in the surrounding communities. Releases would be quickly contained by sectionalized block valves. NGLs would quickly evaporate and dissipate into the atmosphere; however, any residual material would be cleaned up and the area remediated as soon as possible. The final ERP would identify the steps to be taken to protect health, property, and the environment.

4.12.2 No Action Alternative

If BLM rejects the project as proposed, the Proposed Action would not be constructed. Impacts to public safety would continue at current levels.

Given the oil and gas development in the region, NGLs would still need to be transported from the region. Other pipelines that would transport NGLs to the Conway, Kansas, region would likely be of similar or greater length and, consequently, would have similar or greater impacts on public safety. Alternative transport methods (e.g., trucking or rail) would result in substantially greater impacts to public safety (Section 2.8.4).

4.12.3 Southern Energy Corridor – Copper Ridge Bypass Alternative

Impacts to public safety associated with this alternative would not be significantly different than for the Proposed Action. No HCAs have been identified along the Southern Energy Corridor – Copper Ridge Bypass Alternative.

5.0 Cumulative

5.1 Cumulative Impacts

NEPA requires federal agencies to consider the cumulative impacts of proposals under their review. Cumulative impacts are defined in the CEQ regulations 40 CFR 1508.7 as "…the impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable actions regardless of what agency… or person undertakes such other actions." These actions include current and projected area development (e.g., oil and gas); management activities and authorizations on public lands (e.g., range conversion and forestry programs); land use trends; and applicable industrial/infrastructure components (e.g., utility corridors). Although the individual impacts of each separate project might not be significant, the additive effects of multiple projects could be.

The primary cumulative impact study area consists of an existing utility corridor that the Overland Pass pipeline would traverse throughout its length. The widest portion of this corridor (approximately 2 miles wide) extends from Granger, Wyoming (RP 30) to the Wyoming/Colorado border (RP 330). Up to eight existing natural gas, refined products, and NGL pipelines occupy this corridor. Other linear facilities located within or adjacent to this large pipeline corridor include I-80, the Union Pacific Transcontinental Railroad, several fiber optic cables, and low voltage electrical transmission lines. Also included in this cumulative study area are pipeline projects approved or under construction (Rockies Express West, Enterprise Western Expansion). Nearby communities in Wyoming served by I-80 include Wamsutter, Rawlins, Laramie, and Cheyenne. Oil and gas well field developments are located within this major east-west utility corridor in the Great Divide Basin (vicinity of Wamsutter).

The reasonably foreseeable pipeline projects are those currently being reviewed under NEPA (Overthrust Wamsutter Pipeline Project, Pinedale Anticline Pipeline Supplemental Environmental Impact Statement [SEIS], Kanda Lateral), and oil and gas field and mining development applications and Environmental Assessments (EAs) submitted to the BLM.

Projects and activities included in this analysis generally are those located within the same counties directly affected by construction of the Overland Pass. Most effects of more distant projects are not assessed because their impact generally would be localized and would not significantly contribute to cumulative impact in the proposed project area. However, the air quality study area consists of the regional air sheds. **Table 5.1-1** identifies existing, under construction, or proposed projects that were evaluated in the Overland Pass cumulative analysis.

Figure 5.1-1 is a schematic drawing illustrating the number of existing gas and liquids pipelines included in the existing utility corridor where the Overland Pass would be located, as well as sensitive resources encountered along the entire route. The majority of the existing pipelines in this utility corridor were constructed in the last 30 years, and the revegetation of the ROW has varied with climate and soil type. From Rawlins eastward, grasslands largely have recovered to former cover; the shrub-scrublands consisting of saltbush and Wyoming sagebrush from Rawlins, Wyoming, west to Opal, Wyoming, have only partially recovered former shrub cover and height. Recent or proposed pipeline projects, such as the Overthrust Wamsutter Expansion Pipeline, and Enterprise Western Expansion, would be only partially revegetated by the time Overland Pass proposes to construct its pipeline.

For this analysis, cumulative impacts were based on existing (through 2006) and foreseeable project surface disturbances that occur within 1 mile of the proposed Overland Pass pipeline route. **Table 5.1-2** provides an estimate of the utility use surface area for the projects considered in this analysis. It is estimated that the total cumulative utility surface use area for this project exceeds 200 square miles over the 759.9-mile Proposed Action length. The Overland Pass pipeline would contribute approximately 5 percent of this total, and other new pipeline projects from 1 to 2 percent. Surface disturbance widths of 75 feet were assumed for the small diameter pipeline projects (Overland Pass, Enterprise Western Expansion), and 125 feet for the large diameter

Rockies Express West pipeline. Older existing pipelines and the I-80 corridor which have largely revegetated ROWs are discussed within cumulative impacts as appropriate (e.g., habitat fragmentation).

Table 5.1-1 Projects with Potential Cumulative Impacts on Resources within the General Area of the Proposed Overland Pass Pipeline

Project /Activity	Project Location (State)	Counties Where Project Coincides with the Proposed Overland Pass Pipeline	Description	Anticipated Date of Construction/ Project Status
Multiple existing natural gas, NGLs, and petroleum products pipelines; fiber optic cables; ancillary aboveground facilities (compressor and pump stations).	Wyoming, Colorado, Kansas	All counties crossed by the project.	In Wyoming, multiple pipelines (up to 8) are located in a wide utility corridor that extends from RP 27 to RP 330. The Overland Pass pipeline is not located in this utility corridor between RP 54 and RP 103, and from RP 137 to RP 163. From RP 330, the Overland Pass pipeline parallels the Southern Star natural gas pipeline for the majority of the length to the terminus at RP 749.	Existing, constructed prior to 2006
Rockies Express/ Entrega Project.	Wyoming, Colorado	Wyoming: Sweetwater, Carbon, Albany, Laramie; Colorado: Weld	328 miles of 42-inch-diameter natural gas pipeline. The Overland Pass pipeline parallels the Rockies Express/Entrega Pipeline for 164 miles from RP 166 east of Wamsutter to the Colorado/Wyoming border (RP 330). The project includes a new compressor station at Wamsutter, Wyoming. The Echo Springs lateral that feeds the Entrega Pipeline near Continental Divide would cross over the Overland Pass pipeline north of I-80.	Construction underway; in-service by 2007
Enterprise Western Expansion Project	Wyoming	Sweetwater	50,000 bpd expansion of existing NGL pipeline system, consisting of 202 miles of looped pipeline segments and pump station upgrades. Three loop segments would be located adjacent to the Overland Pass pipeline ROW. Total length parallel to Overland Pass pipeline is approximately 20 miles.	ROD issued in 2005; under construction
Overthrust Wamsutter Pipeline (evaluated as part of the Rockies Express West Project).	Wyoming	Sweetwater	77 miles of 36-inch-diameter natural gas pipeline between Green River (Kanda) and Wamsutter, includes 2 compressor stations. This project (among others) would convey gas to the Rockies Express/Entrega Pipeline at Wamsutter.	Draft EIS released in November 2006
El Paso Kanda Lateral Project	Utah, Wyoming	Sweetwater	128 miles of 30-inch natural gas pipeline between the Uinta Basin, Utah, and Kanda, Wyoming. The Kanda Lateral would cross over the Overland Pass pipeline at the Kanda hub (RP 63).	Draft EA in preparation; construction expected in late 2007
Questar Rendevous Pipeline Project	Wyoming	Sweetwater	Approximately 103 miles of 30-inch pipeline from the Pinedale Anticline to the vicinity of Granger, Wyoming. This pipeline would cross over the Overland Pass pipeline at RP 28.	Included in the Pinedale Anticline Supplemental EIS being prepared by the Pinedale BLM office
Oil and Gas Development	Wyoming	Sweetwater	Vermillion Basin Area; up to 56 gas wells southwest of Bitter Creek.	Drilling in progress
		Sweetwater	Pappy Draw Exploratory Coal Bed Methane (CBM) Project; drill 20 exploratory wells in BLM's Pappy Draw Unit Area.	BLM EA in progress
		Carbon	Atlantic Rim Natural Gas Development Project; drill 2,200 wells over 20 years in southern Carbon County.	BLM Final EIS in progress
		Carbon	Seminoe Road Gas Development Project; drill and operate 1,240 CBM wells over a 30- to 40-year project life; includes 16-inch diameter gas transmission pipeline.	BLM Final EIS in progress
		Sweetwater	Continental Divide – Creston Project: drill and develop 1,250 natural gas wells approximately 40 miles southwest of Rawlins, Wyoming.	BLM NOI published March 2006
		Sweetwater, Uinta, and Lincoln	Moxa Arch Area Infill Gas Development Project: infill drill 1,860 natural gas wells.	BLM Draft EIS in progress

Table 5.1-1 Projects with Potential Cumulative Impacts on Resources within the General Area of the Proposed Overland Pass Pipeline

Project /Activity	Project Location (State)	Counties Where Project Coincides with the Proposed Overland Pass Pipeline	Description	Anticipated Date of Construction/ Project Status
		Carbon	Brown Cow II POD: drill and develop 12 coal bed natural gas (CBNG) wells in Atlantic Rim Natural Gas Development project area, approximately 7.5 miles north of Baggs.	FONSI/DR issued September 2006
		Sweetwater	Hiawatha Field Project: drill up to 4,207 natural gas wells.	NOI issued in September 2006
Mining	Wyoming	Sweetwater	Pit 14 (Coal) Lease: addition of maintenance tract adjacent to the existing Black Butte Mine.	Final EIS issued November 2006

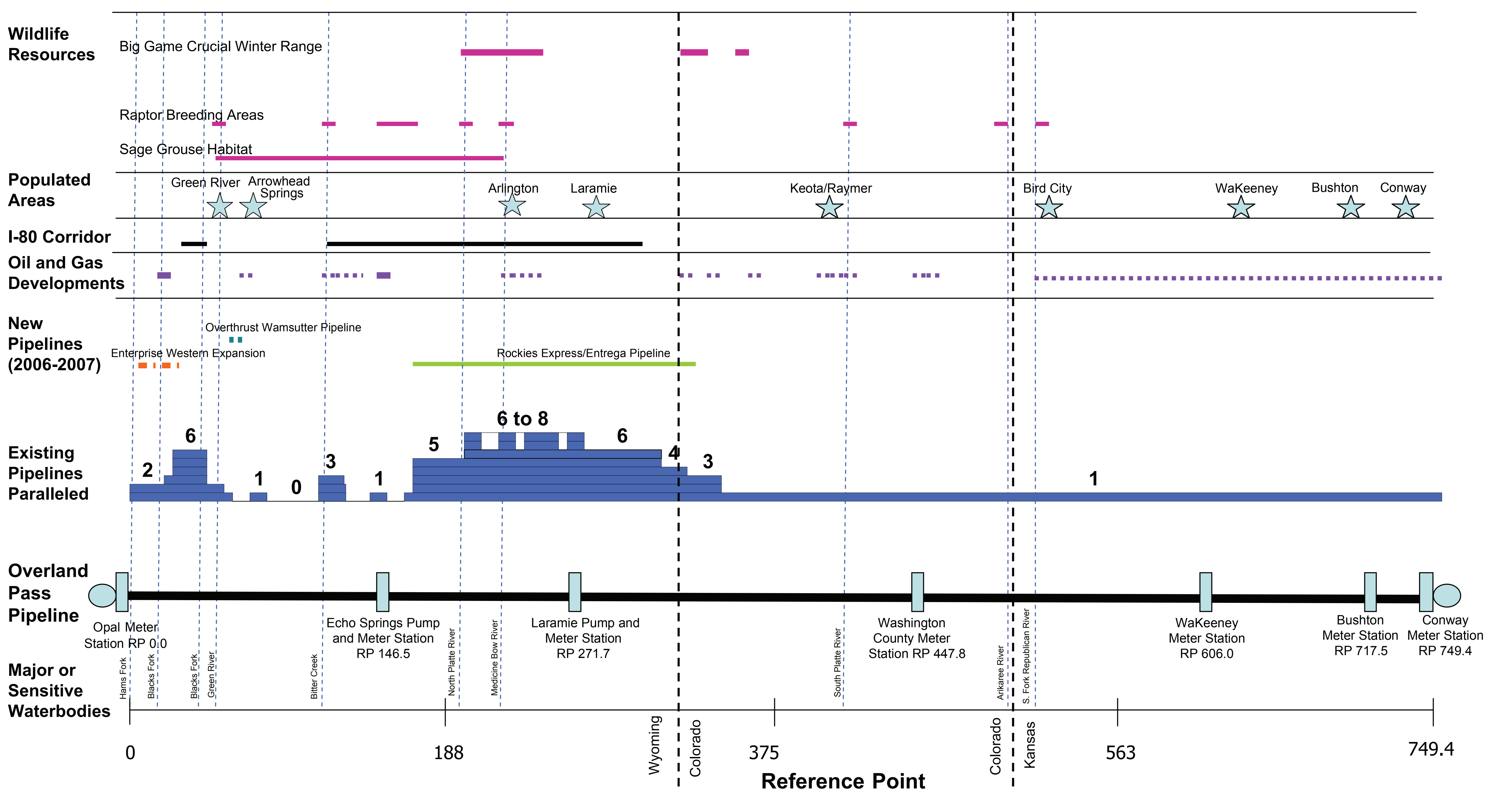
Table 5.1-2 Estimated Cumulative Utility Use Area within the Existing Utility Corridor Occupied by the Proposed Overland Pass Pipeline

Overland Pass RP Begin	Overland Pass RP End	Miles	Existing Pipelines (Estimated)	Existing[1] Estimated Corridor Width (feet)	Existing Utility Use Surface Area (square mile)	Overthrust Wamsutter Pipeline Surface Area (square mile)	Overland Pass[3] Utility Use Surface Area (square mile)	Enterprise[3] Utility Use Surface Area (square mile)	Total Utility Use Surface Area (square mile)
0	9	9	0 to 2	100	0.2		0.1		0.3
9	27	18	3	300	1.5		0.3	0.1	1.9
27	44	17	6	600	5.0		0.2		5.2
44	50	6	6	300	2.8		0.1		2.9
50	54	4	2	150	1.5		0.1	0.1	1.7
54	62	8	1	75	0.9		0.1		1.0
62	68	6	0	0	0.0	0.1	0.1		0.2
68	76	8	1	75	1.1		0.1		1.2
76	103	27	0	0	0.0		0.4		0.4
103	120	17	3	500	11.4		0.2	0.1	11.7
120	137	17	0	500	13.0		0.2		13.2
137	148	11	1	75	2.1		0.2		2.3
148	159	11	0	0	0.0		0.2		0.2
159	163	4	1	75	2.3		0.1		2.4
163	196	33	5	600	22.3	0.7	0.5		23.5
196	236	40	6 to 8	500	22.3	0.9	0.6		23.9
236	269	33	6 to 8	700	35.7	0.8	0.5		36.9
269	294	25	6	400	22.3	0.6	0.4		23.2
294	307	13	6	500	29.1	0.3	0.2		29.6
307	323	16	4	300	18.4	0.4	0.2		19.0
323	336	13	3	300	19.1		0.2		19.3
336	749	413	1	75	10.6		5.9		16.5
Total		**749**			**221.5**	**3.8**	**10.6**	**0.3**	**236.3**

[1]The existing utility corridor includes pipelines, pump and compressor stations, fiber optic lines, Interstate Highways, and railroads. The overall corridor width is the sum of the widths of major linear utilities within approximately 1 mile of the proposed Overland Pass pipeline centerline. Secondary roads and highways are not included in this estimate.

[2]Overthrust Wamsutter Pipeline. The utility use area is based on a surface disturbance width of 125 feet.

[3]Overland Pass, Enterprise Western Expansion Pipelines. The utility use surface area for each project is based on a surface disturbance width of 75 feet.



Overland Pass Pipeline Project

Figure 5.1-1
Utility Corridor Relationships with Sensitive Resources

5.2 Cumulative Impacts to Resources

5.2.1 Climate and Air Quality

Cumulative fugitive dust (particulate) increases may occur where Overland Pass and Overthrust Wamsutter are using the same access road system to construct their projects (Section 5.2.7). Both projects would follow state and local requirements for dust control on roads and excavated surfaces. As noted previously, the two projects could overlap very briefly in the same work area.

Overland Pass proposes to use electrical pumps at two proposed locations in Wyoming. As a consequence, Overland Pass would not directly contribute to hydrocarbon emissions from its facilities. Indirectly, the electricity used by Overland Pass would be produced by coal-fired and natural gas-fired power plants within the region. It is anticipated that demands for project electrical power would be met by existing and new generating capacity. The specific locations of new generating capacity presently are not known.

The Echo Springs and Laramie pump stations would be located in rural locations, and 1 mile or more from any residential locations. Each pump station would be sited at a new location, and therefore would not interact cumulatively with other nearby industrial sources.

5.2.2 Geology

5.2.2.1 Mineral Resources

Nearly all of the proposed pipeline route, and those pipelines that parallel the proposed pipeline route, cross oil and gas producing reservoirs. Some of the existing pipelines overlie trona mineral and coal deposits. Other mineral sources crossed by the pipelines include gravel, uranium in the Medicine Bow Mountains, and copper, gypsum, carbonates, and granite along the flanks of the Laramie Range (BLM 2002b). Although the presence of facilities within the corridor that would be occupied by the existing and proposed pipelines would preclude extraction of gravel and other minerals, oil and gas production could be accomplished through well pad offsets and directional drilling. In most cases, the Overland Pass pipeline generally is adjacent to existing pipelines (e.g., Rockies Express West) in Wyoming. Where the proposed pipeline route is not adjacent to an existing pipeline or other utilities, it is due to routing or environmental concerns (e.g., steep terrain, cultural resource site) or realigned to join another ROW. The amount of near-surface coal deposits precluded from future development due to the proposed pipeline route adjacent represents a very small increase in the cumulative effects. In fact, a recent study of the coal basins underlying the Rawlins Field Office jurisdictional area (BLM 2002b) indicates that coal mining in this area is at a distinct economic disadvantage as compared to the Powder River Basin, and that no new mines are expected to open to exploit these coal deposits in the foreseeable future.

5.2.2.2 Geologic Hazards

Regional seismic hazards, including earthquake ground shaking and subsidence and fault movement sufficient to cause damage, are very unlikely (see Section 3.3). Several existing pipelines within the Overland Pass corridor cross faults but none of these faults are active. Consequently, cumulative impacts related to fault movement and seismic activity are not anticipated.

5.2.2.3 Paleontological Resources

The proposed pipeline route would cross approximately 54 miles of BLM Condition 1 geologic units on BLM lands in western Wyoming, and 18 miles on the PNG administered by the USFS in Colorado. Condition 1 is represented by "areas that are known to contain vertebrate fossils or noteworthy occurrences of invertebrate or plant fossils." Construction of the Overland Pass, Enterprise Western Pipeline, and the Overthrust Wamsutter Pipeline would contribute approximately 1.7, 0.3, and 0.4 square miles, respectively, of surface and trench disturbance in Condition 1 units. Pre-construction paleontological surveys have been, or would be completed for approved projects. Trench monitoring would be conducted in areas with high potential for important fossils.

Fossil material would be recovered and recorded from sites that warrant these investigations. Construction of the Overland Pass pipeline would contribute to the cumulative exposure and potential loss of scientifically valuable fossils, but construction monitoring would ensure that new scientific information would be collected and added to the existing body of knowledge.

5.2.3 Soils

The cumulative area of previous soil disturbance within the study area from existing utility projects from Opal, Wyoming, to Conway, Kansas, is approximately 222 square miles (**Table 5.2-1**). Cumulative impacts where this line parallels older utilities would be minimal with the effective implementation of BMPs and mitigations. More recent utility projects may be in the process of rehabilitation. Potential cumulative impacts could occur where these disturbances overlap. These impacts would be highly localized and primarily limited to the time of construction and 3 to 5 years following construction with successful reclamation. Cumulative impact would be minimized, however, with the effective implementation of erosion control and restoration measures.

Some soils on previously re-vegetated ROWs may be re-disturbed by construction on adjacent new pipeline ROWs in the future. Pipeline projects scheduled for 2006 and 2007 construction (Overthrust Wamsutter Pipeline, Enterprise Western Expansion) would disturb 3.8 and 0.3 square miles where these projects parallel the proposed Overland Pass pipeline. The Proposed Action would disturb approximately 10.6 square miles in this utility corridor.

5.2.3.1 Erosion

Potential cumulative erosion impacts could occur where pipeline construction disturbance areas overlap, or are located near each other between RP 0 and RP 329. BMPs for soil management and protection would be applied across all ownerships for these pipeline projects. Revegetation mixtures would be applied that are appropriate to soil conditions and expected future uses (grazing, wildlife habitat). As a consequence, the potential for cumulative erosion increases caused by one or more of these projects is low.

5.2.3.2 Sensitive Soils

The primary sensitive soils cumulative impacts issue is the maintenance of agricultural soil productivity where these soils have been disturbed by multiple pipelines. Based on STATSGO soils data, the project would cross approximately 4.9 miles of hydric soils in Wyoming, 1.1 miles in Colorado, and 1.5 miles in Kansas. These areas generally equate to irrigated pasturelands where shallow water tables have been augmented by seasonal irrigation. The majority of these areas are located in Albany and Laramie counties, Wyoming. The primary cumulative impact issue is to ensure that surface drainage is restored across the proposed Overland Pass construction ROW as well as adjacent pipeline ROWs, and to ensure that soil compaction is relieved in haylands and pasture. The Overland Pass, Overthrust Wamsutter Pipeline, and Enterprise Western Expansion projects have prepared, or would be required to prepare plans to restore and monitor irrigated soils. Application of these plans would ensure that agricultural productivity would be maintained indefinitely.

Soil mixing and compaction could occur on other sensitive soils (shallow, wet, rocky, saline) during construction. Where these pipeline corridors overlap and compaction is not mitigated a reduction in infiltration and runoff could result. These effects would be addressed on a site-specific basis by the various projects and would be minimized by proper implementation of soil protection measures and mitigations for decompaction.

Table 5.2-1 Overland Pass Project Cumulative Impacts for River Crossings, and Streams Containing Fisheries in Wyoming

Crossing/ Method/ Ownership	Associated Parallel Buried Utilities	Issues	Proposed Construction Methods/ Mitigation Measures
Hams Fork River (RP0.9) Open Cut Private	Pipeline 75 feet upstream	• Bank armoring – stream channel modification. • Channel scouring. • Bank stabilization.	• Low flow construction period. • Flow bypass flumes to maintain flow during construction. • Channel floor armoring with rock to reduce scouring risk. • Sand bags to stabilize banks.
Blacks Fork River (RP 18.9) Open Cut Private	4 pipelines - 50 to 125 feet downstream	• Downstream sedimentation on resident fisheries habitat (Water quality classification 2AB). • Bank armoring – stream channel modification. • Channel scouring.	• Low flow construction period. • Flow bypass flumes to maintain flow during construction. • Channel floor armoring with rock to reduce scouring risk. • Rip rap (rock) to stabilize banks.
Blacks Fork River (RP 41.3) Open Cut Private	3 pipelines – 50 to 100 feet downstream.	• Downstream sedimentation on resident fisheries habitat (Water quality classification 2AB). • Existing erosion problem on adjacent ROW downstream; bank instability. • Channel scouring • Bank armoring – stream channel modification.	• Low flow construction period. • Flow bypass flumes to maintain flow during construction. • Spoil storage outside the channel; replace channel sediment with rock to reduce scouring risk. • Rip rap (rock) to stabilize banks.
Green River (RP 59.3) Open Cut Federal - USFS	No parallel utilities within 500 feet of the proposed crossing.	• Downstream sedimentation on game fisheries habitat (Class 1 Fishery). • Migration of Kokanee salmon (spawning period). • Channel scouring that could exceed pipe burial depth (USFS calculations). • Greater pipe burial depth would require greater channel spoil removal, resulting in greater stored spoil volume, and greater in-stream sedimentation.	• Low flow construction period; partially avoid Kokanee salmon migration period. • Flow bypass flumes to maintain flow during construction. • Spoil storage outside the channel; replace channel sediment with rock to reduce scouring risk. • Pull-in pipe section to reduce work time in the channel. Backfill trench with rock (from flume) to provide scour protection.
Bitter Creek (RP 107.2) Open Cut Private	4 pipelines, 1 fiber optic cable within 250 feet downstream of proposed crossing.	• Bank armoring – stream channel modification. • Channel scouring.	• Low flow construction period. • Excavation of trench across channel with backhoes (no flow management devices or channel armoring. • Bank stabilization with rip rap.

Table 5.2-1 Overland Pass Project Cumulative Impacts for River Crossings, and Streams Containing Fisheries in Wyoming

Crossing/ Method/ Ownership	Associated Parallel Buried Utilities	Issues	Proposed Construction Methods/ Mitigation Measures
North Platte River (RP 195.5) Open Cut State of Wyoming – Game and Fish Commission	3 pipelines within 300 feet upstream of the proposed crossing.	• Downstream sedimentation on resident fisheries habitat (Water quality classification 2AB). • Bank armoring – stream channel modification. • Channel scouring.	• Low flow construction period. • Excavation of trench across channel with backhoes timber mats. • Flow maintained with flumes under a 7-foot Portadam. • Spoil storage within the river (downstream). • Pull-in pipe section to reduce construction time within the river. • Bank stabilization with rip rap.
Medicine Bow River (RP 228.1) Open Cut Private	4 pipelines, 2 fiber optic cables from 50 to 300 feet downstream of the proposed crossing.	• Downstream sedimentation on resident fisheries habitat (Water quality classification 2AB). • Unfavorable crossing location (immediately downstream of two actively cutting river bends) because other pipelines are already located in the best crossing locations within this utility corridor. • Extensive bank stabilization required to prevent river from cutting into the permanent ROW.	• Low flow construction period. • Dry crossing – sandbag dams upstream and downstream of trench – single flume to bypass river flow. • Sandbags and rip rap to stabilize banks, especially bend immediately upstream of the ROW.

5.2.4 Water Resources

5.2.4.1 Surface Water

Overland Pass proposes to directionally drill the South Platte River and, consequently, there would be no cumulative sediment increases at this crossing. The proposed pipeline projects would follow the FERC procedures and/or BLM stipulations for open-cut crossing smaller perennial streams and intermittently flowing waterbodies. In most cases, the site-specific erosion control and bank stabilization measures would prevent cumulative sedimentation increases where the projects cross the same stream channel at the same location.

Overland Pass proposes to open cut the crossings of the rivers and larger streams in Wyoming. **Table 5.2-1** provides a summary of: the existing buried utilities located at the same crossing point; proposed crossing construction methods; applicant-committed measures to reduce sedimentation from channel excavation and to protect stream banks; and additional recommended measures to reduce water quality reductions at individual crossings. The crossing methods and adjacent utilities are described in site-specific crossing plans provided to BLM by Overland Pass.

The Enterprise Western Expansion Project would be constructed across the Blacks Fork and Bitter Creek, and the Rockies Express/Entrega Project across the North Platte and Medicine Bow rivers several months to 1 year before the Overland Pass would cross the same waterbodies at nearly the same locations. Each project would be responsible for stabilizing the stream banks and the channel, and would be offset from the Overland Pass ROW. It is unlikely that these prior, but very recent projects would cause new channel stabilization requirements for Overland Pass.

However, there are existing channel and bank stability problems associated with other pipelines that share the pipeline corridor proposed for use by Overland Pass (**Table 5.2-1**). Existing bank erosion and channel down-cutting are occurring at the crossing of the Black Fork at RP 41.3. It is recommended that a scour control plan, and a joint project with the adjacent pipeline owners be undertaken to ensure the long-term stability of all adjacent pipelines in the corridor at that location.

The proposed Overland Pass crossing of the Medicine Bow River is in an unfavorable upstream position relative to other pipelines because of the large number of pipelines already installed at the same location. Extensive bank rip rap on upstream bends would be required to stabilize the permanent Overland Pass ROW. It is recommended that woody vegetation plantings be incorporated into the bank stabilization plan to reduce the amount of rock rip rap required.

Based on currently available schedules, the various projects would not be conducting concurrent hydrostatic tests at the same locations and, consequently, these projects would not cause cumulative water withdrawal volume reductions on the Green, North Platte, and Laramie rivers.

The proposed Overland Pass pipeline alignment parallels numerous pipelines and other linear features that cross alluvial floodplains and fans that are subject to periodic flooding and scour. Although Overland Pass has taken steps to avoid or limit the effects of scour, should an event occur, it could affect one or more other pipelines in addition to the Overland Pass pipeline. Potential cumulative damage interactions among pipelines as the result of a major channel scouring event are not expected.

5.2.4.2 Groundwater

Existing pipeline and other utility projects do not consume groundwater. None of the pipeline projects currently under construction (Overthrust Wamsutter Pipeline, Enterprise Western Expansion), and none of the proposed projects (Overland Pass) would use groundwater to hydrostatically test their pipeline. The proposed projects would implement spill containment and control plans as required by the BLM and state agencies. No cumulative impacts on groundwater volume or quality from these projects are expected.

5.2.4.3 Wetlands

Cumulative impacts to wetlands would occur where the Rockies Express/Entrega, Enterprise Western Expansion, and Overland Pass projects would be co-located between Overland Pass' RP 0 and RP 329 at the Cheyenne Hub. The majority of this disturbance would be in palustrine emergent wetlands and hayfields, dominated by grasses and sedges. Within Wyoming, the Overland Pass pipeline would disturb approximately 55 acres of wetland (primarily hayfields). In the segments co-located with Overland Pass, the Rockies Express/Entrega Pipeline would disturb approximately 98 acres. Where they are co-located with Overland Pass, the Enterprise Western Expansion would not cause cumulative wetland disturbance impacts. The natural gas pipeline projects would apply FERC wetland crossing procedures and/or BLM stipulations, and would be subject to conditions contained in USACE 404 permits and state water quality permits. None of the wetlands crossed would be permanently filled or drained. Therefore, cumulative effects to wetlands would be minor and short-term because of rapid recovery by grasses, sedges, and other herbaceous species.

5.2.5 Vegetation

5.2.5.1 Noxious Weeds and Invasive Plant Species

Based on input from local NRCS offices and the BLM, weed populations already exist, or potentially exist on the land adjacent to proposed construction ROWs for the Rockies Express West, Overthrust Wamsutter, Enterprise Western Expansion, and Overland Pass pipeline projects. These projects would apply weed controls prior to and during construction, including pre-construction weed control and equipment cleaning. These projects also would be responsible for monitoring and controlling weed invasions on federal lands; comparable programs have been recommended on private lands, subject to landowner agreements. Based on proposed weed control measures and equipment cleaning, these projects would not cumulatively contribute to new weed infestations.

The total amount of vegetation that may be affected by all of the proposed projects is substantial but still relatively small compared to the abundance of similar habitat in the project area. While these projects could potentially fragment vegetation habitat, this effect would be minimal because no densely forested areas would be crossed by the proposed pipelines. This effect would be further reduced by the co-location of many of these projects with existing ROWs. All of the projects would include mitigation measures designed to minimize the potential for long-term erosion, increase the stabilization of site conditions, and in many cases control the spread of noxious weeds, thereby minimizing the degree and duration of the cumulative impact of these projects.

5.2.6 Wildlife, Aquatic Resources, and Special Status Species

5.2.6.1 Wildlife

Habitat

The removal of forest land and shrubland habitats would result in a long-term habitat reduction because the regeneration of woody species is slow in the project region. Construction and operation of the proposed Overland Pass pipeline would incrementally add to the width of habitat discontinuities within existing utility corridors, which may affect the movement of species dependent on these habitats and would cumulatively reduce carrying capacity for woodland- and shrubland-dependent species.

Big Game

The Overland Pass pipeline would cross elk, mule deer, and pronghorn critical or crucial winter habitats in both Colorado and Wyoming, respectively. The incremental surface disturbance contributed by the Overland Pass pipeline to the cumulative projects would represent a small fraction (less than 1 percent) of the individual big game ranges crossed. Overland Pass, Overthrust Wamsutter Pipeline, and Enterprise Western Expansion Pipeline projects have coordinated with the BLM, CDOW, and WGFD to develop revegetation seeding mixtures that include shrub, forb, and grass species that are used by big game, as well as other target species. The application of these mixtures, followed by ROW monitoring after construction (**Appendix B**) would ensure that there is a long-term effort to restore big game forage in designated critical (Colorado) and crucial (Wyoming) winter habitat.

These projects would cross big game winter ranges in relatively remote areas of southern Wyoming. These projects would be subject to winter construction closures depending on severity of the early winter, so that wintering big game conflicts would be largely avoided during this season. Big game winter range closures are being determined for the Overland Pass by the BLM in consultation with the WDGF.

5.2.6.2 Aquatic Resources

Overland Pass proposes to open-cut five streams (Hams Fork River, Blacks Fork River, Bitter Creek, Green River, North Platte River, Medicine Bow River, and Laramie River) in Wyoming that contains game fisheries (**Table 5.2-1**). Several of these waterbodies also would be crossed by the Overthrust Wamsutter Pipeline and Enterprise Western Expansion pipeline projects several months to 1 year earlier than the Overland Pass project. Cumulative waterbody construction impacts would not occur in the same season. Channel armoring measures, and sediment control measures are proposed by Overland Pass for these crossings to reduce downstream sedimentation on fish habitats. As described under water resources, pre-existing bank and channel instability associated with previous pipeline projects are contributing to increased sedimentation downstream of the utility corridor at the Hams Fork and Blacks Fork river crossings. BLM recommendation to reduce erosion and channel scouring at this location would benefit fisheries that would otherwise be affected by the project.

5.2.6.3 Special Status Species

With the exception of occasional foraging by bald eagles (but no winter roost sites), none of the species discussed below would be affected by other pipeline projects within the proposed pipeline cumulative study area.

Bald Eagle

Within the cumulative affects area, bald eagles use winter roosts and occasionally nest along the Green, North Platte, Medicine Bow, Rock Creek, and Laramie rivers. Pipeline crossings for the Rockies Express/Entrega Pipeline and Overland Pass pipelines would be subject to construction timing restrictions during critical bald eagle use seasons, and would be requested to implement measures to avoid the loss of roost or nest trees. No other known projects are scheduled for work locations at these crossings and these projects would be constructed in different years. Therefore, these projects would not contribute to cumulative impacts to bald eagle winter or nesting habitat, nor would construction activities coincide with bald eagle critical use periods along these rivers.

Black-footed ferret and other prairie dog colony inhabitants (burrowing owl, mountain plover)

The Overland Pass, Overthrust Wamsutter, Rockies Express/Entrega, and Enterprise Western Expansion pipeline alignments would cross prairie dog colonies between Opal (RP 0.0) and RP 152, east of Rawlins, Wyoming. The construction of these projects has and would cumulatively cause surface disturbance in prairie dog colonies and potential loss of prairie dog individuals, which are black-footed ferret prey. These projects would be subject to pre-construction surveys. If ferrets were sighted, construction would not be authorized until the necessary consultation with the USFWS had occurred. If mountain plovers or burrowing owls were sighted during pre-construction surveys, construction constraint periods would be established to ensure that fledglings leave the areas before construction begins. Based on these measures, no cumulative impacts to these species are expected, with the exception of the short-term surface disturbance within prairie dog colonies during construction.

Sage grouse

Active sage grouse lek (breeding) sites occur within 2 miles of the Overland Pass, Enterprise Western Expansion, and Overthrust Wamsutter pipeline routes in Wyoming. Projects would be subject to seasonal construction restrictions to avoid critical sage grouse breeding and brood-rearing periods. These projects would contribute to incremental increases in the width of the existing pipeline corridors. The combined construction ROWs through this segment could be as much as 200 feet, which could more than double the pipeline corridor width in some sagebrush habitats. Between Wamsutter and Arlington (a distance of approximately 110 miles), the Overland Pass would largely parallel Rockies Express West and would expand a large existing pipeline corridor through Wyoming sagebrush habitats. Reduction in sagebrush cover exposes sage grouse to higher predation rates and may limit bird movement across these discontinuities. Reduction in sage grouse populations and reductions in use of traditional lek sites have been documented in oil and gas well fields in Alberta, Wyoming, and Colorado (Connelly et al. 2000). Other factors, such as wildfires, periodic drought, invasion by cheatgrass, and intensive livestock grazing also adversely affect sage grouse habitat suitability (Connelly et al. 2004). In summary, the Overland Pass and other regional pipeline projects would contribute to the cumulative long-term reduction in, and fragmentation of sage grouse habitat in Wyoming by expanding an existing utility ROW. These projects would adhere to seasonal restrictions during sage grouse breeding and brood-rearing periods, and therefore cumulative indirect effects from increased human activity and noise during construction would not occur.

5.2.7 Land Use and Visual Resources

5.2.7.1 Land Use

Conversion and Construction Effects

The Overland Pass, Enterprise Western Expansion, Rockies Express/Entrega, and Overthrust Wamsutter pipeline projects incrementally would add to the acreage of aboveground oil and gas pipeline facilities in Wyoming. Assuming that approximately 300 acres are already dedicated to compressor stations, MLVs, meter stations, and pig launchers/receivers, Overland Pass proposes to add 14 acres in Wyoming for aboveground facilities. Enterprise Western Expansion Project would require an estimated 9 acres for new aboveground facilities (valves, pigging facilities, and interconnections), Rockies Express/Entrega would require approximately 17 acres in Wyoming, and Overthrust Wamsutter Pipeline would require 52 acres for its aboveground facilities in Wyoming.

While installation of new pipelines in an existing corridor would incrementally reduce the area available for future development, use of established utility corridors concentrates cumulative land use impacts. With the exception of a rural residential area between Cheyenne and Laramie (Rockies Express/Entrega and Overland Pass), the Overland Pass, Overthrust Wamsutter, and Enterprise Western Expansion projects would not cumulatively affect residential land uses. The majority of rural residential lots between Cheyenne and Laramie are approximately 40-acre parcels. The existing corridor contains 5 to 6 utilities (pipelines and fiber optic cables) in this area. Adding Rockies Express/Entrega and Overland Pass together, the 50-foot permanent ROW for 8 utilities across the full width of a 40-acre parcel would be 12.1 acres, or approximately 30 percent of the parcel area. However, the existing pipeline corridor pre-dates the subdivision of existing rangeland in this area, and owners and new buyers were informed of the pipeline easements in their deeds.

Special Management Areas

The Overland Pass and the Rockies Express/Entrega pipelines both cross the Continental Divide Trail at RP 178.5. The construction periods of the two projects would not overlap at this location. Both projects would maintain recreational user access along this trail by providing short detours, and restoration of existing roads and trails.

5.2.7.2 Visual Resources

The majority of the proposed pipeline route across federal lands where visual management standards have been established are already highly modified by existing utility projects. Two Class II Visual Resource Management Areas where minimum landscape modifications would be allowed are located between RP 0 to RP 1.6 (Kemmerer Field Office), and between RP 59.2 to RP 60.4 (Rock Springs Field Office). No other proposed projects would be co-located with the proposed pipeline route at these locations; therefore cumulative visual resource impacts caused by additional pipeline construction would not occur.

The primary Overland Pass aboveground facilities (Echo Springs and Laramie pump and meter stations) would be constructed adjacent to an existing utility corridor. These new facilities would be located in rural locations, and therefore would not viewed by a large number of recreational and highway travelers. Cumulative impacts resulting from greater visibility of industrial facilities in natural settings are not expected.

5.2.8 Cultural Resources

Records searches and pedestrian surveys have been completed in Wyoming, Colorado, and Kansas. There is a potential for sites eligible to the NRHP to be affected by pipeline projects constructed adjacent to each other in the same utility corridor. Effects on eligible sites by the individual projects would be determined independently through reviews by the BLM and the SHPOs of the individual states. In some instances, the cumulative surface disturbance of multiple projects in the same corridor may require rerouting of one or more projects to minimize surface disturbance effects on cultural resources.

5.2.9 Socioeconomics

The Overland Pass pipeline and other pipeline projects may be constructed in a similar timeframe. While detailed schedules are not available, it is likely that the Overthrust Wamsutter Project could overlap with the Overland Pass construction timeframe and the two projects would be constructed in the same general area. Assuming approximately 1 mile of pipeline construction completed each day, the workforces of the two projects could broadly overlap over a period of several weeks. The Rendevous pipeline and Kanda Lateral also may be constructed in late 2007, and the workforces for these projects may place demands on local infrastructure (temporary housing, other services). The potential for the maximum cumulative workforce likely would occur in the vicinity of Green River and Rock Springs, Wyoming. Based on current high levels of oil and gas activity in this region, it is expected that there may be a shortage of temporary housing for non-local workers, resulting in longer employee commutes, or the requirement for contractors to obtain more temporary housing in the vicinity of the pipeline spreads. There also may be increased demands on local emergency services, based on the large number of projects underway at the same time, and the large distances to be traveled for emergency response.

The majority of the Overland Pass and Overthrust Wamsutter work areas are in rural areas, with good access to I-80 across Wyoming. Cumulative traffic impacts are not expected except where multiple projects are being constructed simultaneously, such as the vicinity of Kanda and Granger in western Wyoming. These cumulative impacts would be short-term as pipeline spreads move away from congested areas.

The Overland Pass and Overthrust Wamsutter projects would follow transportation plans to manage construction vehicles, and would follow standard measures for fence repair, provision of temporary gates, and provision of temporary crossings for livestock. Equipment turning onto and off state highways and access roads may require flagmen and other controls to limit the risk of accidents on public roads. Both projects would be required to obtain local crossing permits for county roads, which would define weight limits and maintenance standards. The BLM and USFS have defined minimum standards for maintenance of existing roads, and construction and operation of any new permanent roads on BLM- or USFS-administered land.

The construction workforces for projects occurring in the same time frame would contribute to short term increases in local sales tax revenues, and long term increases in the property tax base. Few long-term employees would be needed to operate these new pipelines, and therefore no long term impacts to employment and demands on local services are expected.

5.2.10 System Safety and Reliability

As discussed previously, no cumulative operational safety impacts are expected among pipelines and other facilities located in the same general utility corridor because of the spacing between pipelines, the depth of soil cover, and requirements to meet USDOT Minimum Federal Safety Standards in Title 49 CFR Part 192 and Part 95.

6.0 Unavoidable Adverse Impacts

Unavoidable adverse impacts are the effects on natural and human resources that would remain after mitigation measures have been applied. **Table 6-1** contains a summary of those impacts.

Table 6-1 Summary of Unavoidable Adverse Impacts

Soils. A small fraction of the construction ROW and ancillary facility topsoil that would be graded, stockpiled, and replaced would be mixed, buried, or lost from the ROW or site because of wind and water erosion, especially across sensitive soils.
Native Vegetation/Wildlife Habitats. Clearing and grading native and non-native grassland, shrubland, and forest communities would result in long-term changes in species composition and community structure (height and density) within the pipeline construction ROW and ancillary sites. Based on reconnaissance of existing pipeline ROWs, recovery of pre-existing vegetation cover and diversity for grassland communities after disturbance generally is 5 years. Shrubland forest communities would begin to regenerate within 10 years.
Land Use – Utility use conversion. Private land would be converted to utility uses within new permanent utility ROWs during the 30-year project life. Land uses that would not interfere with pipeline operations (e.g., farming, livestock grazing, etc.) would continue.
Land Use – Conversion to industrial land uses. Rangeland and agricultural land would be converted to pipeline products terminals, pump stations, and pressure control stations for the project life. The Proposed Action could result in conversion of 9 acres to industrial land uses.
Water Quality. Unavoidable temporary impacts to water quality could occur during construction at river crossings. Turbidity and sedimentation could be increased, although mitigation measures would minimize extent and duration of impacts. Accidental discharges may occur, however, these would be infrequent, quickly dispersed, or cleaned up. Similarly, unplanned releases of drilling mud could occur during installation of HDD stream crossings, but this would be quickly mitigated.
Wildlife Resources. Aquatic habitat could be unavoidably disturbed, either in the short term or the long term at river crossings. Trenching activities could result in mortalities to fish, macroinvertebrates, and amphibians. Egg and juvenile life stages would be the most vulnerable to equipment. Trenching at the Green River crossing could cause mortalities to kokanee salmon and brown trout eggs. Trenching at the Hams Fork River and one of the Blacks Fork River (RP 18.9) crossings could cause long-term effects on habitat for special status fish species. Potential scouring also could affect fish movements during low flow periods. Terrestrial biota could be disturbed, removed, or, in rare instances, killed during construction activities. Measures would be taken to reduce potential effects on special status species.
Public Safety. Installation of a pipeline has some degree of unavoidable impact with regard to public safety. Risk analysis indicates the occurrence of a pipeline accident affecting the public is unlikely. The pipeline is new and incorporates safety features and design aspects that increase safety.
Aesthetics. The presence of the pipeline and associated facilities has an unavoidable aesthetic effect. Early in the project the pipeline would be visible, as vegetation re-establishes. At night, lights at aboveground facilities could be seen; this is unavoidable because lighting is necessary for safety purposes.
Cultural Resources. Construction could result in the loss of unique or significant archaeological information. Required surveys reduce this potential.

7.0 Irreversible/irretrievable Commitment of Resources

An irreversible or irretrievable commitment of resources refers to impacts on or losses to resources that cannot be recovered or reversed. Examples include permanent conversion of wetlands and playas, or loss of cultural resources, soils, wildlife, agricultural, and socioeconomic conditions. The losses are permanent. Irreversible is a term that describes the loss of future options. It applies primarily to the effects of use of nonrenewable resources, such as minerals or cultural resources, or to those factors, such as soil productivity, that are renewable only over long periods of time. Irretrievable is a term that applies to the loss of production, harvest, or use of natural resources. For example, some or all of the timber production from an area is lost irretrievably while an area is serving as a winter sports site. The production lost is irretrievable, but the action is not irreversible. If the use changes, it is possible to resume timber production. The monetary investment by Overland Pass is not considered to be an irreversible or irretrievable commitment of resources. If this project was not built, the investment that would have otherwise been spent on these projects could be spent elsewhere.

The proposed project would require an irretrievable commitment of natural resources from direct consumption of fossil fuels and construction materials. In addition, the purpose of the project is to irreversibly and irretrievably use natural gas resources. Additional resource commitments are shown on **Table 7-1**.

Table 7-1 Summary of Irreversible, Irretrievable Commitment of Resources by the Proposed Action

Resource	Irreversible Impacts	Irretrievable Impacts	Explanation
Water Quality and Quantity	No	No	Water obtained from water sources for hydrostatic testing would be tested and discharged to the source water body or to stable upland areas.
Soils and Vegetation	No	Yes	Soil lost to increased erosion and vegetation production lost to conversion of land uses would be irretrievable losses. There would be an irreversible commitment of resources on land associated with the ROW and aboveground facilities. No irreversible or irretrievable special status plant species impacts are anticipated.
Agricultural	No	Yes	Irretrievable impacts could include the loss of agricultural crop production for the season during construction in impacted areas. No irreversible impacts are expected.
Wildlife (terrestrial and aquatic)	Yes	Yes	Removal or disturbance of habitat could create irreversible and irretrievable impacts. Aquatic habitat could be irreversibly affected at the Hams and Blacks Fork (RP 18.9) crossings and the Green River crossing.
Cultural Resources	Yes	Yes	Removal or disturbance of previously unidentified cultural resources would result in irretrievable and irreversible loss of data.
Land Use	Yes	No	Public access patterns would be maintained. Land use required for the operation of the pipeline would be an irreversible impact.
Social and Economic	No	Yes	There would be increased use of local contractors during construction of the pipeline. Non-local workforce would impact infrastructure resources. This represents irretrievable loss of workers and infrastructure during the construction phase.
Air Quality	No	No	Project emissions would not exceed federal or state air quality standards. Air quality would return to existing conditions after completion of the project.
Transportation	No	No	Short-term obstruction or temporary disruption to local roads would occur during construction along new pipeline segments. There would be no long-term impacts to transportation.

8.0 Relationship Between Local Short-term Uses of the Human Environment and the Maintenance and Enhancement of Long-term Productivity

Effects on resources often are characterized with respect to their being short- or long-duration. This section is not intended to repeat analyses already provided. Rather, the intent is to present tradeoffs in the relationship between short-term uses of the environment and maintenance and enhancement of long-term productivity of resources. That is, an important consideration when analyzing the effects of the proposed project is whether it will result in short-term environmental effects (adverse or beneficial) to the detriment of achieving long-term or maximizing productivity of these resources.

Short-term is defined as the construction phase of the project plus 4 years (total of 5 years). Long-term is defined as the remaining life of the project through abandonment and reclamation. Many of the impacts associated with this pipeline would be short-term and would cease to be adverse impacts following ROW rehabilitation. No significant decreases in the productivity of the project area due to construction activities would be expected.

The proposed project would result in various short-term adverse impacts, such as the temporary disturbance to soil and vegetation in the construction zone, temporary disruptions to traffic and increased noise impacts and increases in fugitive dust, plus social and economic impacts to the local infrastructure. These impacts are expected to end upon completion of operations and would be minimized through implementation of Overland Pass-committed measures. Revegetation of disturbed areas is expected to stabilize disturbed surfaces and control erosion.

Adverse visual impacts would lessen with time as vegetation becomes established. The aboveground facilities would continue to alter the local landscape and views in the long term.

There may be short-term impacts to surface water and aquatic habitat during the construction phase. Overland Pass-committed measures would minimize these short-term impacts. Exceptions would include the Hams Fork and Blacks Fork (RP 18.9) river crossings, where trenching could result in long-term significant effects on aquatic habitat as a result of changes to channel morphology, potential scouring, and increased sedimentation.

No significant impacts are anticipated for the routine operation of the project. Upon completion of the construction phase, the aquatic environment generally would be expected to remain or return to its normal long-term productivity levels. Exceptions could occur at the Green River crossing and the Hams Fork and Blacks Fork crossings. Project mitigation measures would be incorporated to attempt to minimize long-term productivity effects. Minor short-term effects would be minimal compared with long-term benefits under the Proposed Action.

9.0 Electric Powerlines

Electrical service requirements for the proposed project include utilizing existing service lines and constructing electrical powerlines to pump stations, meter stations, remote valves, and pigging facilities. Because local electrical power providers, not Overland Pass, would be constructing and operating the electrical powerlines, the local electrical power companies would be responsible for obtaining any necessary approvals or authorizations from federal, state, and local governments. While the permitting process for the electrical facilities is an independent process from the pipeline ROW approval process, the construction and operation of these powerlines are considered connected actions under NEPA and, therefore, are evaluated within this EIS for the Proposed Action.

9.1 Electrical Powerline Requirements

Powerline requirements would vary depending on the project facility (i.e., pump stations, meter stations, remote valves, and pigging facilities) (**Table 9.1-1**). New electrical transmission powerlines would be constructed at 17 locations throughout most of the pipeline route from RP 0 to RP 749.4. New powerline connections would provide power for two pump stations, Echo Springs (RP 146.5) and Laramie (RP 271.7) each with a voltage of 34.5 kV. The length of these connections would be greater than 0.25 and 2.9 miles, respectively. Voltages for powerlines to the Unnamed (RP 448), WaKeeney, Bushton, and Conway meter stations would range from 12.5 kV to 13.2 kV. Lengths for these connections would range from greater than 0.25 to 2.4 miles (**Table 9.1-1**). If the WaKeeney Pump Stations were constructed in the future, it is likely that the electrical power would be supplied from the service delivered to the WaKeeney Meter Station; thus, the impacts for the future station are included in the analysis. Other electric power requirements for remote valves and pigging facilities would be supplied from distribution service drops from adjacent distribution powerlines (i.e., powerline with voltage ranging between 12.5 kV to 15 kV). Each of these distribution service drops would require the installation of approximately one or two poles and a transformer. The length of these distribution service drops typically would be less than 200 feet. Utilities would restore the work area as required on completion of the new service drop in accordance with local standards.

Table 9.1-1 details the land requirements for the new electrical powerlines associated with the pump stations for the Proposed Action. Preliminary routing has been identified for each powerline. These routes are subject to change as the pumping station supply requirements are further reviewed by the local utilities providing electrical service. Powerlines would be located entirely on private land.

9.2 Electrical Powerline Construction

The construction phases for each electrical powerline would consist of ROW acquisition, ROW clearing, construction, and site restoration and cleanup. The following is a brief summary of the typical steps associated with powerline construction. Actual powerline construction procedures would be developed by each utility to address site-specific conditions.

- ROW Easements. The electric utilities would obtain any necessary easements and ROW grants. It is estimated that the construction ROW width would be 50 feet, with a 25-foot permanent ROW width.
- ROW Clearing. Limited clearing would be required along existing roads in native and disturbed grasslands and croplands. Some trees may require removal to provide adequate clearance between the conductors and underlying vegetation. Trimming to avoid tree removal may be employed in some locations.

Table 9-1 Electrical Powerline Requirements for the Proposed Action

Facility	Reference Point (RP)	Power Required	Utility Company	Length of Connection	Direction of Incoming Connection	Line Voltage
Remote Valve #1	0.0	480 V, 5 hp, 50 amp Service	Power to be provided by Williams at the Opal Plant	<0.25 mile	Power to be run underground	480 V
Remote Valve #8	72.1	480 V, 5 hp, 50 amp Service	Pacific Power and Light (Rocky Mountain Power)	100 feet	Too close to be determined	12,240 V
Remote Valve #17 (Echo Springs Pump Station)	146.5	480 V, 5 hp, 50 amp Service (5 MVA for entire station)	Power to be provided by Williams at the Echo Springs Plant	<0.25 mile	Power to be run underground	34.5 kV
Remote Valve #23	207.0	480 V, 5 hp, 50 amp Service	Carbon Power and Light	2.9 miles	From the SouthWest	13.2 kV
Remote Valve #30 (Laramie Pump Station)	271.7	480 V, 5 hp, 50 amp Service (5 MVA for entire station)	Laramie Pump Station, power to be provided by Carbon Power and Light as part of the entire station	2.4 miles	From the North	34.5 kV
Remote Valve #34	307.4	480 V, 5 hp, 50 amp Service	High West Energy	0.2 mile	From the North	12,470 V
Remote Valve #35	323.0	480 V, 5 hp, 50 amp Service	Poudre Valley REA	Powerline crosses valve site	Too close to be determined	15 kV
Remote Valve #37	342.7	480 V, 5 hp, 50 amp Service	High West Energy	<1 mile (within 1/2)	From the East	12,470 V
Remote Valve #42	389.8	480 V, 5 hp, 50 amp Service	Xcel Energy	1 to 1.5 miles	From the West	13.2 kV
Remote Valve #47/Meter Station	447.8	480 V, 5 hp, 50 amp Service	YW Electric	1 to 1.5 miles	From the West	12,470 V
Remote Valve #52	507.9	480 V, 5 hp, 50 amp Service	Prairieland Electric	1 to 1.5 miles	From the SouthEast	13.2 kV
Remote Valve #56/Scraper Trap	552.9	480 V, 5 hp, 50 amp Service	Midwest Energy	<0.5 mile (within 1/4)	Too close to be determined	13.2 kV
Remote Valve #61/Meter Station	606.0	480 V, 5 hp, 50 amp Service	Western COOP	0.5 mile	From the East	13.2 kV
Remote Valve #66/Scraper Trap	654.7	480 V, 5 hp, 50 amp Service	Western COOP	<0.5 mile (within 1/4)	Too close to be determined	13.2 kV
Remote Valve #72/Meter Station	718.0	480 V, 5 hp, 50 amp Service	Power to be provided by ONEOK at the Bushton Plant	<0.25 mile	Power to be run underground	480 V
Remote Valve #74	736.0	480 V, 5 hp, 50 amp Service	Power to be provided by Williams at the Mitchell Plant	0.1 mile	Power to be run underground	480 V
Remote Valve #75/Meter Station	749.4	480 V, 5 hp, 50 amp Service	Power to be provided by Williams at the Conway Plant	0.1 mile	Power to be run underground	480 V

9.2.1 Powerline Construction

The structures would be delivered on flatbed trucks. A mobile crane or picker truck would be needed to install the poles. Holes for footings would be excavated for structure placement, typically with radial arm diggers. The wooden or steel poles would be directly embedded into the ground and anchors may be required at angles and dead ends. The height of each structure would be an average of 30 feet. Pole spacing typically would be approximately 300 feet. Conductors (wires) would be attached to the structure using porcelain or fiberglass insulators. Alternating current electrical transmission powerlines require four or five sets of wires, one set for each electrical phase and one or two sets for overhead shield wires. Pulling or reeling areas would be needed for installation of the conductor wires. Each pulling or reeling area would be less than 0.25 acre in size and spaced at approximately 300-foot intervals.

Overland Pass has recommended that local service providers adhere to design concepts to prevent collision and electrocution hazards for foraging and migrating raptors, including:

1. On single-phase structures, a minimum vertical separation of 36 inches from phase to the ground would be used to accommodate eagles and most wading birds;

2. On three-phase structures, a vertical clearance of at least 43 inches between uninsulated conductors, ground wires, and grounded hardware on poles with 8-foot crossarms, would provide the required 60-inch clearance;

3. Corner poles may be constructed in a conventional manner, if jumper wires were insulated and center phase non-conducting extension links were used;

4. If conductor separation could not be achieved and covering or reframing was impractical, perch guards (triangles) with optional perches may be used for protection of large perching birds;

5. Where adequate separation of conductors, or conductors and grounded parts, could not be achieved, covering conductors may be the only solution short of reframing or replacing structures; and

6. If transformers, cutouts or other energized or grounded equipment were present on the structure, jumpers, cutouts, and bushings should be covered to decrease the chance of bird electrocution.

9.2.2 Restoration

After the powerline structures are in place and the conductors are strung between the structures, the disturbed areas would be restored. The soil in the disturbed areas would be reshaped and contoured to its original condition. Reseeding would follow landowner requirements. All litter and other remaining materials would be removed from the construction areas and properly disposed.

9.3 Affected Environment and Environmental Consequences

This section addresses the natural and human resources potentially affected by the construction, operation, and maintenance of the proposed electrical powerlines associated with the Proposed Action. Impacts associated with the electrical service drops are expected to be minimal and comparable to those associated with supplying electricity to the average home or farm.

As proposed, the powerline routes cross streams, wetlands, and riparian areas that are likely to attract raptors and migratory birds. The new electrical powerline segments would incrementally increase the collision potential for migrating and foraging bird species (e.g., raptors and migratory birds [APLIC 1994]). However, collision potential typically is dependent on variables such as the line location in relation to high use habitat areas (e.g., nesting, foraging, and roosting), line orientation to flight patterns and movement corridors, species composition, visibility, and line design. In addition, distribution lines that are less than 69 kV but greater than

1 kV pose an electrocution hazard for raptor species attempting to perch on the structure. Configurations less than 1 kV or greater than 69 kV typically do not present an electrocution potential, based on conductor placement and orientation (APLIC 1996).

Potential collision and electrocution impacts to bird species from the Proposed Action could be reduced further if electrical service providers agree to implement the mitigation measures proposed in Overland Pass' Suggested Guidelines for Raptor Protection on Power Lines (Overland Pass 2006).

9.4 Cumulative Impacts

While the construction of the powerlines would overlap in space and time with other projects, the amount of surface disturbance caused by powerline construction would be negligible compared to other development projects discussed in Chapter 5.0. The total disturbance caused by the construction and operation of the powerlines would be minor and dispersed across hundreds of miles.

10.0 List of Preparers and Reviewers

The Draft EIS was prepared by ENSR, a third-party contractor, under the direction of the BLM. Representatives from the cooperating agencies contributed to and participated in the NEPA process. Technical input regarding the proposed project was provided by Overland Pass and their representatives. The following sections present the names of individuals and their area or areas of responsibility.

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Glossary

alluvial	material composed of riverbed or delta material.
ancillary facilities	facilities associated with the pipeline system, including compressor stations, valves, and metering stations.
aquifer	a layer of underground sand, gravel, or porous rock in which water collects; a source of groundwater.
barrel	42 gallons of natural gas liquid.
block valve	valve that can block the flow of natural gas liquids in both directions within the pipeline when closed.
cathodic protection	a method to reduce external corrosion by placing a small electrical charge on the steel pipe.
corrosion	an electrochemical process that occurs when steel is exposed to an electrolyte, such as soil or water. Corrosion can occur along the internal or external surfaces of the pipe. External corrosion is reduced by cathodic protection and pipeline coatings. Corrosion is monitored by internal inspection tools (internal and external corrosion) and corrosion coupons (internal corrosion).
depth of cover	in new construction areas, the burial depth typically would be 36 inches from the top of the pipe to the natural grade. No depth of cover is specified for existing pipe under OPS regulations.
easement	a legal instrument, usually negotiated with the landowner, that is used to convey a ROW to the pipeline company. The easement gives the pipeline company the right to operate and maintain its pipeline in the permanent ROW and, in return, compensates the landowner for the use of the land.
eminent domain	the right of the government to take private property for public use after providing just compensation by virtue of the sovereign power over all lands within its jurisdiction.
fugitive dust	a non-point source of air pollution, such as from unpaved roads, agricultural croplands, and construction sites.

High Consequence Areas (HCAs) — OPS-defined areas subject to the Integrity Management Rule. HCAs include high-density population areas, waters where commercial navigation occurs, and areas that are unusually sensitive to environmental damage.

horizontal directional drilling — technology used for vertical drilling has been modified for the horizontal installation of pipelines beneath major obstacles, such as rivers, railroads, and highways.

hydrostatic testing — pressure testing of a pipeline to test its structural integrity. Typically the line is tested to at least 125 percent of the MAOP and the pressure is held for 8 hours. Hydrostatic testing is a destructive test to evaluate the integrity of the pipe. A pipe that passes this test is considered safe to operate at pressures less than or equal to the MAOP.

Impressed current cathodic protection — cathodic protection that uses an external power source to place a small electrical charge on the steel pipe to prevent external corrosion.

Integrity Management Rule — as defined in 49 CFR 192, this OPS rule increases requirements for inspection, enhanced damage protection, improved emergency response, and other measures to prevent and mitigate pipeline leaks in HCAs.

internal inspection tool — a “smart pig”; tools that assess the pipeline’s integrity. At this time, there are three primary types of internal inspection tools: caliper pigs, magnetic leak flux pigs, and ultrasonic pigs.

kV — kilovolts; 1,000 electrical volts.

L_{dn} — Day-night (average sound) level.

liquefaction — The process by which water-saturated sediments lose strength and may fail during strong earthquake induced ground shaking. Liquefaction can result in the loss of ground bearing capacity or lateral spreading, both of which could potentially damage pipelines and ancillary facilities. Soil liquefaction hazards are associated with unconsolidated alluvial soils with a high water table.

Maximum Operating Pressure (MOP) — a rating indicating the maximum pressure at which a pipeline or segment of a pipeline may be operated under the DOT regulations in normal conditions (40 CFR § 195.406 MOP). The MOP is defined as 80 percent of the hydrostatic test pressure (also called the pressure rating).

meters	devices that measure the amount of natural gas transported and delivered.
one-call systems	a system by which operators and other underground utility operators have joined together in state-level one-call notification programs. The program acts as a clearinghouse of information to excavators, and marks the location of underground utilities prior to excavation.
pig	a plug designed to be pushed along the inside of a pipeline. Pigs can be used to separate materials, clean, or inspect the pipeline's surface.
pigging facility	a short section of pipe controlled by valves that interconnect with the main pipeline to launch and receive cleaning and inspection tools ("pigs") that travel inside the pipeline.
pump station	ancillary facility where pumps are used to maintain pipeline pressure required to move natural gas liquids through the pipeline.
right-of-way (ROW)	a legal right of passage over another's property. Typically, the ROW would consist of a 50-foot-wide permanent ROW and, during construction, an additional 50-foot construction ROW.
riparian areas	these areas form of wetland transition between permanently saturated wetlands and upland areas. These areas exhibit vegetation or physical characteristics reflective of permanent surface or subsurface water influence. Lands along, adjacent to, or contiguous with perennially and intermittently flowing rivers and streams, glacial potholes, and the shores of lakes and reservoirs with stable water levels are typical riparian areas. Excluded are such sites as ephemeral streams or washes that do not exhibit the presence of vegetation dependent upon free water in the soil.
SCADA	Supervisory Control and Data Acquisition; computerized system that monitors and analyses the pressure within the pipeline every 3 to 5 seconds, notifying operators of any operating abnormalities.
seasonal constraints	time periods when construction may be restricted, such as constraint periods associated with breeding birds.

smart pig	An internal inspection tool that passes inside a pipe and contains electronic devices capable of measuring pipe integrity.
Specified Minimum Yield Strength (SMYS)	a measure of pipeline strength.
temporary workspace	areas located outside the construction ROW where additional space is required for construction.
trona	natural sodium bicarbonate.
well head protection areas	areas where land uses are managed to protect and maintain the quality of groundwater.

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