ENVIRONMENTAL CONSEQUENCES

CHAPTER 4

4.0 Environmental Consequences

[redacted]

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 C**) 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 and **Appendix A**. 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. Key applicant-committed measures are identified in **Appendix A, Table A-1**. 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. Additional mitigation measures contained in the EIS are recommendations and are summarized in **Appendix A, Table A-2**. 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.

7. Applicability of key applicant-committed mitigation measures is identified in **Appendix A, Table A-1**. Unless specifically stated, additional mitigation measures recommended by the BLM (**Appendix A, Table A-2**) would be applicable to federal lands only.

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 beginning June 1, 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

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
Project Total			**21.6**

Blasting operations could damage nearby structures, including buildings, springs and wells, and existing underground pipelines. Blasting is not expected to be conducted in close proximity to known springs.

Additional Mitigation

No additional mitigation was identified.

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).

Overland Pass developed a blasting plan as part of their draft POD that incorporates notification and monitoring requirements (Overland Pass 2007). While blasting could adversely affect nearby structures, springs and wells, and existing underground pipelines that may be in the vicinity, 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 or is close to 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 2007). Prior to construction, Overland Pass shall identify any associated underground pipelines in the project construction ROW and 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 trona.

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 monitor for subsidence during construction and operation in susceptible areas. 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 trench 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 pipe padding, 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 C**) 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 monitor potential subsidence areas (RP 675 to RP 749) 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 have 67 perennial stream crossings, 405 intermittent stream crossings, and 5 seasonally dry lake crossings in Wyoming; 10 perennial stream crossings; 73 intermittent stream crossings, and 6 seasonally dry lake crossings in Colorado; and 17 perennial stream crossings, 313 intermittent stream crossings, and 0 seasonally dry lake crossing in Kansas. All these crossings 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) are not 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 would be minimal since work would occur on previously disturbed ROW.

Additional Mitigation

No additional mitigation was identified.

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 – 19%**	**20 – 29%**	**>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 acres 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 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	95	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	19	462	18	334	0	6	0	0	0	30	0	7	7	139	13	191	2	82
Laramie	0	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**	**470**	**1,070**	**259**	**491**
Colorado																		
Larimer	0	<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	0	67	0	49	0	18	0	54	0	0	0	0	0	0	0	3	0	14
Logan	0	90	0	53	0	26	0	67	0	4	0	1	0	4	0	1	0	23
Washington	0	264	0	99	0	48	0	206	0	0	0	0	0	0	0	8	0	10
Yuma	0	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	0	350	0	127	0	5	0	236	0	5	0	0	0	3	0	5	0	5
Rawlins	0	174	0	47	0	1	0	129	0	3	0	0	0	0	0	3	0	1
Thomas	0	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	0	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	0	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 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	0	254	0	13	0	0	0	251	0	0	0	0	0	0	0	13	0	0
Ellsworth	0	72	0	4	0	0	0	72	0	0	0	0	0	0	0	4	0	0
Rice	0	254	0	12	0	0	0	249	0	1	0	2	0	2	0	11	0	0
McPherson	0	49	0	0	0	0	0	49	0	0	0	1	0	0	0	0	0	0
Subtotal	**0**	**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	507	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 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	95	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	19	462	15	333	4	68	0	47	0	14	0	0	5	231	1	30	2	76	6	66	5	59
Laramie	0	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																						
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	0	67	0	23	0	41	0	3	0	0	0	0	0	55	0	7	0	0	0	5	0	0
Logan	0	90	0	48	0	37	0	5	0	0	0	0	0	80	0	2	0	0	0	8	0	0
Washington	0	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	**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	0	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	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

Table 4.4-2 Acreage Breakdown of Topsoil Depth and Average Slope Class Along the Proposed 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	0	48	0	0	0	40	0	3	0	5	0	0	0	42	0	0	0	6	0	0	0	0
Barton	0	254	0	3	0	228	0	13	0	10	0	0	0	251	0	0	0	3	0	0	0	0
Ellsworth	0	72	0	1	0	64	0	4	0	3	0	0	0	71	0	0	0	1	0	0	0	0
Rice	0	254	0	7	0	214	0	20	0	13	0	0	0	249	0	1	0	4	0	0	0	0
McPherson	0	49	0	3	0	44	0	1	0	1	0	0	0	49	0	0	0	0	0	0	0	0
Subtotal	**0**	**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. Since the Draft EIS, Overland Pass has adopted additional mitigation to reduce impacts from wind and water erosion (**Appendix A, Table A-1**).

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 (1,540 acres), with an additional 133 acres in Colorado, and 116 acres in Kansas. Of the total, 507 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 negotiated compensation for damages to landowners, as appropriate.

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 three pump stations (including 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 94 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.

Additional Mitigation

SOIL-1: 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-2: Prior to preparation of the final POD, Overland Pass shall consult with the federal land management agencies to obtain detailed soil inventory information to be used to fine-tune the proponent's 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 for the project.

SOIL-3: On the ANF, topsoil would not be removed from the temporary workspace area.

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.

Since the publication of the Draft EIS, Overland Pass has committed to supplemental mitigation measures intended to reduce impacts to soils. Benefits of these mitigations include:

- Reducing the amount of topsoil lost to erosion;
- Reducing compaction and rutting on two-track roads;
- Minimizing the expansion of two-tracks by braiding; and
- Reducing the compaction on the working side of the ROW.

Application of the recommended additional mitigation measures (SOIL-1, SOIL-2, and SOIL-3) would further reduce impacts.

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-2 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.

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 L**). 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

Soil resources affected by the Southern Energy Corridor – Copper Ridge Bypass Alternative would be the same as the Proposed Action except in areas of steep terrain or requiring side slope construction. 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 Action, 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.
- Increased salt loading from surface discharge in the Colorado River Basin.

Analysis

Waterbody Crossings

Overland Pass proposes to make a total of 94 perennial waterbody crossings, several of which would cross the same waterbody multiple times (**Appendix H, Table H-1**). Of these perennial streams, 67 are in Wyoming, 10 are in Colorado, and 17 are in Kansas. Six are located on federally managed lands. Overland Pass generally proposes to cross streams using a wet-ditch (open-cut) method. The HDD method would be used to cross the South Platte River and several lined irrigation ditches. In addition to geotechnical work at the South Platte River, Overland Pass conducted geotechnical investigations for the proposed crossings at the Green River, North Platte River, and Medicine Bow River. Borings at these crossings indicated subsurface conditions that, in engineering opinions, would lead to high probabilities of failure for HDD crossings. To avoid the potential impacts of drilling mud releases, drill recovery, and other clean-up activities associated with an HDD failure, dry-ditch (flume) methods are proposed at these crossings. Related applicant-committed mitigation measures would be implemented at each crossing (**Appendix A**).

The project also will cross 791 intermittent or ephemeral waterbodies (**Appendix H, Table H-1**). The majority of these are dry washes. If these intermittent or ephemeral streams are dry at the time of construction, Overland Pass would cross them using conventional upland construction techniques and committed reclamation and revegetation measures (**Appendix C**). If the waterbodies are flowing when crossed, Overland Pass would cross them with open-cuts and implement the related committed mitigation measures. Depending on the waterbody width, these crossings would generally be completed within 24 to 48 hours.

On a case-by-case basis, Overland Pass may elect to use dry-ditch crossing methods (i.e., flume or dam-and-pump) at selected waterbody crossings. Dry-ditch crossing methods would be implemented on an as-needed basis, primarily depending on construction conditions and the presence of flows.

On the PNG, it is likely that the streams will not contain water, since they typically flow only a few days per year. If water is encountered at a stream crossing on the PNG, Overland Pass has agreed to wait up to 48 hours for the water to subside before constructing the crossing. If the water subsides within that time, upland construction techniques would be used. If the water does not subside, a dry-ditch construction technique would be used to cross the stream.

Committed measures are proposed by Overland Pass to reduce the potential for water resource impacts at waterbody crossings. In general, these measures include: sediment controls (silt fences or equivalent); earthen trench plugs to separate the upland trench from the waterbody trench for as long as possible; erosion controls and slope breakers on long, steep sideslopes adjoining streams; and re-establishing the original bed and bank configurations. To allow construction equipment to cross, temporary bridges may be installed across perennial waterbodies that are greater than 30 feet wide at the time of construction. Overland Pass also has prepared an Incised Bank Stabilization Plan, and has committed to protective distances from waterbodies for equipment refueling, overnight parking, and materials storage. These practices and additional applicant-committed measures are further discussed in Chapter 2.0, **Appendix A**, and in construction and restoration practices proposed by Overland Pass (**Appendix C**).

In crossing waterbodies, Overland Pass would comply with the requirements of its waterbody crossing permits. Site-specific construction plans (Overland Pass 2007) have been developed for a number of waterbody crossings, including those listed in **Table 3.5-2** and others. These plans address:

- The method 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;
- The method and material that would be used to backfill the trench in the riverbed;
- The size requirements of the additional TWAs on each bank (such as trench size and work that would be done at each workspace); and
- A description of any special mitigation that would minimize impact on riparian vegetation and in-stream habitat.

As proposed by Overland Pass, all but one of these major and sensitive waterbodies (South Platte River [HDD]) would be crossed using the open-cut construction method.

Stream crossing construction techniques differ in their impacts to water resources and related beneficial uses. As discussed in Chapter 2.0, common buried crossing methods include wet ditch open-cut, dry ditch open-cut (flume or dam-and-pump), and HDD. An aboveground method, the bridge or aerial pipeline crossing, is avoided in present-day oil and gas construction due to costs and hazards from vandalism, explosion and fire, flooding, and scour or settlement at abutments (Zwirn 2002).

The potential impacts from ditched crossings include increased erosion from clearing and grading streambanks, traffic in waterbodies, increases in sedimentation and turbidity, changes in stream channel and bank morphology, altered flows and water chemistry (particularly temperature and biological oxygen demand), and associated adverse effects on aquatic and riparian ecosystems (Zwirn 2002; Anderson et al. 1998). The magnitudes of these impacts vary between crossing methods, the equipment used, the time of year, construction/restoration practices and the length of time required to implement them, and the characteristics of streamflows, channel beds, and banks.

Dry-ditch open-cut crossing methods consistently generate lower average suspended sediment concentrations than wet-ditch methods. However, dry-ditch methods are more complex, time-consuming, and expensive to construct (Reid et al. 2004). For dry-ditch crossings, if turbid water is pumped from the ditch to upland areas, sediment increases are usually limited to short-term peaks when the dams (and flume, if applicable) are being installed and removed. However, dam failures or leaks may allow pulses of sediment to be released (Reid and Anderson 2000). Flumed crossings appear to be more prone to such sediment control failures than dam-and-pump crossings, possibly due to their application on larger waterbodies (Reid et al. 2004). No matter which dry-ditch method is used, an accidental spill of sediment-laden trench water would generate substantial stream turbidity (Zwirn 2002). Dry-ditch crossings typically require a longer period of in-stream activity than do wet

ditch open-cut crossings, and may take three to five times longer to construct. Fish passage may be restricted during that time, particularly if pumps are used (Reid et al. 2004).

Wet-ditch crossings are typically completed in much shorter time than dry-ditch crossings but generate substantial suspended sediment concentrations for the duration of the construction and shortly afterward (Reid and Anderson 1999, 2000). As a result, fish spawning habitat, incubating fish eggs, invertebrate populations, water temperature and biological oxygen demand are adversely affected. The magnitude and duration of elevated suspended sediment concentrations are influenced by the size of the waterbody, bed material characteristics, streamflow rates, and the type of equipment used (e.g., backhoe, clamshell dredge). Smaller streamflows during construction result in minimal dilution and high suspended sediment concentrations, but downstream transport may be limited under such conditions. For these reasons, late summer or winter construction may reduce the extent of impacts from open-cut crossing construction. In contrast, high flows increase background sediment transport and mixing, but also create construction and sediment control difficulties that usually result in greater impacts.

Deposition of coarse sediment often takes place within short stream distances (tens or hundreds of feet) no matter which trenching method is used. However, the finer particles (silts and clays) remain suspended for considerably longer distances. The extent and magnitude of sediment-related impacts depend highly on channel and bank materials, flow rates, proximity to incoming tributaries, and background concentrations. Removal of deposited sediment may require several weeks to 2 years or more, depending on flow regimes (Reid and Anderson 1999; Zwirn 2002). Sizable deposits of coarse sediment may cause long-term channel alterations at or near the crossing location. At any ditched crossing, improper recontouring or stabilization of the channel or banks may also affect channel morphology and create unstable waterbody conditions. These risks increase when unsuitable backfill materials are used, or during periods when soils and spoil materials are frozen into large blocks. Changes in channel geometry may modify flow hydraulics to the point where fish passage and aquatic habitats are adversely affected (Zwirn 2002; Reid and Anderson 1999).

HDD crossings avoid excavation-related impacts on waterbodies, but they are the most costly and time-consuming to construct. They may not be suited to all large or sensitive crossing locations due to site characteristics. Since HDD crossings involve specialized drilling equipment and staff, economic and geotechnical concerns often limit their construction. The most common adverse environmental effect from HDD crossing construction is degradation of surface water quality by an inadvertent release of drilling fluids through porous channel materials. Additional land disturbance occurs from staging, equipment uses, and material storage at both the entry and exit locations.

For the proposed project, open-cut crossings constructed at ephemeral or intermittent streams in winter are unlikely to create water quality impacts at the time. Streamflows are likely to be absent during construction at these locations. Increased sediment transport may occur at some of these crossings later in the spring, when the disturbed sites are exposed to spring runoff. The magnitude and spatial extent of sediment transport increases and related impacts at these crossings would be minimized by mitigation and restoration practices committed to by Overland Pass.

Project impacts from open-cut (wet-ditch) crossings at perennial streams would be similar to those described above from experience and empirical studies. Perennial streams, including those listed in **Table 3.5-2**, would undergo increases in sedimentation and turbidity, alterations of flow and water chemistry, and associated adverse effects on aquatic and riparian ecosystems. These impacts would occur to various degrees in perennial streams, major or sensitive waterbodies, and related habitats, even during the winter construction timeframe currently anticipated. Significant and ongoing aquatic habitat impacts are known to occur at the Hams Fork and Blacks Fork crossings in Wyoming from previous pipeline crossings there. In addition, a large concentration of utility crossings already occurs at the proposed crossing location on the Medicine Bow River. Because of these existing and potential impacts, Overland Pass is encouraged to utilize dry-ditch (flume or dam-and-pump) or HDD crossing methods at perennial streams wherever possible, both on lands under federal jurisdiction and elsewhere.

Nationwide 12 permits have been approved for the project by both the Omaha and Kansas City USACE districts, and accompanying Section 401 water quality certifications from Colorado and Kansas are in the review process (Wyoming has issued its certification). A number of general conditions must be complied with under these nationwide permits. Such conditions involve avoiding or minimizing impacts, or mitigating impacts, to aquatic life movement, fish spawning areas, public water supply intakes, endangered species, and other resources. Soil erosion and sediment controls, management of water flows, removal of temporary fills, and compliance with regional or case-specific conditions are also required under the USACE permits issued for the project.

Overland Pass would adhere to the measures contained in its *Construction, Reclamation, and Revegetation Plan* (**Appendix C**) 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 waterbody. On federally managed land spoil would be placed or stored a minimum of 50 feet from the edge of a waterbody. 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 edge of the waterbody or wetland edge on federal land and on non-federally managed land (e.g., private) the setback will be 10 feet. Mitigation Measure VEG-1 (Section 4.6) further addresses the issue of setback distance from riparian areas on federal lands. Refueling, storage and use of hazardous materials, and equipment storage would be set back 500 feet from the edge of the waterbody or wetland on federal land and 100 feet on private land.

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. Overland Pass has agreed to construct a flume crossing at the Green River.

Pipeline integrity during floods and related channel scouring is a major concern for the proposed 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. In addition, Overland Pass has conducted detailed hydrologic and hydraulic studies for the crossing location based on various flood conditions including the 100-year, 24-hour flood. A 5-foot burial depth, from the channel bed surface at its deepest point to the top of the concrete-coated pipe, has been recommended as a result of these investigations. Based on valve placement and burial of the pipeline to this depth, adequate protection of the Green River from flooding and scour would be provided. No water resources impacts related to these concerns are anticipated. Other construction considerations at the Green River 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. Overland Pass considered the HDD crossing method at these streams and rejected it. Site-specific open-cut crossing plans for these streams have been submitted as part of the permit process and approved by the USACE.

Open-cut crossings at the Blacks Fork and Hams Fork rivers may create additional effects on channel geometry, flow depths and velocities, and would increase erosion and sedimentation. If these effects acted in combination with previous impacts at these locations, significant habitat impacts could result.

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, in the vicinity 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 a dry ditch open-cut crossing without disturbing the existing beaver dam and aquatic habitat immediately upstream of the crossing location.

Overland Pass has committed to one HDD river crossing at the South Platte River in Colorado and five HDD at other minor waterway crossings in Colorado. 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, an open-cut contingency plan has been prepared and submitted to BLM and USACE. 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 2007). 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 areas 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. Additional mitigation WATER-1 requires crossing structures at all waterbodies and wetlands on federal land regardless of the size of 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 C**).

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**).

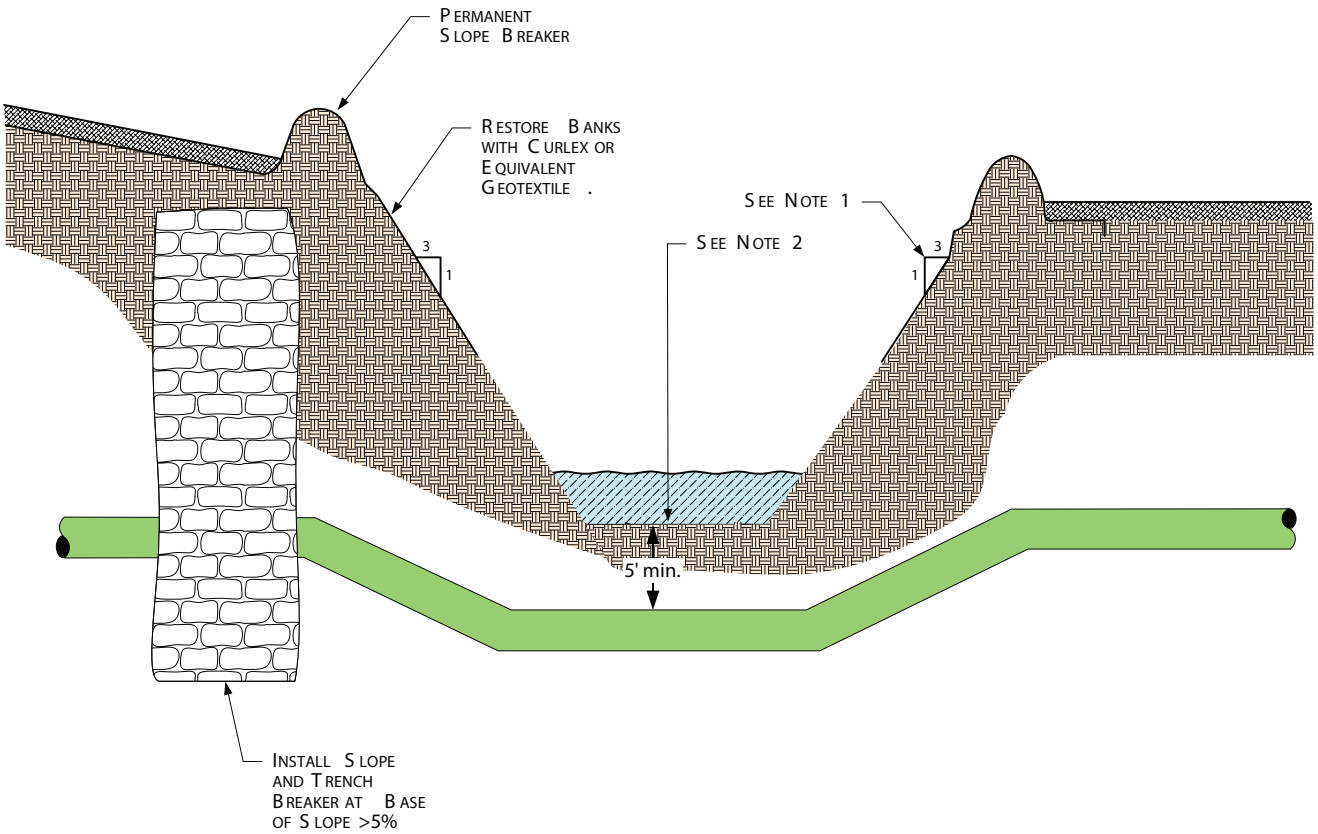
If necessary, specialized, site-specific construction practices and plans would be developed in areas where standard construction practices are not sufficient to protect a resource. For open-cut crossings, waterbody banks would be stabilized and temporary sediment barriers installed within 24 hours of 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.

Construction Water Uses

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. According to the *Hydrostatic Test Plan*, surface water volumes would be returned to their sources, near the points of withdrawal and in compliance with water quality permits. This would avoid transfer of diseases and nuisance organisms.

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 U.S. Bureau of Reclamation (USBOR) data of releases from Flaming Gorge Reservoir indicates that the average annual flow in the Green River below the reservoir is 1,989 cubic feet per second for the period 1964 to 2005. The lowest average monthly flow (in October) is 850 cubic feet per second (about 382,000 gallons per minute), and the highest average monthly release (in

STREAM BANK PROFILE VIEW



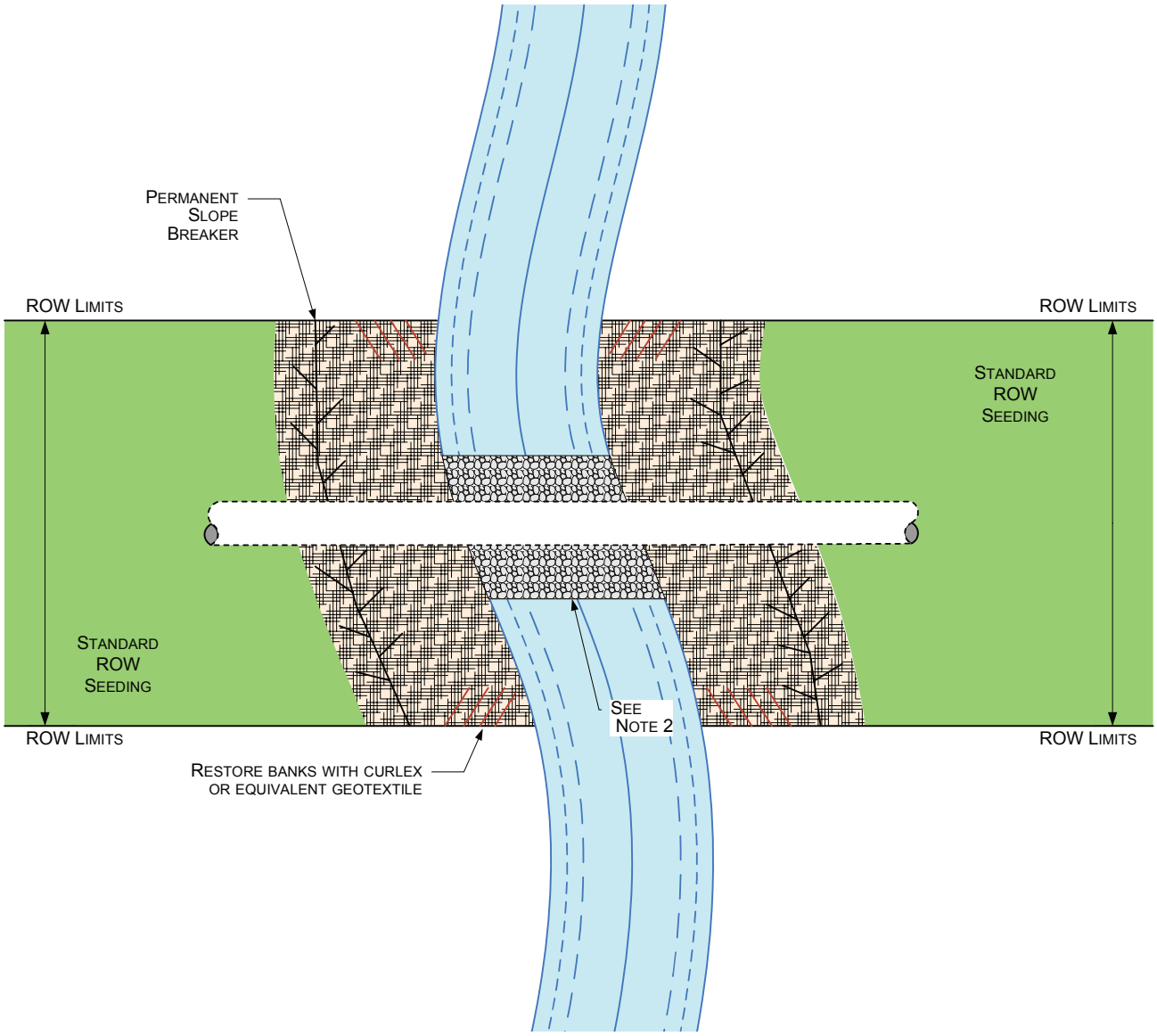
NOTES:

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 North 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

May) is 2,000 cubic feet per second (about 898,000 gallons per minute). Recent winter releases to the Green River from Flaming Gorge Reservoir (since the year 2000) are on the order of 1,000 cubic feet per second (about 449,000 gallons per minute) (USBOR 2006a). The maximum targeted withdrawal rate for proposed hydrostatic testing purposes (either 1,000 or 3,000 gallons per minute, depending upon the dates of withdrawal) is less than 1 percent of the average winter flow.

The Overland Pass *Hydrostatic Test Plan* (**Appendix D**) lists five streams, numerous private wells in Colorado and Kansas, and wells 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 January and March 2008.

Collectively, hydrostatic testing would use up to 18.1 acre-feet from surface water sources in the Colorado River Basin and up to 46.7 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 most 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 Anticipated Water Sources for Construction of the Proposed Project[1]

Approximate RP	Potential Source(s)	Volume for Dust Control		Volume for Hydrostatic Testing		Volume for HDD Uses	
		gallons	acre-feet	gallons	acre-feet	gallons	acre-feet
Colorado River Tributaries							
41.3	Blacks Fork River			2,400,000	7.4		
59.3	Green River			3,500,000	10.7		
	Subtotal				**18.1**		
Platte River Tributaries							
195.5	North Platte River			6,800,000	20.9		
277.1	Laramie River			2,500,000	7.7		
412.4	North Sterling Ditch of the South Platte River			5,900,000	18.1	4,500,000	13.8
	Subtotal				**46.7**		**13.8**
Other Sources							
Overall	Municipal Wells	22,340,000	68.5			500,000	1.5
444.2 – 598.6	Bushton Wells or Private Wells[2]			8,000,000	24.6		
718.0	Wells at ONEOK Bushton Plant			8,300,000	25.5		
	Subtotal		**68.5**		**50.1**		**1.5**
Totals		**22,340,000**	**68.5**	**37,400,000**	**114.9**	**5,000,000**	**15.3**

[1]Source: Supplemental Information, Section 4 (Overland Pass/NRG 2007). Values are approximate; conversion errors are due to rounding.

[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.

Proposed hydrostatic testing withdrawals from the Green and North Platte rivers and the South Platte-North Sterling Canal are minimal with respect to the flows of those channels, and significant adverse impacts to them are not anticipated. The potential for significant adverse effects from proposed surface water withdrawals for hydrostatic testing is greatest with respect to aquatic life habitats in the Blacks Fork and Laramie rivers. Inspection of USGS flow data indicates that the proposed withdrawal rates (1,000 or 3,000 gallons per minute) are substantial when compared to many daily average flows on these streams. When proposed withdrawals are compared to the total volume that moves past a given point in a month's time, the hydrostatic testing program would use a very small portion of water. This is identified in the Hydrostatic Testing Plan (**Appendix D**), and is an appropriate measure for water storage and supply. However, aquatic life support in streams is based on habitat values that depend on the presence of flow in the channel (e.g., depth, velocity, temperature, dissolved oxygen). Proposed pumping rates could pose a risk to the presence of streamflow. The Blacks Fork supports sensitive fish species near the proposed withdrawal location (Keith 2007), and the Laramie River supports a trout fishery. The presence of these species are further detailed in Sections 3.7.1.2 and 3.7.1.3. Potential flow reductions on the Blacks Fork at the proposed withdrawal location are of particular concern (Keith 2007).

At a pumping rate of 1,000 gallons per minute (2.2 cubic feet per second), Overland Pass would require about 1.7 days to fill the test sections from the Blacks Fork (**Appendix D**). This withdrawal rate would be between 4 and 2.5 percent of the mean January and February flow rates, respectively, over the last 20 years at the location. At 1,000 gallons per minute, approximately 0.7 percent of the mean March flow rate would be withdrawn. At 3,000 gallons per minute (6.7 cubic feet per second), pumping would require about 0.6 day to fill the test sections. That rate would withdraw about 12 and 8 percent of the mean January and February flow rates, respectively, over the last 20 years at the Blacks Fork location. The 3,000 gallons per minute rate would withdraw about 2 percent of the mean March flow on the Blacks Fork.

On the Laramie River, the same durations for the respective rates would be required to fill the test sections (**Appendix D**). Recent streamflow data are not available at this location. Based on older records, pumping at 1,000 gallons per minute would withdraw about 6 percent of the mean January and February flows in the channel. The 1,000 gallons per minute withdrawal rate would be about 4 percent of the mean March flow. Pumping at 3,000 gallons per minute would withdraw about 19 and 17 percent of the mean January and February flows, respectively. The 3,000 gallons per minute rate would withdraw about 13 percent of the mean March flow.

In arid and semi-arid regions, daily, monthly, and seasonal streamflows are highly variable where they are not dominated by storage or other flow regulation (e.g., reservoir releases, treatment plant outflows). Mean daily flow data from the USGS were examined for approximately 20 years of record at both the Blacks Fork and Laramie rivers. When proposed project withdrawal rates are compared to daily streamflow rates, potential habitat impacts become apparent at the Blacks Fork and the Laramie rivers. By reviewing daily data at 7-day increments, between 12 and 15 percent of the weeks exhibited flows all week long where the proposed 3,000 gallons per minute (6.7 cubic feet per second) withdrawal rate would remove 50 to 100 percent of the flow. A number of periods exhibited flows where the proposed 1,000 gallons per minute (2.2 cubic feet per second) withdrawal rate would remove a substantial portion of the streamflow. Most periods of limited flows were in August, September, or October on either stream. Overland Pass is not currently proposing withdrawals in those months. However, some of these periods occurred in winter months, particularly during the drought between 2000 and 2004 on the Blacks Fork.

Maintenance flows to support various game fish populations in the Green River Basin during late-season, low-flow months have been identified by the WGFD (Tyrell 2001). For the smaller Green River tributaries listed, these flows are on the order of 10 to 20 cubic feet per second. However, a maintenance flow for the lower Blacks Fork was not listed. Instream flow requirements have not been officially established for either stream segment. Tennant (1976) studied instream flow regimens for fish habitats, and developed a set of recommended protective flows as portions of mean annual flows. He rated these qualitatively (good, fair, poor, etc.). His analysis was largely based on stream studies in Montana and Wyoming. Based on Tennant's results, leaving 10 percent of the mean annual flow would provide a level of protection for aquatic resources in both coldwater and warmwater streams (Tennant 1976).

In the absence of more detailed information, this flow proportion may be useful as a general guide for aquatic habitat maintenance during the short-term withdrawals proposed by Overland Pass at the Blacks Fork and the Laramie River. Ten percent of the mean annual flow over the past 20 years on the Blacks Fork near Little America, Wyoming, would be about 20 cubic feet per second. Based on available data, 10 percent of the mean annual flow on the Laramie River at Laramie, Wyoming, would be about 10.5 cubic feet per second. It is important to note that existing flows in these streams often fall below these levels. In addition to natural flow variations, agricultural diversions are made upstream of the proposed withdrawal locations on both rivers.

In order for these flows to remain in the streams, Overland Pass would need to restrict withdrawals of 1,000 gallons per minute to periods when streamflows are above 22 cubic feet per second at the Blacks Fork, and above 13 cubic feet per second at the Laramie River. For withdrawals of 3,000 gallons per minute, Overland Pass would need to restrict pumping to periods when streamflows are above 27 cubic feet per second at the Blacks Fork, and above 17 cubic feet per second at the Laramie River.

Further study and interactions with appropriate state or federal fisheries agencies could modify these maintenance estimates substantially. Neither stream segment has official instream flow requirements. Further, WGFD has indicated that from a fisheries standpoint, a more suitable water source than the Blacks Fork might be located on the Hams Fork near Opal, Wyoming, or on the Green River (Keith 2007). BLM has concerns about impacts to aquatic habitats on both the Blacks Fork and the Laramie rivers during withdrawals, but neither location is on federally managed land. Stream reaches at both proposed water source locations are entirely on state or privately owned lands. BLM recommends that adequate flow rates for aquatic life habitats be maintained in the Blacks Fork and Laramie River during withdrawals for hydrostatic testing.

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 back into the source water or into adjoining suitable upland areas. 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 C**). The *Hydrostatic Test Plan* (**Appendix D**) 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 discharged back into the source water or onto stable upland areas (well vegetated surfaces with a gradient of less than 10 percent) immediately adjoining the source. Committed mitigation measures for managing hydrostatic test water discharges would minimize the potential for impacts to surface waters or upland disposal sites. Overland Pass has not committed to testing all surface water discharges unless required by specific state permits. BLM mitigation measure WATER- 6 requires testing of hydrostatic test water prior to discharge to ensure that the water meets local, state, or federal water quality standards, including meeting NPDES permit requirements.

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. However, there are a number of streams that flow across state lines that are in various conditions with respect to disease and nuisance organisms. Because of concerns about transferring these organisms, additional mitigation is recommended.

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.

Additional Mitigation

WATER-1: If water is present, 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: On an as-needed basis as determined and specified through consultations with appropriate state and federal fisheries and water-quality agencies, power washing equipment with water and other chemicals as specified shall be required to avoid transfer of whirling disease, parasites, or nuisance organisms after equipment crosses perennial streams. Suitable chemical treatments may be used for equipment cleaning when sustained daytime temperatures are below freezing. Any fluids used for this purpose that contain additives (e.g., chlorine) shall not be discharged to streams or drainages, but shall be disposed of in an agency-approved manner at an appropriate facility.

WATER-3: If water is withdrawn from the Green, North Platte, and Laramie rivers (e.g., for HDD or hydrostatic testing) during the period from April 1 through October 31, Overland Pass shall utilize a filter screen with a mesh size that would prevent impingement and entrainment of aquatic organisms. The mesh size would be 3/32-inch to protect salmonid life stages. For surface water withdrawals during November 1 through March 31, a 0.5-inch mesh filter screen shall be used.

WATER-4: Overland Pass shall use construction techniques applicable for flowing waterbodies when dry/seasonally dry lake beds are crossed during saturated or inundated conditions.

WATER-5: On federal land, Overland Pass shall reduce the total construction ROW width to 60 feet in riparian and wetland areas.

WATER-6: Prior to any discharge, hydrostatic testing water will be tested and processed to ensure that the water meets local, state, or federal water quality standards. This includes meeting NPDES permit requirements as stated in Chapter XVIII of the Wyoming Water Quality Rules and Regulations. Prior to discharge of hydrostatic testing water from the pipeline, the holder shall design and install a suitable energy dissipator(s) at the outlet(s), and design and install suitable channel protection measures necessary to ensure that there will be no erosion or scouring of natural channels within the affected watershed as a result of such discharge. Overland Pass would be responsible for any erosion or scouring resulting from such discharge. Straw bales, sandbags, rock, or other materials or objects installed will be removed from the site upon completion of hydrostatic testing.

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.

Since the publication of the Draft EIS, Overland Pass has committed to supplemental mitigation measures intended to reduce impacts to water resources. Benefits of these mitigations include:

- Protecting water quality by ensuring hydrostatic test discharges meet water quality standards; and
- Reducing erosion impacts from hydrostatic water discharges.

Implementation of the recommended 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. WATER-3 would reduce impacts on aquatic resources during water withdrawals associated with dust control and hydrostatic testing. WATER-4 would minimize impacts to seasonally dry lakes and ponds. WATER-5 would reduce the extent of construction impacts in riparian and wetland areas. WATER-6 would assure hydrostatic test water discharges meet water quality standards.

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 L**) 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 within 10 miles downstream of the pipeline crossing were identified in **Table 3.5-4**. 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 L**.

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.
- 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 2007). 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 2007), 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 2007), 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.

Construction Water Use

An additional impact of project construction on groundwater resources may occur from withdrawals made to supply dust control efforts (approximately 68.5 acre-feet or 22.3 million gallons), hydrostatic testing (approximately 50.1 acre-feet or 16.3 million gallons), and HDD crossings (approximately 1.5 acre-feet or 0.5 million gallons) (**Table 4.5-2**). Groundwater for dust control would be pumped from existing municipal water wells serving about 40 communities between Green River, Wyoming and WaKeeney, Kansas. The total amount withdrawn from any one location would vary between about 0.7 acre-feet (about 225,000 gallons) to 7.1 acre-feet (about 2.3 million gallons). The greatest withdrawals are anticipated from six widely separated municipal wellfields at major communities in Wyoming, and the smallest withdrawals are anticipated in eastern Colorado and Kansas.

In comparison, the total estimated public-supply water use along the proposed route in Wyoming is approximately 8 million gallons per day in Lincoln County; approximately 8.9 million gallons per day in Sweetwater County; approximately 3.4 million gallons per day in Carbon County; and approximately 6.6 million gallons per day in Albany County (USGS 2006). The total fresh groundwater withdrawals for public supplies are about 830,000 gallons per day in Yuma County, Colorado; about 540,000 gallons per day in Sheridan County, Kansas; and about 770,000 gallons per day in Ellsworth County, Kansas (USGS 2007).

In Carbon County, Wyoming, Rawlins represents about two-thirds of the county-wide municipal population, and the proposed withdrawal there would be about two-thirds of the county's daily public demand. Elsewhere, if the proposed municipal sources generally represent about one-third to one-half of their respective daily county withdrawals for public supply, the proposed withdrawals would similarly represent roughly 1 day of public demand at each source. Since dust control withdrawals would occur over many days in each area, groundwater impacts from proposed project withdrawals for dust control would not be significant.

The current hydrostatic testing plan proposes to make groundwater withdrawals for this purpose between approximate RP 442 and RP 599, and at RP 718 (NRG 2007). The first area extends from eastern Colorado (Washington County) into northwestern Kansas (Sheridan County). The South Platte River floodplain extends along the proposed route from about RP 413 to RP 416. Thus, the river alluvium is about 22 miles east of the potential well-water source area, and may be more distant, depending on the source well locations. 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 a 0.5 mile or so of the source well. If such an effect occurs, it may create a minimal impact on streamflows.

Proposed total hydrostatic test withdrawals from groundwater are approximately 50.1 acre-feet (**Table 4.5-2**). 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 about 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. 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) would likely 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 would probably 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 the project *Hydrostatic Testing Plan* (**Appendix D**) to manage test water discharges. Compliance with approved permit 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. Overland Pass has agreed that 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.

Groundwater withdrawals for an HDD crossing at the Cheyenne Hub would require about 1.5 acre-feet (500,000 gallons). The anticipated water source consists of industrial wells owned by gas companies at the site. No impacts to aquifers in that area are anticipated.

Springs and 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. Because of this, Overland

Pass has agreed that 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.

The existence and locations of wells have been investigated for the project. The search of recorded well data identified 47 wells in Wyoming, 54 wells in Colorado, and 108 wells in Kansas that are within 500 feet of the proposed ROW. Five of these are on federally managed lands. Of the total number of wells identified, six are within 50 feet of the proposed construction workspace, and 27 are within 100 feet (NRG 2006).

To avoid impacts to water wells during construction, Overland Pass would conduct pre- and post-construction monitoring of well yield and water quality on all potable wells located within 50 feet of the construction work area. In addition, the Blasting Plan prepared by Overland Pass addresses environmental aspects of blasting activities, identifies areas of concern along the proposed ROW, and identifies practices to promote safety and minimize blasting effects. Overland Pass would either repair or replace potable water supply wells damaged by construction activities (including blasting), or fairly compensate the landowner for damage to potable water supply wells resulting from pipeline construction (NRG 2006). As a result of these practices and mitigation measures, no significant impacts to water wells are anticipated from construction activities.

Additional Mitigation

No additional mitigation was identified.

Conclusion

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 2007). The applicant-committed measures would ensure that groundwater used for hydrostatic testing purposes is of sufficient quality so as to not impact terrestrial resources when discharged aboveground. Committed measures also 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 L**). 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. Overland Pass would implement committed measures that 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

No additional mitigation was identified.

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.
- 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 C**), 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 VEG-1 and WATER-5 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.
- 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 perennial streams crossed by the Southern Energy Corridor – Copper Ridge Bypass Alternative (Little Bitter Creek and Cedar Creek). 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 G**).

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 C**). 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. Key applicant-committed mitigation measures are identified in **Appendix A**.

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
	Federal	138.4	0.0	43.2	0.0	0.0	0.0	1.5	0.0	0.2	0.0
667.2	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[6]	0.0	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[7] 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[7] 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[7]	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. Acres 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. Vegetation characteristics were as provided on a USGS large-scale land use/land cover GIS-based map (www.mrlc.gov).

[2]Wetland totals may differ from **Table 3.5-7** where National Wetland Inventory map data were used 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 palustrine 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 that does not display vegetation characteristics (e.g., commercial/industrial).

[6]Does not include areas in agricultural land associated with the potential future WaKeeney Pump Station.

[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. Totals do not include 82.2 acres for access roads during pipeline operation.

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 on private lands associated with the North Platte River and Medicine Bow River crossings. On federal lands, riparian areas exist at the Green River, Bitter Creek, and Little Bitter Creek 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.

Successful reclamation of sensitive plant communities could take 10 years or more 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-5 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 C**). 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, a total of 3.7 acres would be disturbed, 1.7 of which would be 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 L**).

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 E**). 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. Key applicant-committed mitigation measures are identified in **Appendix A**.

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 initially 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

No additional mitigation was identified.

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. Since the publication of the Draft EIS, Overland Pass has committed to supplemental mitigation measures intended to prevent the spread of undesirable weeds. These applicant-committed mitigation measures are presented in **Appendix A, Table A-1**.

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-2: 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-2 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, and Special Status Species

4.7.1 Proposed Action

4.7.1.1 Wildlife

Construction Phase

Issues

- Habitat reductions and fragmentation from construction clearing.
- Direct disturbance and loss of individuals from construction activities along the ROW and access roads.
- Indirect effects consisting of displacement of individuals and loss of breeding success from exposure to construction noise, and from higher levels of human activity.

Analysis

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, 877 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 Affected by the Proposed Action[1]

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	207.7	46.3	161.4

[1]Crucial big game ranges identified by WGFD and CDOW. Habitats identified in this table have timing restrictions; crucial winter habitat without timing restrictions are not included in this table.

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 on federal lands 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 bald eagle nest could occur as a result of this project. Consultation with the BLM and USFWS will occur to mitigate the potential for these impacts if they were to occur during the breeding season. 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 scrub-shrub 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 could 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.

Additional Mitigation

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. In areas with large amount of rock where trenching may take longer and may include blasting, Overland Pass may request variances from this mitigation measure on a case-by-case basis.

Conclusion

Construction of the Overland Pass Pipeline would disturb wildlife habitat, displace individual animals, and contribute to habitat fragmentation by creating 138 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 2007), including the *Conservation Measure Plan*; *Construction, Reclamation, and Revegetation Plan* (**Appendix C**); SPCC Plan, *Traffic Management Plan*; and *Weed Management Plan* (**Appendix E**). 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 on federal lands 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.

Limiting open trench segments to 10 days will minimize the potential for wildlife and livestock to fall in the trench and become trapped or injured. Some areas of heavy rock concentrations will take longer to excavate and could involve the need for blasting in order to construct the trench. In these rocky areas, it is probable that the trench will need to remain open for longer than 10-day periods during construction. Extensions to the 10-day open trench condition will be handled on a case-by-case basis through the variance process.

Since the publication of the Draft EIS, Overland Pass has committed to supplemental mitigation measures intended to reduce impacts to wildlife. Benefits of these mitigations include:

- Reducing injuries and fatalities to wildlife by providing escape ramps and inspecting the trench frequently;
- Avoiding the take of active nests during actual construction;
- Minimizing the effects of blasting on nesting birds; and
- Reducing the compaction on the working side of the ROW.

Application of the recommended additional mitigation measures would further reduce impacts. Mitigation WILD-1 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 the trench is open. Reduction of the construction ROW width to 60 feet in riparian woodlands and wetlands in WATER-5 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.

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.
- 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.
- 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.
- Potential direct mortalities to amphibians from vehicle traffic.

Analysis

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 2007). 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 C**). 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.

Crossing techniques for PNG intermittent streams are described in surface water impacts (Section 4.5.2).

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. Dry-ditch methods may be used for streams with perceptible flow and widths greater than 30 feet. Site-specific construction plans have been developed and provide detailed crossing methods for the 10 major and sensitive waterbody crossings listed in **Table 3.5-2** as well as 5 minor perennial waterbodies (Overland Pass 2007).

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. Channel modifications 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 10,200 square feet, based on a trench width of 34 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 C**) 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

Construction at stream crossings may occur in the fall or winter months. 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 are 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 warmwater fisheries would avoid peak spawning periods for game fish species. The proposed construction window for coldwater fisheries would avoid spawning periods for trout species in all streams except the Green River in Wyoming and Chief Creek and North Fork Republican River in Colorado. Potential impacts on trout spawning in these streams are discussed below. The additional mitigation measure, WILD-2, would be implemented to minimize construction effects on kokanee salmon and brown trout in the Green River.

As part of project-committed mitigation, Overland Pass would construct during the following timeframes to minimize effects on game fish spawning:

- Coldwater fisheries (except Green River) – May 16 through September 30 and November 15 to March 30;
- Warmwater fisheries – October 1 through June 1;
- Hams Fork and Blacks Fork Rivers and Bitter Creek – October 1 through June 1; and
- South Platte River – August 1 through November 30.

The effects of trenching on game fish species in the Green River would depend on the timing of construction. If construction occurred in late August through late October, construction activity could potentially affect

spawning movements for kokanee salmon and brown trout. Although flumes would be used at the crossing to maintain river flow, physical activity in the trench area at the upstream end of the flumes could affect fish movement. The first run of kokanee salmon occurs from late August through late September. A second run occurs from late September into November, although most of the run is completed by early November. The additional mitigation measure, WILD-2, would be implemented to avoid the first kokanee run and most of the second run by avoiding the period from August 20 through October 15. Mitigation measure WILD-3 also would be required, which would involve notifying WGFD of construction at streams with sensitive fisheries at least 72 hours prior to initiation. 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.

If construction occurred in October or November in Chief Creek or the North Fork of the Republican River, fall spawning brown trout could be affected. Impacts could include disturbance to spawning substrates or eggs and early life stages, alteration of spawning habitat quality due to sedimentation, interruption to spawning movements, and displacement of spawning adults from preferred spawning areas. If construction occurred after mid-November, impacts would be limited to streams that may have eggs or early life stages within the construction disturbance area. The CDOW indicated that brown trout is an introduced species in these streams. For this reason, a construction timeframe of July 1 through April 15 is proposed for these streams to protect two special concern fish species (orangethroat darter and stonecat) (see Section 4.7.1.3, Aquatic Species).

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 square feet, 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. Mitigation measure WILD-2 would be used at the Green River to minimize impacts to spawning migrations of kokanee salmon and brown trout.

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.

Construction Water Use

Hydrostatic testing, dust control, and HDD crossings would result in temporary reductions in surface water and groundwater quantity. The *Hydrostatic Test Plan* (**Appendix D**) lists five streams and numerous wells as water sources for hydrostatic testing, dust control, and HDD crossings. The withdrawal location and volumes are provided in **Table 4.5-2**. The water would be withdrawn during the period January through March 2008. As discussed in Section 4.5, hydrostatic testing withdrawals would result in relatively small reductions in the Green River (10.7 acre-feet), North Platte River (20.9 acre-feet), and South Platte River (North Sterling Ditch) (18.1 acre-feet).

Water withdrawals in the Blacks Fork and Laramie rivers could result in flow reductions of greater than 25 percent when comparing the withdrawal volume to the base flow conditions. The magnitude of the percent reduction would depend upon stream flows at the time of withdrawal. The duration of the flow reduction would continue until a precipitation event increased base flows. As a result of the flow reductions from hydrostatic testing in the Blacks Fork and Laramie rivers, there could be substantial temporary decreases in the amount of habitat for aquatic biota. Additional discussions of effects of water withdrawals for construction use on fish habitat are provided in Section 4.5.1.

Dust control water would be obtained from groundwater sources (municipal wells) located in the following basins: 28.4 acre-feet from the Green River Basin, 14.2 acre-feet from the South Platte Basin, and 14.2 acre-feet from the North Platte Basin. In addition, HDD would use 12.1 acre-feet from the South Platte River (North Sterling Ditch). Collectively, hydrostatic testing, HDD, and dust control would result in a temporary withdrawal of 47.2 acre-feet in the South Platte Basin and 42.7 acre-feet in the North Platte Basin. There would be conflicts regarding minimum flow requirements for the five 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. The *Hydrostatic Test Plan* (**Appendix D**) proposes using a 0.25-inch mesh on intake hoses. As part of the applicant-committed mitigation, the discharge of hydrostatic test water would follow state permit requirements, which would minimize potential effects on aquatic biota. As part of applicant-committed mitigation, 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. Specific discharge locations are provided in the *Hydrostatic Test Plan*. Energy dissipaters also would be used at the discharge points to prevent erosion.

Amphibians

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.

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-2: To avoid impacts to kokanee salmon and brown trout movements and effects on habitat from ice in the winter and high flows in the spring, construction across the Green River shall occur between July 1 and August 15 or between October 15 and November 20.

WILD-3: Overland Pass will notify WGFD at least 72 hours prior to initiating construction at streams with sensitive fisheries (**Table 3.5-2**).

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 *Construction, Reclamation, and Revegetation Plan*, various site-specific waterbody crossing plans (designated for environmentally sensitive waterbody crossings), and other aspects of the POD. 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 2007). 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 could occur 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-2 would be implemented to minimize effects of trenching at the Green River crossing on the late-run of kokanee salmon.

Since the publication of the Draft EIS, Overland Pass has committed to supplemental mitigation measures intended to reduce impacts to fisheries. Benefits of these mitigations include avoiding the alteration of

streambed substrate (i.e., roughness) that can affect sedimentation and erosion regimes, degrade the channel, and create fish barriers.

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-3 would reduce impacts on aquatic resources during water withdrawals associated with dust control and hydrostatic testing.

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 removing woody vegetation from over the top of the pipeline periodically to prevent roots from interfering with the pipeline. 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 L**. 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 I**). 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. Sixteen 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 **Tables 4.7-2, 4.7-3**, and 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; USFS-R4S	MA	MA	NE
Preble's meadow jumping mouse	*Zapus hudsonius preblei*	FT; CO-T	MA	MA	NE
Birds					
Yellow-billed cuckoo	*Coccyzus americanus*	FC; BLM-WY; WY-NSS2; USFS-R4S	MA	NE	NE
Whooping crane	*Grus americanus*	FE; CO-E; KS-E	MA	MA	NE
Interior least tern	*Sterna antillarum athalassos*	FE; CO-E; KS-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; USFS-R4S	MI	MI	NI
Townsend's big-eared bat	*Plecotus townsendii*	BLM-WY; USFS-R4S WY-NSS2; CO-SOC; KS-SINC	MI	MI	MI
Pygmy rabbit	*Brachylagus idahoensis*	BLM-WY; USFS-R4S	MI	NI	NI
Swift fox	*Vulpes velox*	CO-SOC; USFS-R2S; BLM-WY	MI	MI	MI

Table 4.7-2 Impacts for Special Status Species

Common Name	Scientific Name	Status[1]	Impact Potential[2]		
			Wyoming	Colorado	Kansas
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					
Bald eagle	*Haliaeetus leucocephalus*	CO-T; WY-NSS2; KS-T; BLM-WY; USFS-R4S	MA	MA	MA
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; USFS-R4S	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; USFS-R4S	MI	NI	NI
Golden eagle	*Aquila chrysaetos*	BLM-WY; KS-SINC	MI	MI	MI
Peregrine falcon	*Falco peregrinus*	KS-E; BLM-WY; USFS-R4S	MI	NI	MI
Sage sparrow	*Amphispiza belli*	BLM-WY	MI	NI	NI
Sage thrasher	*Oreoscoptes montanus*	BLM-WY	MI	MI	NI
Trumpeter swan	*Cygnus buccinators*	BLM-WY; WY-NSS2; USFS-R4S	MI	NI	NI
White-faced ibis	*Plegadis chihi*	BLM-WY	MI	MI	MI
Greater sage-grouse	*Centrocercus urophasianus*	CO-SOC; BLM-WY; WY-NSS2; USFS-R4S	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; USFS-R4S	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

Table 4.7-2 Impacts for Special Status Species

Common Name	Scientific Name	Status[1]	Impact Potential[2]		
			Wyoming	Colorado	Kansas
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
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:

FC *= Federally Candidate*
FE *= Federally Endangered*
FT *= Federally Threatened*
WY-NSS1*= Wyoming Critically Imperiled Species*
WY-NSS2*= Wyoming Imperiled Species*
CO-E *= Colorado Endangered*
CO-T *= Colorado Threatened*
KS-E *= Kansas Endangered*
KS-T *= Kansas Threatened*
KS-SINC*= Kansas Species in Need of Conservation*
BLM-WY *= Wyoming BLM sensitive*
USFS-R2S *= USFS Region 2 sensitive species*
USFS-R4S *= USFS Region 4 sensitive species (considered with BLM 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 2007). The Overland Pass *Conservation Measure Plan* includes measures that would be implemented if

federally listed species, species of concern, a USFS-sensitive species, or a BLM-sensitive species were identified along the proposed pipeline route during project-specific surveys. In coordination with the BLM and USFS, 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					
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

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
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
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					
Bald eagle	*Haliaeetus leucocephalus*	CO-T; WY-NSS2; KS-T; BLM-WY; USFS-R4S	Nesting: No Impact Foraging: 3	Nesting: No Impact Foraging: 4	Nesting: No Impact Foraging:<1
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

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
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
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

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
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
Eastern hognose snake	*Heterodon platirhinos*	KS-SINC	No Impact	No Impact	Reproduction/Foraging: 563

[1]Status Definitions:

FC *= Federally Candidate*
FE *= Federally Endangered*
FT *= Federally Threatened*
WY-NSS1*= Wyoming Critically Imperiled Species*
WY-NSS2*= Wyoming Imperiled Species*
CO-E *= Colorado Endangered*
CO-T *= Colorado Threatened*
KS-E *= Kansas Endangered*
KS-T *= Kansas Threatened*
KS-SINC*= Kansas Species in Need of Conservation*
BLM-WY *= Wyoming BLM sensitive*
USFS-R2S *= USFS Region 2 sensitive species*
USFS-R4S *= USFS Region 4 sensitive species (considered with BLM 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 seasonally dry lakes 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 contains 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 C**). 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 could adversely affect habitat for special status fish species if the open-cut is not properly restored. Improper restoration also could adversely affect habitat for flannelmouth sucker and roundtail chub. Mitigation measure SSS-1 would be implemented for the Bitter Creek crossing, which would involve a dry crossing method, if perceptible flow exists at the time of construction. Mitigation measure WILD-3 also would be implemented, requiring Overland Pass to contact WGFD at least 72 hours prior to initiating construction at the Black Fork, Hams Fork, and Bitter Creek crossings.

As part of project-committed mitigation, construction would occur during the following timeframes:

- Hams Fork and Blacks Fork Rivers – October 1 through June 1; and
- South Platte River – August 1 through November 30.

Colorado River Basin Depletion

Hydrostatic testing and dust control would result in water depletions in the Colorado River Basin. Hydrostatic test water would be withdrawn once during the period January through March 2008. In the Colorado River Basin, water sources for hydrostatic testing would include the Blacks Fork and Green rivers. A total of 18.1 acre-feet would be withdrawn from these rivers for hydrostatic testing. Dust control could use up to 28.4 acre-feet from the Colorado River Basin. The water sources for dust control would be four municipal water wells owned by the cities of Green River, Kemmerer, Rock Springs, and Rawlins. These municipal wells represent existing water supplies. The total estimated consumptive water use would be 46.5 acre-feet in the Colorado River Basin.

As part of project-committed mitigation for the Proposed Action, water use would comply with the *Recovery Implementation Program for Endangered Fish Species in the Upper Colorado River Basin* (Recovery Plan), which was established in 1988 to mitigate for water depletion impacts to federally listed fish species. To ensure the survival and recovery of the listed species, water users are required to make a one-time payment to the Recovery Plan. The current depletion fee (through September 2007) 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. The relatively small depletions associated with hydrostatic testing and dust control would be covered under the existing Recovery Plan and considered a minor depletion.

Platte River Basin Depletion

Since 1978, the USFWS determined that actions resulting in depletions to flows in the Platte River system are likely to adversely affect one or more federally listed threatened or endangered species and adversely modify critical habitat. The four federally listed species that have been the focus of recovery efforts (the "target species") are the whooping crane, the northern Great Plains population of the piping plover, the interior least tern, and the pallid sturgeon.

The Platte River Recovery Implementation Program (PRRIP), established in 2006, is implementing actions designed to assist in the conservation and recovery of the target species and their associated habitats along the central and lower Platte River in Nebraska through a basin-wide cooperative approach agreed to by the States of Wyoming, Nebraska, and Colorado and the U.S. Department of the Interior. The PRRIP addresses the adverse impacts of existing and certain new water related activities on the Platte River target species and associated habitats, and provides ESA compliance for effects to the target species and whooping crane critical habitat from such activities including avoidance of any prohibited take of such species. The State of Colorado and the State of Wyoming are in compliance with their obligations under the PRRIP.

For federal actions and projects participating in the PRRIP, the program's Final EIS and the June 16, 2006 programmatic BO serve as the description of the environmental baseline and environmental consequences for the effects of the Federal actions on the listed target species, whooping crane critical habitat, and other listed species in the central and lower Platte River addressed in the programmatic BO. Impact discussions relevant to the Platte River Basin are provided below.

- **Wyoming**. Construction of the proposed pipeline project would result in approximately 42.7 acre-feet of new, one-time depletions to the North Platte River, at the Wyoming/Nebraska state line as a result of hydrostatic testing and dust control water use. The sources of water for the replacement of the project's uses are listed in **Table 4.5-2** along with information on the withdrawal points, withdrawal schedule, and the duration of water use. The options for discharge of hydrostatic test water would be to return it back to the North Platte and Laramie rivers or to discharge it in upland areas located within 50 to 100 feet of these waterbodies. In Wyoming, the proposed pipeline project qualifies as a "new water related activity" because such action constitutes new surface water or hydrologically connected groundwater activities which may affect the quantity or timing of water reaching the associated habitats of the target species implemented after July 1, 1997.

- **Colorado**. Construction of the pipeline would result in approximately 47.2 acre-feet of one-time, new depletions to the South Platte River associated with hydrostatic testing, dust control, and HDD. The estimated water volumes, sources, withdrawal points, withdrawal schedule, and duration of water use are provided in **Table 4.5-2**. Hydrostatic test water would be discharged back to the North Sterling Ditch or in an upland area located within 50 to 100 feet of the source waterbody. A hydrostatic test water discharge permit will be acquired from the CDPHE prior to discharge. The HDD process and dust control would be consumptive uses with no water discharge. In Colorado, the proposed pipeline project qualifies as a "new water related activity" because such action constitutes a new surface water or hydrologically connected groundwater activity which may affect the quantity or timing of water reaching the associated habitats of the target species implemented after July 1, 1997.

As part of applicant-committed mitigation for the Proposed Action, water use would comply with the June 2006 programmatic BO. Overland Pass is required to submit documentation to the USFWS to fulfill the responsibilities of PRRIP participants. Toward this end, the BA prepared for the Proposed Action includes the following documentation certifying the project as a new, one-time use water related activity and Overland Pass' intention to rely on the provisions of the PRRIP to provide ESA compliance for potential impacts to the target species and whooping crane critical habitat. Mitigation required in each state under the PRRIP is discussed below.

- **Wyoming**. A letter from the State of Wyoming's State Engineer's Office will be sent to Overland Pass to certify that the water use is covered under the PRRIP. The letter will confirm that the project's water use conforms to the criteria in Section II of Chapters 2 or 3 of Wyoming's Depletions Plan.

- **Colorado**. South Platte Water Related Activities Program (SPWRAP) is a nonprofit corporation formed to assist the State of Colorado in complying with its obligations under the PRRIP for projects in the South Platte River and North Platte River basins. Funds provided by water users and SPWRAP members help support Colorado's participation in the program. The Proposed Action qualifies as a one-time use, new water related activity in Colorado and does not require membership in SPWRAP. This one-time use, however, does require a one-time use fee to SPWRAP, which has been paid.

As part of applicant-committed mitigation, appropriate size mesh 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.

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 I**). 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 C**), potential impacts to special status plant species would be low, with the exception of Nelson's milkvetch (SSS-2). 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
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:

FE = Federally Endangered.
FT = Federally Threatened.
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

Flannelmouth Sucker

SSS-1: 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.

Nelson's Milkvetch

SSS-2: Overland Pass shall prepare a plan prior to construction to be approved by the BLM to avoid disturbance to all Nelson's milkvetch plant locations.

Conclusion

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 2007). Since the publication of the Draft EIS, Overland Pass has committed to supplemental mitigation measures intended to reduce impacts to sensitive species. These mitigations would further minimize potential impacts to the Preble's meadow jumping mouse, migratory birds, mountain plover, eastern spotted skunk, and midget faded rattlesnake. 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 applicant-committed and recommended additional mitigation (SSS-1, **Appendix A**), implementation of Overland Pass' *Construction, Reclamation, and Revegetation Plan* (**Appendix C**), 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-1) and establishing a setback distance from riparian vegetation (VEG-1). Applicant-committed mitigation measures would reduce impacts to sensitive species, such as stonecat, 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 could result in long-term adverse impacts to habitat for special status fish species if the streambed is not properly restored. 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 applicant-committed measures (Overland Pass 2007). 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.

- 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 L**). 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 for wildlife resources. 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. 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. 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, Recreation, 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).

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. Providing adequate notice to federal grazing permittees and maintaining access to rangeland for winter sheep operations also are important issues.

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 C**) 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

LAND-1: Overland Pass shall notify all federal grazing permittees at least 5 days in advance of construction activities. Additionally, Overland Pass must take measures to avoid cutting off access to rangeland for winter sheep operations.

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 2007). Key applicant-committed measures are identified in **Appendix A**.

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. 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. 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 landowners. However, Overland Pass is committed to restoration of all land, consistent with its *Construction, Reclamation, and Revegetation Plan*, to ensure longevity and safe operation.

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.

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.

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.

4.8.1.2 Transportation

Construction Phase

Issues

- Interference with local traffic and traffic to recreational destinations.
- Potential damage to roads and highways from open-cuts.
- 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 1,300 to 1,500 construction personnel would be required to complete the project, which would be divided into 5 construction spreads, each consisting of approximately 200 to 300 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 slight during construction on I-25 and I-76 between Fort Collins and Greeley. 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 slight during construction on I-70 from the Colorado border to the Hays area of Kansas. 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.

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 advance notification and 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 2007).

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-2: Overland Pass shall post notification at recreation sites and on main access roads into these recreation sites warning users of heavy traffic related to construction of the project.

Conclusion

Overland Pass would implement a *Traffic and Transportation Management Plan* to minimize effects of project construction and operation on transportation. 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 (such as public, paved roads) 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.

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.
- Potential damage to residential landscapes.

Analysis

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. Structures located within 50 feet of the Overland Pass construction ROW are identified in **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

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
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
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

No additional mitigation was identified.

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.

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.
- 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 limit how close pipelines may be constructed to one another. 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

The proposed pipeline centerline generally would be located 50 feet from existing pipeline centerlines, where possible. 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.
- Construction noise to nearby residences.

Analysis

Visual Resources

Public lands that would be affected by the proposed pipeline are composed 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. Where the proposed pipeline crosses USFS lands, these SMS standards would be adhered to.

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, recreation areas, 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. Impacts would be greatest in the short term and would become less as vegetation occurred. 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 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.
- Same issues as construction, but on a smaller scale.
- Operational noise/smells to nearby residences.
- 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

No additional mitigation was identified.

Conclusion

Project design and applicant-committed mitigation would minimize visual impacts by locating the aboveground facilities in areas already used by other pipelines minimizing unnecessary nighttime lighting, 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. 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 primary land uses crossed by the Southern Energy Corridor – Copper Ridge Bypass Alternative would be rangeland. Compared to the Proposed Action, approximately 23 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).

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.
- 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 J** 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.

Additional Mitigation

ARCH-1: Adverse effects to historic properties will be mitigated through the implementation of a project-wide Memorandum of Agreement among the BLM; Pawnee National Grasslands USFS; Overland Pass Pipeline LLC; Wyoming, Colorado, and Kansas SHPOs; and the Advisory Council on Historic Preservation.

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. Tribes requested the pipeline be moved to increase buffers between cultural resources and the pipeline corridor. Of specific importance to some tribes was the location of the proposed pipeline in relation to the Foote Creek Rim Archaeological District in southern Wyoming. After careful consideration, the BLM determined that the route least likely to impact historic properties was the proposed route that follows previously disturbed lands within an existing designated utility corridor. Other requests made by the tribes included the presence of tribal monitors during construction, having the tribes conduct their own surveys prior to construction, and release of all cultural resource data pertaining to the project. The BLM and tribes are working cooperatively to develop a data share agreement to facilitate release of pertinent cultural resource data. Additional concerns discussed with the tribes included what laws each state has for protection of burials on private and state lands, mitigation of potential impacts, and treatment of 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 without consultation with interested tribes as required by law.

Additional Mitigation

No additional mitigation was identified.

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 October 2007. Construction would last about 6 months and is anticipated to be complete with the pipeline in service by the second quarter of 2008. Overland Pass anticipates a peak workforce of approximately 1,300 to 1,500 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 200 to 300 construction and inspection personnel associated with each spread. The workforce needed to construct the aboveground facilities within each spread are included in these estimates. The construction of the potential future pump station at WaKeeney would require an additional 20 to 28 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' 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	300
2	147 - 281	1 Pump Station (Laramie) 1 Meter Station (Laramie)	Sweetwater, Carbon, and Albany counties, Wyoming	300
3	281 – 438	NA	Albany and Laramie counties, Wyoming Larimer, Weld, Morgan, Logan, and Washington counties, Colorado	300
4	438 – 591	1 Meter Station (Washington County)	Washington and Yuma counties, Colorado Cheyenne, Rawlins, Thomas, and Sheridan counties, Kansas	200
5	591 – 749.4	3 Meter Stations (WaKeeney, Bushton, and Conway)	Sheridan, Gove, Trego, Ellis, Russell, Barton, Ellsworth, Rice, and McPherson counties, Kansas	200
Potential Future	606.0	1 Pump Station (WaKeeney)	Sheridan County, Kansas	20 to 28

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 was 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 200 to 300 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 was 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 $8.4 million ($2.2 million in Wyoming, $2.6 million in Colorado, and $3.6 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 1,300 to 1,500 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:

- $8.4 million or more annually in property taxes ($2.2 million in Wyoming, $2.6 million in Colorado, and $3.6 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 Health and Safety

4.12.1 Proposed Action

4.12.1.1 Hazardous Materials and Wastes

Construction Phase

Issues

- Storage and handling of hazardous materials.
- Previously contaminated sites.

Analysis

Overland Pass would dispose of construction wastes in accordance with Overland Pass' SPCC Plan (Overland Pass 2007). 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 C**). 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;
- Emergency 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 L**, release of NGLs into the environment does not pose a major threat to water quality or soil contamination. While the probability of an accident is low, there is the potential for a fire if an accident resulted in the release of NGL from the pipeline. Overland Pass will 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

SAFETY-1: In order to comply with BLM regulations at 43 CFR 2886.10, prior to operating the pipeline, Overland Pass must certify to BLM in writing that it has constructed and tested the pipeline in accordance with the terms of the ROW grant and it is in compliance with the plans, specifications, and federal and state laws and regulations concerning the pipeline.

Conclusion

Overland Pass would comply with these federal pipeline safety regulations, including 49 CFR Part 195 and 43 CFR 2886.10. 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. 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 Wyoming Interstate Company was struck by a bulldozer operated by construction crews building the Kinder Morgan Rockies Express/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 Rockies Express/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 Rockies Express/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 was 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.