

ENVIRONMENTAL ANALYSIS

CHAPTER 3

3.0 ENVIRONMENTAL ANALYSIS

3.1 Geology

3.1.1 Geology and Physiography

The proposed EPP route would cross parts of three major physiographic provinces: the Wyoming Basin Province, the Southern Rocky Mountains Province, and the Great Plains Province (Fenneman and Johnson 1946; USGS 1985). The Wyoming Basin Province and Southern Rocky Mountain provinces generally consist of mountain ranges separated by broad basins, while the Great Plains Province is a remnant fluvial plain. **Table 3.1-1** summarizes by MP the physiographic province, section, and geology along the proposed pipeline route.

Construction of the proposed project facilities would not materially alter the geologic and physiographic conditions or worsen existing unfavorable geologic conditions in the area. Construction effects would include disturbances to the natural topography along the ROW and aboveground facilities due to grading and trenching activities. Upon completion of construction, Entrega would restore topographic contours and drainage patterns as closely as possible to their pre-construction condition. Operation of the pipeline and its associated facilities would not affect the geologic and physiographic conditions in the project area.

3.1.2 Mineral Resources

Potentially Exploitable Resources

In Colorado, known oil and gas producing reservoirs underlay approximately 90 percent of the proposed pipeline route and aboveground facilities and approximately 45 percent of the proposed project lies within an area of known oil shale-bearing strata in the Piceance Basin. Coal-bearing formations that are potentially mineable (both surficial and sub-surface sources) would underlay approximately 60 percent of the proposed pipeline route through Colorado, in Rio Blanco and Moffat Counties (Colorado Division of Minerals and Geology 2003). These areas also are potentially capable of producing economic quantities of coal-bed methane (EPA 2002).

In Wyoming, approximately 80 percent of the EPP in Wyoming would occur in sedimentary basins with known oil and gas producing regions. Producing fields in those regions are clustered around the proposed Wamsutter Compressor Station in Sweetwater and Carbon Counties. Other producing fields lie near the proposed project in the Laramie Basin, in western Albany County (De Bruin 2002). Approximately 22 percent of the proposed route would lie within an area of known oil shale-bearing strata extending from the Wyoming-Colorado border north to Wamsutter, in the Washakie Basin. Approximately 60 percent of the proposed pipeline route would cross surface and subsurface coal-bearing formations that are potentially mineable in the Green River, Hanna and Rock Creek Coal Fields of Sweetwater, Carbon, and Albany Counties (Glass and Roberts 1980; Jones 1991; Case et al. 1998a).

Typically, the pipeline trench would be about 6 to 7 feet deep to account for the pipe and adequate cover. Limited blasting could be required in areas where competent shallow bedrock or boulders were encountered

**Table 3.1-1
Geologic Conditions Along the Proposed Pipeline Route**

Physiographic Province/ Section	MP Range	Geology	Topography/Elevation	Miles of Shallow Hard Bedrock ¹
COLORADO				
Wyoming Basin	-0.5 to 85.8			
Piceance Basin	-0.5 to 39.4	Alluvial, colluvial, and mud flow Quaternary deposits along drainages. Tertiary and Cretaceous claystone, shale, siltstone, and sandstone bedrock.	Approximately 6,100 feet above mean sea level (msl) to 6,540 feet above msl. Low relief along pipeline route, with intermittent and adjacent high angle slopes and adjacent hills to 800 feet above drainage floors.	12.5
Axial Basin	39.4 to 54.5	Tertiary siltstone and sandstone bedrock with Quaternary alluvium along drainages.	Approximately 5,970 feet above msl to 8,220 feet above msl. Variable moderate to high relief.	0.0
Sand Wash Basin	54.5 to 85.8	Alluvial, colluvial, and mud flow Quaternary deposits along drainages. Tertiary and Cretaceous claystone, shale, siltstone, and sandstone bedrock.	Approximately 6,000 feet above msl to 6,900 feet above msl. Moderate to low relief.	0.0
Great Plains				
	318.5 to 327.0			
Denver Basin	318.5 to 327.0	Light colored tuffaceous claystones, sandstones, and conglomerates of the Miocene Ogallala Formation with minor Quaternary alluvium along drainages.	Approximately 5,935 feet above msl to 6,220 feet above msl. Low relief.	0.4
				Colorado Total
				12.9
WYOMING				
Wyoming Basin	85.8 to 214.0			
Washakie Basin	85.8 to 133.5	Alluvial, colluvial Quaternary deposits along drainages. Tertiary oil shales and marlstones, claystone, sandstone, and conglomerate bedrock.	Approximately 6,200 feet above msl to 7,010 feet above msl. Variable relief.	2.7
Wamsutter Arch	133.5 to 192.8	Gravel, piedmont and fan Quaternary deposits (MPs 149.1 to 155.1). Otherwise dominated by Tertiary to Cretaceous sandstone, siltstone, and shale bedrock with occasional thin coal or carbonaceous beds.	Approximately 6,520 feet above msl to 7,100 feet above msl. Low relief.	0.5
Saratoga Valley	192.8 to 214.0	Miocene tuffaceous sandstone and white marl with Tertiary to Cretaceous sandstone, siltstone, and shale bedrock with occasional thin coal or carbonaceous beds.	Approximately 6,500 feet above msl to 7,220 feet above msl. Low relief.	0.7

Table 3.1-1 (Continued)

Physiographic Province/ Section	MP Range	Geology	Topography/Elevation	Miles of Shallow Hard Bedrock ¹
Southern Rocky Mountains	214.0 to 305.0			
Medicine Bow Mountains	214.0 to 246.4	Minor alluvial, colluvial and mud flow Quaternary deposits along drainages. Tertiary sandstone, conglomerates, shales, and coal with occasional massive quartzite boulders and Cretaceous sandstone, siltstone, and shale bedrock with occasional thin coal or carbonaceous beds.	Approximately 6,965 feet above msl to 7,940 feet above msl. Variable relief.	1.5
Laramie Basin	246.4 to 284.0	Mostly gravel, piedmont, and fan Quaternary deposits with Quaternary alluvium and colluvium. Cretaceous gray sandstone and soft gray shale bedrock with occasional bentonitic clay seams.	Approximately 7,140 feet above msl to 7,800 feet above msl. Low relief.	0.2
Laramie Mountains	284.0 to 305.0	Mostly Permian and Pennsylvanian thick-bedded sandstone with some interbedded limestone along western flanks, followed by Middle Proterozoic granite bedrock in the core area with some Early Proterozoic meta-sedimentary and meta-volcanic bedrock along the eastern flank.	Approximately 7,380 feet above msl to 8,230 feet above msl. Variable, moderate relief.	16.1
Great Plains	305.0 to 318.5			
Denver Basin	305.0 to 318.5	Light colored tuffaceous claystones, sandstones, and conglomerates of the Miocene Ogallala Formation with minor Quaternary alluvium along drainages.	Approximately 6,150 feet above msl to 7,405 feet above msl. Moderate relief.	3.4
			Wyoming Total	25.1

¹Shallow bedrock locations (within 5 feet of the surface) were determined using the State Soil Geographic (STATSGO) database (NRCS 1995). MPs represent areas where 15 percent or more of the map unit comprises shallow to bedrock soils.

Source: Fenneman and Johnson 1946; USGS 1985; Geological Survey of Colorado 2003a.

3.0 ENVIRONMENTAL ANALYSIS

that could not be removed by conventional excavation. **Table 3.1-1** identifies those areas along the proposed pipeline route in Colorado and Wyoming where shallow bedrock would be anticipated. Additional discussion of blasting impacts is presented in section 3.3.1.

None of the oil and gas wells identified would be located within the proposed pipeline construction ROW. However, blasting operations could potentially damage nearby oil and gas wells, and trenching could encounter underground gathering pipelines associated with the wells. Because oil and gas is generally 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 the project-specific Blasting Specification Plan (Entrega 2004a) as well as additional mitigation measures identified in section 3.3.1. Prior to construction, Entrega would identify any associated underground gathering lines in the project construction ROW and would either avoid piping, or take appropriate precautions to protect the integrity of such facilities.

Mining and Mineral Resource Operations

Anywhere the route would follow drainages in both Colorado and Wyoming, the surface materials (alluvium, colluvium and fan deposits) are potentially mineable for industrial minerals, such as sand and gravel (Harris 1992, 1996). Other areas of known or potential mineral resources include uranium in the Medicine Bow Mountains, and copper, gypsum, carbonates, and granite along the flanks of the Laramie Range (U.S. Department of the Interior [USDI] 2002).

Mining and mineral recovery operations within 1,500 feet of the proposed project were identified using aerial photography and project alignment sheets, USGS topographic maps, information on mineral operations from the National Atlas of the United States (USDI 2002), state mineral publications, and the USGS Minerals Yearbook (USGS 2003). In Colorado, mineral resource operations near the proposed project consist of one active sand and gravel pit and nine oil and gas wells (USDI 2002; USGS 2003). In Wyoming, 11 sand and gravel operations (5 active, 6 inactive), 1 underground coal mine (inactive), 1 quarry (active), and 66 oil and/or gas wells, would be located within 1,500 feet of the proposed project (USDI 2002; USGS 2003).

The only active operation intercepted by the pipeline route would be a Union Pacific quarry between MPs 297.4 and 298.1. The pipeline would cross a reclaimed area with active mining approximately 200 feet south of the proposed pipeline route. A field survey conducted by Entrega confirmed that construction of the pipeline through this reclaimed area would not represent an engineering or environmental concern that would require a reroute.

Potential impacts to surface mining operations, if any, would be limited to temporary short-term encumbrances during construction and would be minimized by Entrega working with the owners and/or operators of these mining operations during ROW negotiations and facilities construction to minimize conflicts where mineral resources could be affected. Because construction of the pipeline would be limited

to near-surface disturbance, the proposed project would not impact oil and gas production in the area or other underground resource recovery operations, such as coal.

The proposed project would cross private and federal lands in the Red Rim Coal Area between about MPs 167.5 and 169.7. The Red Rim Coal Area has been designated for mining development by the BLM. This area is discussed further in section 3.7.3. 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 route. Additionally, impacts on future mineral development would not constitute a significant loss of mineral resource or mineral availability because of the narrow, linear nature of the pipeline ROW relative to the expanse of areas with mineral resource potential.

It is anticipated that the pipeline would be backfilled with materials derived from the trench excavation, and it might be necessary to obtain some construction sand and gravel from local, existing commercial sources for use as backfill, road base, or surface facility pads. These demands for sand and gravel would not substantially affect the long-term availability of construction materials in the area.

3.1.3 Geologic Hazards

Geologic hazards are natural physical conditions that, when active, can result in damage to the land and structures, or injury to people. Geologic hazards that exist in the proposed project area consist of seismic-related hazards (i.e., earthquakes, ground rupture, soil liquefaction), landslide, subsidence, flooding/scour, and avalanche. The conditions necessary for the occurrence of other geologic hazards, such as karst features and volcanism, are not present in the project area. The potential for geologic hazards to affect pipeline facilities is characterized as low to moderate.

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.

Seismic Hazards

We reviewed known fault zones that could pose potential geological hazards to the proposed pipeline and aboveground facilities. While the proposed pipeline route would not cross any faults in Colorado that are known to be active or which have a high potential for future surface rupture, the proposed pipeline route would be located near several faults that are considered potentially active (Geologic Survey of Colorado 2003b). The Dudley Gulch Graben – South Fault is located near MP -0.5 and the Dudley Gulch Graben - North Fault is located near MP -0.4. The faults that bound the graben have not experienced surface ruptures since at least 11,000 years ago nor were they activated during the most extreme historically recorded earthquake in the area, which occurred in 1882. If reactivation were to occur on the Dudley Gulch Graben boundary faults, the potential exists for landslides and/or mudflows to develop in Dudley Gulch or North Dudley Gulch (Clift 1986).

3.0 ENVIRONMENTAL ANALYSIS

In general, the potential for seismic events sufficient to damage the proposed pipeline is lower in Wyoming than in Colorado. No active or potentially active surface faults are known to be located along the proposed route in Wyoming (Case et al. 1995a,b, 1998b; Case 1997; King et al. 1987).

Secondary seismic effects (liquefaction, lateral spreading, flow failure) are often more damaging than shaking or surface faulting. Soil liquefaction is a phenomenon that occurs when saturated, cohesionless soils are subjected to strong and prolonged shaking from seismic events. Liquefaction can lead to loss of load bearing strength and can result in lateral spreading, flow failures, and flotation of buried pipelines. Lateral spreading and flow failure involve the horizontal movement of competent surficial soils due to the liquefaction of an underlying deposit. These events can pose a potential hazard to pipeline integrity since they can shift large amounts of material that could bend and weaken a pipeline along slopes. Lateral spreading normally develops on very gentle slopes and involves displacements ranging from 3 to 6 feet, while flow failures generally occur in saturated, loose sands with ground slopes ranging between 10 and 20 degrees.

For soil liquefaction and the related effects of lateral spreading or flow failure to occur, a relatively shallow water table, rapid, strong ground motions, and susceptible soils all must be present. Since the potential for strong earthquake ground-shaking to occur along the proposed pipeline route in Colorado is categorized as low, the potential for soil liquefaction and related effects to develop also is considered to be low.

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 192 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.

Landslides

Landslides refer to the downward and outward movement of slope-forming materials reacting under the force of gravity. **Table 3.1-2** identifies areas where the potential for landslides along the proposed pipeline route may exist. No area of high landslide susceptibility was identified for the proposed route, although portions of the route in the Wyoming Basin Province are moderately susceptible to landslides. A potential landslide deposit was identified adjacent to the proposed pipeline route (MPs 236.7 to 236.9, in the Medicine Bow Mountains). For this 0.2-mile section, the risk of further landslides is characterized as moderate. The proposed EPP route is located within an area of low seismic hazard potential, which reduces the potential for landslides to occur.

We consulted with WIC regarding their existing UBL pipeline, since the EPP would parallel the UBL along many segments in western Colorado and southwestern Wyoming. From these consultations, an area was identified along the proposed EPP route at MP 31 where landslides have previously occurred. Construction of the proposed EPP near MP 31 could damage drain tiles previously installed by WIC to mitigate the landslide hazard in the area. As a result, Entrega has committed to repair any construction-related damage that might occur to the drain tile system, thereby ensuring continued protection against landslide recurrence in the area.

**Table 3.1-2
Potential Geologic Hazards Along the Proposed Pipeline Route**

State/Region	Approximate MP(s)	Potential Geologic Hazard
COLORADO		
Piceance Basin	-0.5 to 39.4	Moderate to low landslide susceptibility and low liquefaction susceptibility.
	-0.5 to 6.3	Alluvial floodplains and alluvial fans are subject to flooding and scour. Floodplains adjacent to high-angle slopes are especially susceptible to debris flows or land slides.
	7.0 to 11.7	
	12.8 to 14.1	
	14.7 to 15.5	
	27.3 to 33.5	
	-0.5 to -0.4	Low potential for differential movement and surface rupture of the Dudley Gulch Graben boundary faults (North and South).
	13.8	Unnamed normal fault of the Maybell Fault group. Late Cenozoic. No record of recent seismic activity.
	15.3	Unnamed normal fault. Late Cenozoic. No record of recent seismic activity.
	28.0	Unnamed normal fault of the Brown Parks Fault group. No record of recent seismic activity.
Axial Basin	39.4 to 54.5	Moderate to low landslide susceptibility and low liquefaction susceptibility.
	43.0 to 44.3	Alluvial floodplains and alluvial fans are subject to flooding and scour. Floodplains adjacent to high-angle slopes are especially susceptible to debris flows.
	50.3 to 50.6	
Sand Wash Basin	54.5 to 85.8	Moderate to low landslide susceptibility and low liquefaction susceptibility.
	55.6 to 57.0	Alluvial floodplains and alluvial fans are subject to flooding and scour.
	59.8 to 60.1	
	83.9 to 84.8	
	84.7	Unnamed normal fault of the Elkherd Mountain Fault (west) group. No record of recent seismic activity.
85.6	Same fault as above (Unnamed normal fault of the Elkherd Mountain Fault (west) group). The proposed pipeline route crosses this fault twice. No record of recent seismic activity.	
Denver Basin	318.5 to 327.0	Low landslide susceptibility and low liquefaction susceptibility.
	320.2 to 320.7	Alluvial floodplains and alluvial fans are subject to flooding and scour.
WYOMING		
Washakie Basin	85.8 to 133.5	Low landslide susceptibility and low liquefaction susceptibility.
	96.0 to 96.2	Alluvial floodplains and alluvial fans are subject to flooding and scour.
	98.5 to 98.7	
	109.8 to 110.0	
Wamsutter Arch	133.5 to 192.8	Low landslide susceptibility and low liquefaction susceptibility.
	134.0 to 134.3	Alluvial floodplains and alluvial fans are subject to flooding and scour. Internal drainage basins are subject to flash flooding during storm events.
	170.9 to 171.1	
	175.9 to 177.2	
	188.0 to 188.1	
	192.7 to 192.8	
	168.7	Abandoned underground mines in the area, but none known to be beneath the proposed route. Low potential for underground mine-induced subsidence to impact the project.
172.5		
Saratoga Valley	192.8 to 214.0	Low landslide susceptibility and low liquefaction susceptibility.
	205.7	Abandoned underground mines in the area, but none known to be beneath the proposed route. Low potential for underground mine-induced subsidence to impact the project.

3.0 ENVIRONMENTAL ANALYSIS

Table 3.1-2 (Continued)

State/Region	Approximate MP(s)	Potential Geologic Hazard
Medicine Bow Mountains	212.6 to 212.9	Alluvial floodplains and alluvial fans are subject to flooding and scour.
	214.0 to 246.4	Moderate landslide susceptibility and low liquefaction susceptibility.
Laramie Basin	225.2 to 225.9 237.3 to 237.6	Alluvial floodplains and alluvial fans are subject to flooding and scour.
	236.7 to 236.9	Route adjacent to a potential landslide deposit along the steep east side of a north-south trending ridge. Moderate landslide susceptibility.
	246.4 to 284.0	Low landslide susceptibility and low liquefaction susceptibility.
	249.9 to 250.1 274.2 to 274.5	Alluvial floodplains and alluvial fans are subject to flooding and scour.
	256.3 to 259.6	Abandoned underground mines in the area, but none known to lie beneath the proposed route. Low potential for underground mine-induced subsidence to impact the project.
Laramie Mountains	284.0 to 305.0	Low landslide susceptibility.
Denver Basin	305.0 to 318.5	Low landslide susceptibility.

In the event that any previously unknown landslides that would damage the pipeline are identified prior to construction, Entrega has committed to bury the pipeline below the potential landslide depth, if feasible, and/or to implement drainage control to reduce the chance of a landslide. Drainage control could include any of the following methods, either singly or in combination:

- frequent slope breakers;
- frequent ditch breakers;
- subsurface gravel or cobble drains;
- culverts to carry water away from the ROW;
- drainage ditches to carry water to a stream;
- reducing the slopes on cuts; and
- special pipeline padding to reduce drag on the pipeline should the slope move.

Implementation of Entrega's Plan and Procedures (appendices E and F) and the project-specific Blasting Specification Plan (Entrega 2004a) 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 Entrega's Plan (appendix E). At a minimum, these measures would include the construction of trench breakers, permanent slope breakers, and establishment of permanent vegetation within the ROW.

Subsidence

Subsidence, the loss of surface elevation due to removal of subsurface support, is one of the most diverse forms of ground failure, ranging from small or local collapses to broad regional lowering of the earth's surface. Causes of subsidence can include dissolution in limestone aquifers (karst topography), past and present underground mining, and withdrawal of fluids (groundwater, petroleum, geothermal).

The greatest risk for collapse or subsidence in the project area is from underground mining operations. In Colorado, the most common form of subsidence occurs over abandoned underground coal and clay mines. No areas along the proposed pipeline route in Colorado were identified to have the potential for subsidence resulting from underground mining activities. Further, the proposed project would not cross directly over any known active or abandoned underground mines. We also consulted with WIC to determine if subsidence had been an issue along the existing UBL pipeline. WIC has not experienced problems with mining-induced subsidence along the UBL pipeline.

Similarly, the most common form of subsidence in Wyoming is associated with abandoned underground coal and clay mines. While abandoned underground mines were identified near MPs 168.7, 172.5, 205.7, and 256.3 to 259.6 (Case 1993), Entrega found no evidence of subsidence directly underlying the route. In Wyoming, the proposed EPP route generally follows existing pipelines, which would reduce the likelihood of encountering previously unknown areas of subsidence.

Other types of subsidence are less common in Colorado (Shelton and Prouty 1979) and generally do not pose a significant risk to the proposed pipeline project. No areas of regional subsidence were identified in

3.0 ENVIRONMENTAL ANALYSIS

the proposed project area. 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 project route is low. Nevertheless, WIC did identify two areas of potential concern for sinkholes along their existing UBL pipeline (MPs 25.5 and 53.5 to 54.5). 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. Entrega would monitor the pipeline route for sinkholes during construction and operation. If a span was created that posed a safety hazard, Entrega would be required to mitigate the hazard as required by DOT regulations.

Flooding

In general, seasonal flooding hazards exist where the proposed pipeline route would cross major streams and rivers, and flash flooding hazards exist where the pipeline would cross small watersheds. The proposed pipeline route would cross 21 perennial and 174 intermittent waterbody crossings in Colorado and 22 perennial and 178 intermittent waterbody crossings in Wyoming, all of which are locations where seasonal or flash flooding could occur. **Table 3.1-2** identifies areas where the proposed pipeline route would cross alluvial floodplains and alluvial fans, which are areas with an elevated risk for flood-related debris flows and scouring to 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.

We are concerned about the potential for streambed scour on the White, Yampa, Little Snake, and North Platte Rivers, since these rivers can experience very large spring runoff events. Entrega has committed to perform a brief assessment of potential streambed scour depths for seasonal high flows for the North Platte, Yampa, and Little Snake Rivers, and would cross the White and Yampa Rivers by HDD, (placing the pipeline well below scour depth). The assessment would be based on existing stream flow data, USGS topographic maps, and aerial photographs for each crossing. Additional, site-specific information may be obtained, if necessary. **We recommend that Entrega include the White River in its assessment of potential streambed scour depths, so that this information would be available for design purposes if an open-cut crossing is ultimately required at this location.**

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. The compressor, meter, and pigging stations and mainline valves do not appear to be located within areas susceptible to flooding.

Review of Federal Emergency Management Agency maps for the Meeker Hub Compressor Station (MP 0) indicates that the facility lies entirely outside the 100-year floodplain of Piceance Creek. Minimal hazard of flooding from Piceance Creek (less than 1 percent in any given year) would be present at surface facilities.

Most of the Meeker Hub Compressor Station site, including the location of all aboveground facilities is above the floodplain on an alluvial fan (up to about 5 feet above the floodplain). Siting aboveground facilities on an alluvial fan exposes them to other potential hazards. An alluvial fan is a fan-shaped geological feature formed by material deposited where a stream issues from a narrow mountain valley onto a plane or broad valley. In this case, the feature is the result of material deposited by flows from the intermittent North Dudley Gulch as it joins the broader Piceance Creek valley. Siting the proposed compressor facilities on the alluvial fan exposes them to an increased potential for flash flooding and debris flows associated with North Dudley Gulch. However, the drainage has been rerouted along the highway frontage (south of the station) and, in most cases, would prevent flood and debris flows from reaching the site.

Avalanche

Snow avalanches are the rapid down-slope movement of snow, ice, and associated debris, such as rocks and vegetation. While avalanches would not pose a hazard to the underground pipeline facility, an avalanche could damage surface facilities and would pose a risk to workers in the affected area. In the mountainous areas of Colorado and Wyoming, avalanches generally occur above 8,000 feet elevation, and on slopes with average gradients of 30 to 45 degrees. Slopes steeper than 45 degrees usually do not accumulate enough snow to produce large avalanches (Mears 1979).

Overall, the risk of an avalanche damaging the project facilities would be categorized as low because most of the proposed pipeline route would lie below 8,000 feet elevation. Isolated portions of the route in Colorado (MPs 53.3 to 54.0) and Wyoming (MPs 236.4 to 236.9) would traverse or approach elevations and terrain that could favor avalanche development. The currently proposed locations for the compressor and meter stations (un-manned facilities) are not located in avalanche prone areas. The un-manned Arlington Pigging Station (MP 236.9) would be located at the base on the leeward side of a steep slope in one of these designated areas. While snow slides would occur on these slopes, the amount of snow that would accumulate on the slope and the distance from the base of the slope to the pigging facilities suggests that damage to structures would be unlikely.

3.1.4 Paleontological Resources

A paleontological study of existing data was conducted to identify geological units and known fossil localities crossed by the proposed pipeline route. The study identified 33 formal geological formations ranging in age from Precambrian to Pliocene along the proposed pipeline route, many of which are known to contain scattered vertebrate fossil localities and abundant plant and invertebrate fossil sites in the vicinity of the proposed project (Uinta Paleontological Associates, Inc. 2005). The study also identified six informal Quaternary units. The sensitivity of each unit for containing fossil material subsequently was evaluated using a three-tiered classification system established by the BLM (BLM Paleontology Resources Manual and Handbook H-8270-1). Under this system, units are ranked according to their potential for noteworthy fossil occurrences as follows:

- **Condition 1** – Areas that are known to contain vertebrate fossils or noteworthy occurrences of invertebrate or plant fossils.

3.0 ENVIRONMENTAL ANALYSIS

- **Condition 2** – Areas with exposures of geological units or settings that have high potential to contain vertebrate fossils or noteworthy occurrences of invertebrate or plant fossils.
- **Condition 3** – Areas that are very unlikely to produce vertebrate fossils or noteworthy occurrences of invertebrate or plant fossils based on their surficial geology, igneous or metamorphic rocks, extremely young alluvium, colluvium, or aeolian deposits, or the presence of deep soils.

Entrega conducted a paleontological field survey in the spring and summer of 2004 to identify fossil localities that could be disturbed by pipeline construction. The survey covered a 250- to 300-foot-wide corridor along the length of the fossiliferous strata along the proposed pipeline route, unless the grade was considered too steep, the surface exposures were too well vegetated, or there was substantial alluvial or soil cover. Along segments of the proposed route that parallel an existing pipeline, the edge of the 250- to 300-foot-wide corridor was located 50 feet from the proposed centerline on the side with the existing pipeline and 200 to 250 feet from the centerline on the other side. Where the proposed pipeline would not parallel an existing pipeline, a 300-foot-wide survey corridor centered on the staked centerline of the pipeline route was examined. In addition to the pipeline corridor, access roads, temporary use areas, and associated ancillary facilities also were examined for paleontological resources.

The field survey identified 91 occurrences of fossils in Colorado grouped into 36 localities, and 263 occurrences of fossils in Wyoming grouped into 60 localities. Most of these localities are along the north-south segment of the proposed corridor, between Meeker, Colorado, and Wamsutter, Wyoming, on the eastern edges of intermontane Tertiary basins. Much of the remainder of the proposed pipeline ROW, between Wamsutter and its terminus south of Cheyenne, Wyoming, is covered with an undetermined thickness of well-vegetated Quaternary deposits that are not known to be fossiliferous. However, where the Quaternary deposits are thin, pipeline construction may impact underlying fossiliferous units (Uinta Paleontological Associates, Inc. 2005).

The field surveys undertaken for the project examined those units mapped as meeting the BLM's Condition 1 paleontological criteria (approximately 160 miles of the pipeline corridor). Spot checks or rock exposure evaluations were done along the Condition 2 units (approximately 71 miles). However, subsequent evaluation of the field survey data indicates there are 123.3 miles that meet the Condition 1 criteria, 42.6 miles in Colorado and 80.7 miles in Wyoming (**tables 3.1-3** and **3.1-4** lists the miles of Conditions 1, 2, and 3). Entrega will monitor Condition 1 locations during construction. Field surveys indicate that Condition 2 criteria are met along 124 miles of the proposed pipeline corridor, 22.5 miles in Colorado and 101.5 miles in Wyoming. Entrega will spot check these areas for fossils during ground disturbing activities associated with project construction. Condition 3 units were not included in the field surveys, and no further work is needed on these units (approximately 21.1 miles in Colorado and 59.1 in Wyoming). No field surveys were conducted from MP 247 to MP 254.8 and MP 285.7 to MP 289.7 due to denied access.

As a result of the field survey, at least 354 new occurrences of fossils were found, many of which were grouped into 96 new localities. Several scientifically critical discoveries were made: dinosaur remains in the Iles Formation (UCM 2004063), and faunal assemblages in local areas of the Laney Tongue of the Green River Formation and the Cathedral Bluffs Member of the Wasatch Formation (UCM 2004039, 2004026, and

**Table 3.1-3
Conditions 1, 2, and 3 Along the Surveyed Entrega Pipeline Route**

Formation	BLM Rating	Fossil Potential	Miles Surveyed
Alluvium and colluvium	Condition 3; Condition 1 near rivers	Usually low, but river beds can be rich	44.2
Alluvium and colluvium over Jurassic Morrison Formation	Condition 1	Usually fossiliferous	0.7
Alluvium and colluvium over Triassic Chugwater Formation	Condition 2	Low to moderate	0.8
Alluvium over Wasatch	Condition 3	Usually low, but river beds can be rich	2.5
Battle Spring Formation – proximal conglomerate correlative with Wasatch Formation	Condition 2	Moderate	3.8
Browns Park Formation, Wyoming and Colorado	Condition 1	Locally high	9
Casper and Fountain Formations	Condition 2	Low for vertebrates	3.3
Chugwater Formation or group by Laramie	Condition 2	Moderate	1.1
Eolian, wind blown, or loess over Wasatch	Condition 3	Low	0.8
Ferris Formation	Condition 1	Locally high	1.9
Forelle Limestone and Satanka Shale = Goose Egg Formation	Condition 2	Low for vertebrates	2.3
Fort Union Formation, Colorado	Condition 2	Moderate	1
Fort Union Formation, Wyoming	Condition 1	High	6.6
Gravel, pediment, and fan deposits	Condition 3	Low	18.9
Green River Formation/Lower Wasatch Formation Interface	Condition 1	High	1.8
Green River Formation: Laney member	Condition 1	High	23.1
Green River Formation: Laney member (lower)	Condition 1	High	0.4
Green River Formation: Luman tongue	Condition 1	High	0.8
Green River Formation: Parachute Member, Colorado	Condition 1	High	1.9
Green River Formation: Tipton shale member or tongue	Condition 1	High	5.6
Green River Formation: Wilkins Peak member	Condition 1	High	0.1
Hanna Formation	Condition 1	High	9.3
Iles Formation, Colorado	Condition 2 to 1	Moderate	1.8
Lance Formation	Condition 1	Locally high	2.9
Land slide deposits	Condition 3	Low	0.2
Lewis Shale, Colorado	Condition 2	Low for vertebrates	0.2
Lewis Shale, Wyoming	Condition 2	Low for vertebrates	11.3
Mancos Formation, Colorado	Condition 2	Moderate	0.9
Medicine Bow Formation	Condition 2	Moderate	1.9
Mesaverde Group	Condition 1	Locally high	9.5
Metasedimentary and Metavolcanic Rocks	Condition 3	Low	3.6

3.0 ENVIRONMENTAL ANALYSIS

Table 3.1-3 (Continued)

Formation	BLM Rating	Fossil Potential	Miles Surveyed
Miocene Rocks	Condition 1 to 2	Locally high	12.3
Miocene Rocks (Browns Park, North Park, Troublesome, or Ogallala formation equivalents)	Condition 1	High	0.5
Niobrara Formation	Condition 2	Low for vertebrates	0.6
Ogallala Formation	Condition 2	Locally high	5.9
Playa lake and other lacustrine deposits	Condition 3	Low	1.2
Pleistocene gravels – terrace, glacial, alluvial	Condition 3	Low	2
Quaternary alluvium over Green River Formation, Colorado	Condition 1	High	3.7
Quaternary alluvium over Uinta Formation with Green River Formation tongues, Colorado	Condition 1	High	1
Quaternary alluvium over Wasatch Formation	Condition 1	High	0.8
Quaternary alluvium over Wasatch Formation	Condition 3 or 1	Low to high	1.1
Sherman Granite	Condition 3	Low	11.4
Steele Shale	Condition 2	Low for vertebrates	5.6
Steele Shale and Niobrara Formation	Condition 2	Low for vertebrates	14.7
Uinta Formation with Green River Formation tongues in Colorado	Condition 1	High	1.1
Upper Miocene Rocks	Condition 2	Locally high	12.3
Variable thickness of alluvium and colluvium over Browns Park	Condition 1 Condition 3; near rivers	Usually low, but river beds can be rich	0.9
Wasatch Formation – Main Member	Condition 1	High	0.3
Wasatch Formation aka DeBeque Formation in Piceance Creek Basin, Colorado	Condition 1	High	10.3
Wasatch Formation: Cathedral Bluffs tongue	Condition 1	Locally high	33.4
Wasatch Formation: main body in Wyoming	Condition 1	High	13.3
Washakie Formation	Condition 1	High	2.5
White River Formation	Condition 1	High	3.7
Williams Fork Formation, Colorado	Condition 1	Locally high	4.7
Wind River Formation – at base locally includes equivalent of Indian Meadows Formation	Condition 1	High	0.8
Total miles			316.9

Source: Uinta Paleontological Associates Inc. 2005.

**Table 3.1-4
Conditions 1, 2, and 3 Along the Entrega Pipeline Route Developed by Mapping¹**

Formation	BLM Rating	Fossil Potential	Miles Mapped
Alluvium and colluvium	Condition 3; Condition 1 near rivers	Usually low, but river beds can be rich	1.1
Casper and Fountain Formations	Condition 2	Low for vertebrates	3.7
Gravel, pediment, and fan deposits	Condition 3	Low	0.3
Hanna Formation	Condition 1	High	0.3
Lewis Shale, Wyoming	Condition 2	Low for vertebrates	1.6
Mesaverde Group	Condition 1	Locally high	1.4
Sherman Granite	Condition 3	Low	0.3
Steele Shale	Condition 2	Low for vertebrates	0.8
Wind River Formation – at base locally includes equivalent of Indian Meadows Formation	Condition 1	High	1.7
Total Miles			11.2

¹ This table lists the total miles of formations and corresponding Conditions 1, 2, and 3 that were not surveyed due to denied access. The data shown in the table was obtained through the use of geological maps rather than by field survey.

Source: Uinta Paleontological Associates Inc. 2005.

3.0 ENVIRONMENTAL ANALYSIS

2004073). For UCM 2004073, Entrega recommends that surface fossils be collected prior to construction (Uinta Paleontological Associates, Inc. 2005). Little excavation work would be necessary. Mitigation or avoidance is recommended for UCM 2004063, UCM 2004039, and UCM 2004026. Entrega is currently evaluating options for avoiding UCM 2004063 and UCM 2004039. Entrega has indicated that it will file an addendum report of the reroutes in May 2005.

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, Entrega has prepared and would implement a Monitoring and Mitigation Plan to protect fossil resources that may be encountered during project construction, including the resources identified during the field survey (Uinta Paleontological Associates, Inc. 2005). Primary elements of the Monitoring and Mitigation 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 Monitoring and Mitigation Plan would be performed by qualified paleontologists with trained assistants. The plan would be filed with the Secretary prior to construction.

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 EPP ROW), impacts to paleontological resources would be negligible. As a result of a comment from the BLM, Entrega has committed to paleontological monitoring in areas where maintenance activities require trenching that would be wider than the original trench.

3.2 Soils and Noxious Weeds

Soils characteristics that can affect construction or increase the potential for soil impacts include: highly erodible soils; prime farmland; hydric soils; compaction-prone soils; presence of stones and shallow bedrock; droughty soils; depth of topsoil; and percent slope. Additional soil-related issues include revegetation potential, soil salinity, and soil contamination. **Tables 3.2-1** and **3.2-2** summarize characteristics of soils that would be crossed by the pipeline route.

**Table 3.2-1
Acreage Summary of Sensitive Soils**

State/ County	Total Acres ¹	Highly Erodible		Prime Farmland ⁴	Hydric ⁵	Compaction Prone ⁶	Stony – Rocky ⁷	Shallow Bedrock ⁸	Droughty ⁹
		Water ²	Wind ³						
COLORADO									
Rio Blanco	396	396	12	0	0	0	295	241	30
Moffat	853	792	258	0	26	0	143	68	407
WYOMING									
Sweetwater	1,135	750	128	0	<1	0	465	131	443
Carbon	1,175	1,071	80	0	0	0	454	233	465
Albany	724	533	10	0	46	10	311	227	128
Laramie	272	268	0	0	4	0	193	195	4
COLORADO									
Larimer	3	3	0	0	0	0	2	2	0
Weld	148	106	2	0	0	0	23	29	38
Project Total Acres^{10,11}	4,706	3,919	490	0	76	10	1,886	1,126	1,515

¹ Acreage assumes a 100-foot-wide construction ROW, including areas where ROW was increased/decreased due to site-specific conditions, and additional temporary workspace. Individual soils may occur in more than one characteristic class.
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 (1995) as potential prime farmland if adequate protection from flooding and adequate drainage are provided.
⁵ As designated by the NRCS (1995).
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 cobbly, 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 Total does not include 149 acres in Colorado and 516 acres in Wyoming of land to be used for pipe storage and contractor yards, as no soil data was available.
¹¹ Discrepancies in acreages are due to rounding.

Pipeline construction activities that have the potential to adversely affect soils and revegetation potential include: clearing and grading along the ROW, trenching, backfilling, and restoration. Potential soil impacts include: loss of soil due to water or wind erosion, especially on steep slopes or fine sandy soils; reduction of

3.0 ENVIRONMENTAL ANALYSIS

**Table 3.2-2
Acreage Breakdown of Topsoil Depth and Average Slope Class
Along the Entrega 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
----- Acres -----											
COLORADO											
Rio Blanco	396	225	150	0	0	21	18	43	123	47	166
Moffat	853	526	299	0	15	12	116	237	265	135	99
WYOMING											
Sweetwater	1,135	631	402	55	0	44	755	11	168	165	32
Carbon	1,175	828	328	0	0	19	405	225	269	250	25
Albany	724	469	110	75	21	50	355	43	117	110	99
Laramie	272	96	119	21	4	31	51	38	53	105	25
COLORADO											
Larimer	3	1	1	0	0	<1	1	1	<1	1	0
Weld	148	37	103	3	1	3	60	50	27	10	0
Project Total Acres^{4,5}	4,706	2,813	1,512	154	41	180	1,761	648	1,022	823	446

¹ Acreage assumes a 100-foot-wide construction ROW, including areas where ROW width was increased/decreased due to site-specific conditions and additional temporary workspace areas.

² Topsoil includes A-horizons (layers 1, 11, and 12) listed in the STATSGO layer table.

³ Slopes are grouped by the averages of the high and low slope ranges provided in the STATSGO database for each map unit identification (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.

⁴ Discrepancies are due to rounding.

⁵ Total does not include 149 acres in Colorado and 516 acres in Wyoming of land to be used for pipe storage and contractor yards, as no soil data were available.

soil quality by mixing topsoil with subsoil or by bringing excess rocks to the surface; soil compaction due to traffic by heavy equipment; introduction of noxious weeds or invasive plant species; and disruption of surface and subsurface drainage or irrigation systems.

None of the soils that would be crossed by the proposed pipeline route or the aboveground facilities are considered prime farmland or potentially prime farmland (**table 3.2-1**). Therefore, no impacts on highly productive agricultural soils are anticipated.

Construction of the compressor, meter, and pigging stations would affect about 76 acres. The Meeker Hub Compressor Station would be located on land already dedicated to commercial/industrial uses, while the Bighole and Wamsutter Compressor Stations, Cheyenne Hub Metering Station, and the Arlington Pigging

Station would be built on rangeland. Soils in these areas are susceptible to wind and water erosion. At the Meeker Hub Compressor Station, soils on a portion of the site are hydric and prone to compaction.

Seventeen of the 22 mainline valves would be constructed in the 50-foot-wide permanently maintained ROW. The remaining five mainline valves would be located within compressor and meter stations. Each mainline valve that was located within the ROW would occupy an area of 40 feet by 60 feet. Soil constraints for these mainline valves would be the same as those identified for the surrounding pipeline ROW.

Ancillary facilities would consist of 6 contractor yards, 8 pipe storage yards, and 4 rail sidings occupying about 517 acres of land. A number of the pipe storage yards would be located in areas already used for industrial purposes, however, some sites would be located partially or entirely in rangeland. 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. 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 Entrega's Plan (appendix E), and topsoil would be restored to its original position.

Soil impacts at the compressor and meter station sites would be mitigated by the implementation of Entrega's Plan, such as erosion control measures, topsoil separation and handling procedures, and remediation of compacted soils. Installation of the mainline valves would occur within the 100-foot-wide temporary construction ROW or the proposed compressor or meter station sites, so no additional land would be disturbed during construction.

While normal operations would have negligible effects to soil resources, future routine maintenance activities could result in infrequent, isolated surface disturbances along the pipeline ROW. These future maintenance activities would adhere to construction and reclamation standards within Entrega's Plan, Procedures, and POD. Adherence to these plans would minimize impacts associated with future maintenance activities.

3.2.1 Erosion

The majority of the proposed route would cross range and shrublands on gently rolling to moderately steep slopes that are highly erodible. Of the total 4,706 acres (not including pipe storage and contractor yards) potentially affected by pipeline construction, the majority (3,919 acres, 83 percent) are considered highly water erodible. About 10 percent (490 acres) of soils along the proposed pipeline route are highly wind erodible, although there is considerable overlap between wind and water erosion classes in some counties (**table 3.2-1**). Removal of vegetation and topsoil increases the likelihood of erosion by wind or water. About 37 percent (1,761 acres) of the soils along the route have average slope-ranges in the 0 to 5 percent category (see **table 3.2-2**). Fifty-three percent of the remaining soils range from greater than 5 percent to 30 percent slope (2,493 acres). About 10 percent of soils have slopes greater than 30 percent (446 acres) (**table 3.2-2**). Most of the highly erodible soils (water and wind erosion) are in western Colorado and Wyoming (1,458 acres and 2,840 acres, respectively); while most of the soils in eastern Colorado are

3.0 ENVIRONMENTAL ANALYSIS

primarily susceptible to water erosion (**table 3.2-1**). Entrega would control erosion and sedimentation by a variety of different methods as discussed in Entrega's Plan, Procedures, and POD. Temporary slope breakers, permanent slope breakers, sediment barriers, and mulches are some of the practices that would be implemented as erosion and sedimentation control (see appendix E). On non-federal lands, we believe that permanent slope breaker spacing may be adjusted to follow the requirements of the local soil conservation authority or land management agency at the discretion of the EI. However, this change from the specifications in Entrega's Plan would require FERC approval prior to implementation. During construction in areas prone to wind erosion, Entrega has committed to "wet down" topsoil stockpiles to maintain a surface crust which would act to minimize wind-blown losses. Topsoil losses reduce soil productivity, which results in further erosion.

In areas susceptible to erosion, it is anticipated that the soil covering the pipeline could be severely eroded and compromise restoration over time. While the DOT requires that a pipeline be buried to a specified depth during construction (30 inches in most locations), there are no regulations dictating that the depth of cover be maintained during the life of the pipeline. Therefore, **we recommend that if severe wind erosion occurs (as noted by exposed pipe, deflation, or dune formation), Entrega should install and monitor erosion prevention devices (e.g., snow fences) to ensure soil stabilization as part of Entrega's ongoing maintenance program. Entrega shall notify the FERC of severe erosion and its mitigation in Entrega's quarterly activity reports to the FERC.**

3.2.2 Sensitive Soils

During construction across BLM and state-owned lands, and subject to the approval of the land managing agency, Entrega proposes to strip and segregate topsoil from the ditch line only, except in cut areas where the ROW or additional temporary workspace areas must be leveled for safe construction. In such areas, Entrega would strip the full ROW. The stripped topsoil would be stored separately and not allowed to mix with trench spoil. On private lands, Entrega would segregate topsoil according to landowner requests. If the landowner has not made a specific request regarding topsoil segregation, Entrega would use the same methods as described above for BLM and state-managed lands. To further minimize potential impacts to soil resources, topsoil would not be stripped from areas used for subsoil stockpiles.

We generally agree that limiting the amount of stripping in shallow topsoil areas reduces impacts on topsoil by limiting its disturbance and how much it is handled. Less disturbance generally equates to improved reclamation success and less opportunity for the introduction of invasive species; less handling results in less topsoil loss, which is especially important when topsoil is shallow. However, by not stripping topsoil from the working side of the construction ROW, there is the potential for heavy construction equipment to pulverize the topsoil and intermix it with subsoil as the equipment and vehicles move up and down the ROW. In windy areas, pulverized topsoil would be blown off the ROW and effectively lost. As a result, Entrega has committed to monitor for potential topsoil degradation in areas where it is not stripped from the working side of the construction ROW. If topsoil in these areas becomes powdered or pulverized to a depth of 4 inches and is being mixed with subsoil, or if wind is moving topsoil off the ROW regardless of dust control measures applied, then the EIs, in conjunction with the agencies' compliance monitors, would require that Entrega change its procedures to strip topsoil from both the ditch line and the working side of the ROW. As required by Entrega's Plan, topsoil stockpiles would be segregated from trench spoil. Entrega would continue with this expanded topsoil stripping procedure until construction encountered an area with

3.2 Soils and Noxious Weeds

soils having a more coarse texture and greater cohesiveness. Here, limited topsoil stripping of the ditch line only could be resumed if approved by both the EIs and agencies' compliance monitors. The BLM has indicated it may require implementation of additional measures to conserve topsoil on federal land.

About 10 acres (less than 1 percent of total area) of compaction-prone soils were identified (**table 3.2-1**) and all of these areas are located in Albany County, Wyoming. In these susceptible areas, Entrega would minimize compaction by restricting activities during wet soil conditions. Entrega would alleviate soil compaction and rutting in agricultural and rangeland soils, as specified in Entrega's Plan, Procedures, and POD.

About 3 percent of the pipeline route contains soils with substantial rocks and stones in the surface soil horizons, with the majority of rocky soils occurring in Rio Blanco County, Colorado, and the four counties in Wyoming (**table 3.2-1**). Soils containing shallow bedrock occupy about 24 percent (1,126 acres) of the proposed pipeline route. About 12 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 bedrock areas are located in Rio Blanco County, Colorado, Carbon, Albany, and Laramie Counties, Wyoming (**table 3.2-1**).

During construction, Entrega would minimize the introduction of subsoil rock into topsoil (Entrega 2004b,c), ensuring that the amount of rock on the ROW after construction would be similar to or less than the area adjacent to the ROW. Where necessary, excess rock would be either hauled off the ROW and disposed of at an approved off-site facility, stockpiled to prevent public use of the ROW, or otherwise used appropriately, if approved by the landowner or land management agency and as allowed by applicable permit conditions.

About 32 percent (1,515 acres) of soils along the proposed pipeline route are inherently droughty (**table 3.2-1**). To mitigate the adverse effects of pipeline construction on droughty soils that are not under cultivation and to assist with revegetation efforts, Entrega would apply mulch and stabilize the soil surface to minimize wind erosion and to conserve soil moisture (Entrega 2004b,c).

The proposed pipeline route would cross about 76 acres of hydric soils, an indicator of areas that may contain drain tiles for crop production. Entrega has committed to replace or repair any drain tiles damaged by construction activities. Entrega has prepared an Irrigation System Repair and Monitoring Plan (appendix L). In this plan, Entrega has agreed to maintain water flow to irrigation systems throughout construction unless landowner permission is obtained to temporarily interrupt water flow. If damage to irrigation systems occurred during construction, Entrega has agreed to restore or repair the damage. Trench backfilling would be conducted in lifts, with water additions and compaction between lifts to minimize settling and misdirection of irrigation flows.

In parts of Moffat County, Colorado, and Sweetwater, Carbon, and Albany Counties, Wyoming, the proposed pipeline route would cross a variety of soils affected by salinity and sodicity. These soils exhibit a characteristic pattern of localized bare spots and scattered, salt-tolerant vegetation and often lack recognizable topsoil. Although saline and sodic soils do not comprise a large acreage of soils along the pipeline route (about 2 percent [over 6 miles] of the entire pipeline route), construction disturbances in areas containing these soils would be difficult to revegetate and could require additional efforts to achieve

3.0 ENVIRONMENTAL ANALYSIS

adequate restoration. Entrega would consult with NRCS and BLM personnel, or other soils specialists, as appropriate, to develop additional restoration measures for these soils.

3.2.3 Soil Contamination

Soil contamination along the route could result from at least two sources: material spills during construction and trench excavation through pre-existing contaminated areas. Contamination from spills or leaks of fuels, lubricants, coolants, and solvents from construction equipment could impact soils. These impacts would typically be minor because of the low frequency and volumes of these occurrences. Furthermore, Entrega has developed a SPCC Plan that specifies cleanup procedures in the event of soil contamination from spills or leaks of fuels, lubricants, coolants, or solvents. Entrega would be required to clean up spills in accordance with its SPCC Plan (Entrega 2004d). There are currently no known contaminated sites crossed by the proposed pipeline route or affected by aboveground and ancillary facilities. If contaminated or suspect soils (e.g., hydrocarbon contamination) were identified during trenching operations, work in the area of the suspected contamination would be halted 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.

There are no known National Priority List sites, Comprehensive Environmental Response, Compensation, and Liability Information System sites, or state landfills within 1 mile of the proposed pipeline route (EPA 2003a,b). Review of the NRCS identified six reported spills within 1 mile of the proposed pipeline route (EPA 2004a). Based on review of the public reports on these spill sites, it is unlikely any contaminated soils would be encountered during construction due to their location in relation to the proposed pipeline route. Based on the data contained in the spill reports, the spills are located down gradient from the pipeline route and have been contained and cleaned up (EPA 2004a).

3.2.4 Noxious Weeds and Other Invasive Plants

After disturbances to the soil, vegetation communities can be susceptible to infestations of invasive or exotic weed species. 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 or noxious weed seeds and propagates, resulting in the establishment of noxious weeds in previously weed-free areas.

The prevention of the spread of noxious and invasive weeds is a high priority to nearby communities. We received 12 comments related to noxious weeds during the public scoping period for this project. Under Executive Order (EO) 13112, federal agencies shall not authorize, fund, or carry out actions likely to cause or promote the introduction or spread of invasive species in the U.S. or elsewhere unless it has been determined that the benefits of such actions outweigh the potential harm caused by invasive species and that all feasible and prudent measures to minimize the risk of harm will be taken in conjunction with the actions.

The BLM maintains a list of invasive species, some of which may potentially occur within the proposed project area in Colorado and Wyoming (**table 3.2-3**). These are species that the BLM attempts to manage in

**Table 3.2-3
Noxious Weeds Potentially Occurring Along the Proposed Pipeline Route**

Common Name	Scientific Name	Colorado Noxious Weed List	BLM Little Snake Field Office	BLM White River Field Office	BLM Rawlins Field Office	Rio Blanco County, CO	Moffat County, CO	Larimer County, CO	Weld County, CO	Sweetwater County, WY	Carbon County, WY	Albany County, WY	Laramie County, WY
Camelthorn	<i>Alhagi pseudalhagi</i>	A											
Common Burdock	<i>Arctium minus</i>	C			X	X				X			
Cheatgrass	<i>Bromus tectorum</i>	C	X										
Plumeless Thistle	<i>Carduus acanthoides</i>	B				X							
Whitetop / Hoary Cress	<i>Cardaria draba</i>	B	X		X	X				X	X	X	
Musk Thistle / Biannual Thistle	<i>Carduus nutans</i>	B	X	X	X	X			X	X	X	X	
Spotted Knapweed	<i>Centaurea maculosa</i>	B	X	X	X	X				X	X	X	
Diffuse Knapweed	<i>Centaurea diffusa</i>	B	X		X	X			X	X			
Meadow Knapweed	<i>Centaurea pratensis</i>	A											
Russian Knapweed	<i>Centaurea repens</i>	B			X	X			X	X	X		
Yellow Starthistle	<i>Centaurea solstitialis</i>	A				X							
Squarrose knapweed	<i>Centaurea virgata</i>	A											
Rush Skeletonweed	<i>Chondrilla juncea</i>	A											
Canada Thistle	<i>Cirsium arvense</i>	B	X	X	X	X			X	X	X	X	X
Bull Thistle	<i>Cirsium vulgare</i>	B		X									
Field Bindweed	<i>Convolvulus arvensis</i>	C			X	X			X	X			X
Common Crupina	<i>Crupina vulgaris</i>	A											
Houndstongue	<i>Cynoglossum officinale</i>	B	X	X	X	X				X	X	X	
Plains Larkspur	<i>Delphinium geyeri</i>										X		
Cypress spurge	<i>Euphorbia cyparissias</i>	A											
Leafy Spurge	<i>Euphorbia esula</i>	B	X		X	X			X	X	X		X
Myrtle Spurge	<i>Euphorbia myrsinites</i>	A											
Curly Cup / Gum Weed	<i>Grindelia squarrosa</i>					X							
Halogeton	<i>Halogeton glomeratus</i>	C	X		X	X					X		
Foxtail Barley	<i>Hordeum jubatum</i>									X			
Hydrilla	<i>Hydrilla verticillata</i>	A											
Black Henbane	<i>Hyoscyamus niger</i>	B		X	X	X				X	X	X	
Dyer's Woad	<i>Isatis tinctoria</i>	A			X					X			
Kochia / Fireweed / Summer Cypress	<i>Kochia scoparia</i>					X							
Sericea Lespedeza	<i>Lespedeza cuneata</i>	A											
Perennial Pepperweed / Tall Whitetop	<i>Lepidium latifolium</i>	B	X	X	X	X	X			X		X	
Dalmation Toadflax	<i>Linaria dalmatica</i>	B	X		X	X		X	X	X		X	X
Yellow Toadflax	<i>Linaria vulgaris</i>	B	X			X		X					

3.0 ENVIRONMENTAL ANALYSIS

Table 3.2-3 (Continued)

Common Name	Scientific Name	Colorado Noxious Weed List	BLM Little Snake Field Office	BLM White River Field Office	BLM Rawlins Field Office	Rio Blanco County, CO	Moffat County, CO	Larimer County, CO	Weid County, CO	Sweetwater County, WY	Carbon County, WY	Albany County, WY	Laramie County, WY
Wyeth Lupine	<i>Lupinus wyethii</i>										X		
Purple Loosestrife	<i>Lythrum salicaria</i>	A											
Scotch Thistle	<i>Onopordum acanthium</i>	B				X			X				
Plains Pricklypear	<i>Opuntia polyacantha</i>										X		
African Rue	<i>Peganum harmala</i>	A											
Sulfur Cinquefoil	<i>Potentilla recta</i>	C				X							
Russian Thistle / Tumbleweed	<i>Salsola tragus</i>					X							
Mediterranean Sage	<i>Salvia aethiopis</i>	A											
Giant Salvinia	<i>Salvinia molesta</i>	A											
Tansy Ragwort	<i>Senecio jacobaea</i>	A											
Medusahead	<i>Taeniatherium caput-medusae</i>	A											
Salt Cedar / Tamarisk	<i>Tamarix</i> spp.	B	X		X					X			
Common Mullein	<i>Verbascum thapsus</i>	C		X		X				X			

western states. The states of Colorado and Wyoming also maintain similar, but not identical, lists of designated noxious weed species.

The Wyoming Weed Program is a programmatic plan, similar to the BLM Weed Management Plan. In comparison, the Colorado Weed Program is more prescriptive. In Colorado, noxious weeds are classified as List A, B, or C under the Colorado Noxious Weed Act (§ 35 5.5-101 through 119, C.R.S. [2003]). Each list has specific control requirements, with the most stringent requirements for those species found on List A, including yellow starthistle and Dyer's woad. If these species were found along Entrega's ROW or at aboveground facilities in Colorado, Entrega would be required to follow the prescribed management techniques stipulated by Colorado's Noxious Weed Act. For species in List A, these techniques must be applied for the duration of the seed longevity for the particular species, which is at least 8 years for Dyer's woad and at least 10 years for yellow starthistle. Control requirements for species on Lists B and C are less stringent.

To control the spread of noxious weeds, Entrega has prepared a Weed Management Plan (appendix H) incorporating details regarding known occurrences of noxious and invasive weeds along the proposed project, current treatment of known noxious weed areas, and mitigation measures that Entrega would implement to minimize the spread and establishment of noxious weeds and non-native invasive species. Entrega would require that its contractors adhere to the mitigation measures outlined in its Weed Management Plan. Mitigation measures found in the Weed Management Plan include:

- Prior to construction, Entrega would complete surveys of the areas of known and anticipated infestations of noxious weeds to identify locations of infestations or presence of noxious weed species identified by federal, state, and local agencies.
- Based on survey results and agency consultations, pretreatment of noxious weed infestations may be conducted in selected areas. Depending on the species and the time of construction, such pretreatment methods may include chemical, biological, or mechanical methods to remove invasive weed populations from the construction ROW prior to surface disturbance.
- Prior to the beginning of construction of the project, all contractor vehicles and equipment would be required to be cleaned of soil and debris that is capable of transporting noxious weed propagules. All contractor vehicles and equipment would be inspected by the EI(s) and may require additional cleaning.
- Prior to entering each county before and during construction, Entrega would clean all contractor vehicles and equipment of soil and debris capable of transporting weed propagules.
- The contractor would ensure that certified weed-free straw or hay bales used to construct sediment control devices or used as mulch applications are obtained from approved certified sources, as recommended by the County Weed and Pest Districts, Weed Control Supervisors, and the states of Colorado and Wyoming.

3.0 ENVIRONMENTAL ANALYSIS

- An equipment wash station would be installed at the Yampa River crossing (MP 50.6).
- Segregated topsoil in areas identified as supporting noxious weeds would be maintained adjacent to the areas from which they were obtained to eliminate the transport of soil-borne noxious and invasive weed propagules to other areas along the right-of-way.

During scoping, we received several comments expressing concern about loss of vegetation productivity. However, the most common concern expressed was the potential for the introduction and spread of noxious and invasive weeds. Many of the concerns and suggestions are addressed by elements of Entrega's Plan (such as topsoil segregation and NRCS recommendations for seeding and weed control) and by Entrega's Weed Management Plan. This plan presents information provided by various county weed departments and BLM offices, identifying where noxious or invasive weed species are present along portions of the proposed route. Entrega has committed to conducting full noxious and invasive weed surveys within and immediately adjacent to all areas of project-related disturbance beginning in spring 2005. Results of the weed survey will be attached to Entrega's Weed Management Plan to create a project-specific plan that identifies locations and mitigation for control in areas of known weed infestations. In addition, **we recommend that Entrega revise its Weed Management Plan to include:**

- a. identification of the locations by MP where noxious or invasive weeds are currently present either within or immediately adjacent to all areas of project-related disturbance; and**
- b. a site-specific plan for each location where weeds are present which:**
 - i. describes options for pretreatment (including the month(s) of the year when pretreatment would be effective);**
 - ii. identifies who was consulted regarding possible pretreatment options; and**
 - iii. includes whether the landowner/administrator has approved of the pretreatment.**

During construction, Entrega proposes to site vehicle and equipment wash stations at various locations such as the Yampa River crossing, prior to entering each county, and where equipment would be moved from an area that is known to contain noxious or invasive weeds. Information regarding the specific locations and number of wash stations, as well as how these stations would be operated and restored, has now been included in the revised Weed Management Plan (appendix H). Entrega's revised Weed Management Plan identifies the locations of equipment wash stations, the source(s) of the wash water, how effluent from the wash stations would be monitored/treated to prevent seed releases, and plans for station configuration and decommissioning. Wash stations would be at least 0.25 mile from all perennial streams and monitored for weeds after construction as part of the ROW monitoring and reclamation efforts. Additional discussion of related water resources considerations is presented in section 3.3.2.

Despite efforts to prevent the spread of noxious weeds, it is possible that pipeline operation and maintenance activities (e.g., ground surveillance, routine checks of mainline valves) would increase the prevalence of noxious weeds along the ROW or that weeds would be transported into areas that were

relatively weed-free. In order to accomplish weed prevention and control in the most appropriate and effective manner, Entrega should consult with BLM FOs, Conservation Districts (e.g., Saratoga-Encampment-Rawlins, White River, Colorado First Soil, West Greeley, and the Medicine Bow Conservation Districts), local governments (e.g., Wyoming Department of Agriculture, Division of Natural Resources sponsored Great Divide Reclamation and Weed Cooperative Resource Management), Weed Management Areas (e.g., Southeast Carbon County Weed Management Area), the Wyoming Weed and Pest Council, and appropriate BLM FO. Entrega has committed in their Weed Management Plan to monitor noxious weeds annually for 5 years following construction. To further reduce the spread of invasive and noxious weeds following construction activities, **we recommend that Entrega conduct weed management surveys and control measures at least once every 3 years (following the initial 5 years of reclamation and weed control surveys) for the life of the project. Reports of these surveys would be sent to all aforementioned parties. Measures for long-term weed control strategies should be developed by consultations with the groups listed above, as well as the local NRCS, weed control board or officials, land management agencies, and landowners. Entrega's developed methods and comments from the various agencies should be filed with the Secretary for the review and written approval of the Director of the Office of Energy Projects (Director of OEP) before implementation.**

Finally, to provide landowners, local governments, and weed management areas (affected parties) with a specific avenue for resolving construction and ROW restoration issues, **we recommend that Entrega develop and implement an environmental complaint resolution procedure that remains active for at least 3 years following the completion of construction. The procedure should provide landowners, local governments, and weed management agencies (affected parties) with clear and simple directions for identifying and resolving their environmental mitigation problems/concerns during construction of the project and restoration of the ROW. Prior to construction, Entrega should mail the complaint resolution procedure to each landowner whose property would be crossed by the project and to each affected agency.**

- a. In its letter to affected parties, Entrega should:
 - i. provide a local contact and telephone number that the affected parties should call first with their concerns; the letter should indicate how soon they should expect a response;
 - ii. provide Entrega's Hotline phone number and instruct the affected parties that, if they are not satisfied with the response, they should call Entrega's Hotline; the letter should indicate how soon to expect a response; and
 - iii. instruct the affected parties that if they were still not satisfied with the response from Entrega's Hotline, they should contact the Commission's Enforcement Hotline at (888) 889-8030 or at hotline@ferc.gov.
- b. In addition, Entrega should include a table in its weekly status report containing the following information for each problem/concern:

3.0 ENVIRONMENTAL ANALYSIS

- i. the identity of the caller and the date of the call;**
- ii. the identification number from the certificated alignment sheet(s) of the affected property and approximate location by MP;**
- iii. a description of the concern/problem; and**
- iv. an explanation of how and when the problem was resolved, will be resolved, or why it has not been resolved.**

3.3 Water Resources**3.3.1 Groundwater**

Aquifers within the proposed project area include unconsolidated deposits of gravel, sand, silt, and clay, and consolidated bedrock formations. **Figure 3.3-1** illustrates the locations of major aquifer systems that would underlie the proposed project. Some of these aquifers overlap each other at varying depths. Thin alluvial aquifers immediately underlie the proposed project area, but groundwater is typically withdrawn from deeper aquifers. The major near-surface aquifer systems underlying the proposed pipeline route include the Colorado Plateaus aquifer system (including the Uinta-Animas Aquifer in Rio Blanco and Moffat Counties) and the High Plains Aquifer in Larimer, Weld, and Laramie Counties. In the Uinta-Animas Aquifer, depth to water typically ranges from 0 to 500 feet and water tends to be of good quality. Groundwater in the High Plains Aquifer is typically found from 50 to 300 feet and is generally of excellent quality.

Entrega has identified 2 potential springs located within 150 feet of the proposed project. These springs are located at MPs 56.0 and 203.5. Entrega is currently verifying the presence of these springs or seeps, and would file the results with the Secretary prior to construction.

Many public and private water supply wells in Colorado and Wyoming are in alluvial valleys (lowlands next to streams and rivers). These types of supply wells occur along the majority of the proposed pipeline route. These shallow wells can be very productive and yield high quality water; however, they are the most vulnerable to pollution from surface activities. The depth to groundwater in many shallow wells is directly influenced by water levels in nearby streams and can fluctuate several feet in response to seasonal stream changes. Entrega has identified 11 private water supply wells that may be within 150 feet of the proposed pipeline route (**table 3.3-1**). No known public water supply wells or wellhead protection areas are located within 400 feet of the pipeline centerline (Parker 2004; Parachini 2004).

Because permanent aboveground facilities would be located either on or adjacent to the construction ROW, groundwater resources in the vicinity of the aboveground facilities would be similar to those along the proposed pipeline route. Entrega has no plans to use groundwater during construction or operation, consequently, impacts to groundwater quantity would be limited to those caused by the physical disturbance of the overlying soils and runoff during grading, trenching, and blasting.

Impacts to groundwater resources would be minimized or avoided by the use of standard construction practices as outlined in Entrega's Plan and Procedures. Ground disturbance associated with typical pipeline construction primarily would be limited to 10 feet or less below the existing ground surface, which is above most surficial aquifers and wells that might be completed in a shallow aquifer. Nevertheless, construction activities such as trenching, blasting, dewatering, and backfilling could encounter shallow alluvial aquifers and cause minor fluctuations in shallow groundwater levels and/or increased turbidity within the aquifer adjacent to the activity. Impacts to deeper aquifers would not be anticipated. Since most shallow alluvial aquifers exhibit rapid recharge and groundwater movement, shallow aquifers would likely quickly reestablish equilibrium if disturbed and turbidity levels would rapidly subside. Consequently, the effects of construction would be short term.

Non-Internet Public

FINAL ENVIRONMENTAL IMPACT STATEMENT FOR THE
PROPOSED ENTREGA PIPELINE PROJECT
Docket Nos. CP04-413-000, et al.

Page 3-30
Figure 3.3-1

Public access for the above information is available
only through the Public Reference Room, or by e-mail
at public.referenceroom@ferc.gov.

**Table 3.3-1
Private Water Supply Wells Identified Within 150 Feet of the Entrega Pipeline Project¹**

State / Approximate MP	County	Direction from Construction Workspace
COLORADO		
-0.46	Rio Blanco	West
4.7	Rio Blanco	East
7.1	Rio Blanco	North
15.6	Rio Blanco	West
35.33	Moffat	East
WYOMING		
128.54	Sweetwater	East
160.8	Sweetwater	North
178.6	Carbon	South
184.21	Carbon	North
236.8	Carbon	North
236.9	Carbon	South
262.5	Albany	Southwest
277.77	Albany	North
283.05	Albany	South
290.35	Albany	South
301.89	Laramie	North
301.91	Laramie	North
302.8	Laramie	North
304.72	Laramie	North
305.75	Laramie	North
309.74	Laramie	South

¹ Based on a search of Wyoming Well Permit Spatial Data (University of Wyoming 2003); USGS well information (USGS 1995, 1996); USGS topographic maps (USGS 2004); and the Colorado Division of Water Resources well information (CDWR 2001).

Blasting would likely be required along segments of the proposed pipeline route where bedrock is located at or near the ground surface (**table 3.2-1**). Blasting operations have the potential to damage nearby structures including wells, buildings, and underground pipelines. To minimize potential impacts, Entrega has developed a Blasting Specification Plan (Blasting Plan, POD Appendix H) that identifies blasting procedures including safety, use, storage, and transportation of explosives (Entrega 2004a). Briefly, the Blasting Specification Plan requires that:

- all blasting be performed by registered licensed blasters who would be required to secure all necessary permits and comply with regulatory requirements in connection with the transportation, storage, and use of explosives, and blast vibration limits;
- appropriate flags, barricades, and warning signals be used to ensure safety during blasting operations. Blast mats would be used when needed to prevent damage and injury from fly rock;

3.0 ENVIRONMENTAL ANALYSIS

- blasting in the vicinity of existing pipelines would be coordinated with the other pipeline operator(s), and would follow operator-specific procedures, as necessary;
- if blasting occurs within 200 feet of any identified water well or potable spring, water flow performance and water quality testing would be conducted before blasting. If the water well is damaged during construction, Entrega would provide an alternative source of potable water until the well repaired/replaced or the landowner is fairly compensated for the damage; and
- within 30 days of placing the pipeline facilities in service, Entrega would file a report with the Secretary identifying all water supply wells/systems damaged by construction, and how they were repaired, including a discussion of any complaints concerning the well yield or water quality and how each problem was resolved.

In its comments on the draft EIS, Entrega agreed to conduct pre-blast surveys of structures or water wells within 200 feet of construction in blast areas and monitoring ground vibration at structures and wells within this range. However, Entrega's revised Blasting Plan (filed as part of the POD on May 20, 2005) specifies that during blasting activities, ground vibrations would be monitored at any water wells, potable springs, and at any aboveground structure within 150 feet of the blasting. In addition, water supply considerations along the ROW extend to features or systems other than wells or potable springs. Examples include springs or wells that might not meet drinking water standards but are still used for irrigation or livestock watering, municipal water pipelines, lined canals, or other systems. Therefore, **we recommend that Entrega**

- **file with the Secretary prior to construction the location by MP of all water supply wells or water supply systems within 200 feet of all construction work areas. For each, the filing should identify the type of feature (well, pipeline conveyance, lined channel) and its use (domestic, municipal, industrial, agricultural, etc.);**
- **revise its Blasting Plan to clarify that ground vibration monitoring would be conducted at all aboveground structures, water supply wells, and water supply systems within 200 feet of construction areas subject to blasting; and**
- **provide an alternative source of water until any water supply well/system damaged during construction is repaired/replaced or the water rights owner is fairly compensated for the damage.**

While there are currently no designated sole source aquifers in Colorado (EPA 2004b), the EPA has designated the Elk Mountain Aquifer as a sole source aquifer in Wyoming. Based on the designated boundary map, the Elk Mountain Aquifer is located approximately 2,500 feet south of the proposed pipeline route at its nearest location at about MP 234.0 (EPA 2004b). In addition to the Elk Mountain Aquifer, the City of Laramie and the County of Albany have designated an aquifer protection overlay zone, known as the Casper Aquifer Protection Area, to safeguard wells and springs located east of Laramie, Wyoming. The pipeline alignment passes within approximately 1 mile of the southwest edge of the Casper Aquifer Protection Area near MP 280. Based on the project's distance from these designated aquifers and

implementation of Entrega's SPCC Plan, we believe that construction and operation of the proposed project would have no significant impact on protected or sole source aquifers.

A potential hazard of long-term groundwater contamination exists from vehicle refueling and maintenance, from hazardous material spills that occur during construction, or from the disturbance of contaminated soils. Spills or leaks of fuels or other hazardous liquids may affect groundwater quality, and dispersal of pollutants from affected soils could be a continuing source of aquifer contamination. The deterioration of groundwater quality by such factors could adversely affect groundwater uses. These impacts could be avoided or minimized by restricting the locations of parking, refueling and storage areas and by implementing procedures to prevent and respond to spills or leaks of hazardous materials.

In the event that contaminated soil and/or groundwater contamination was encountered during construction, Entrega would notify the affected landowner and coordinate with the appropriate federal and state agencies as mandated by notification requirements. Pipeline construction may involve disposal of groundwater encountered during trench excavation. Since the disposal structures are likely to be located outside the cleared disturbed area, prior approval from the landowner and federal and state agencies would be required. By law, Entrega would be required to apply to the states for temporary groundwater disposal permits, and comply with permit stipulations as well as erosion control/revegetation provisions of Entrega's Plan and POD. It is expected that such regulatory compliance would avoid or minimize potential impacts from trench dewatering.

Entrega's Procedures set forth measures that restrict locations for overnight parking and fueling of equipment, hazardous materials storage, and concrete coating activities. Additional procedures address preparedness for rapid containment and prompt and effective cleanup of spills. In addition, because of potential contamination impacts to both groundwater and surface water resources, Entrega has developed an SPCC Plan that addresses some of these issues (Entrega 2004d). In combination with its SPCC Plan, Entrega's overall Plan and Procedures:

- identify preventative measures to avoid hazardous material spills or leaks;
- regulate locations for refueling, lubricating, and equipment washing activities;
- provide for vehicle and equipment inspection and maintenance;
- define proper storage and handling of fuels, lubricants, and hazardous materials;
- identify immediate spill response procedures for uplands, wetlands, or waterbodies; and
- establish reporting and notification protocols.

A major feature of Entrega's SPCC Plan is that refueling and lubricating of construction equipment would be restricted to upland areas at least 100 feet from the edge of any streams, wetlands, ditches, and other waterbodies on private lands, 200 feet from private water supply wells, and 400 feet from public water supply wells. Storage sites for fuels, other petroleum products, chemicals, and hazardous materials (including wastes) would be located in upland areas. No hazardous substances would be stored within 500 feet of streams and/or 200 feet of private water supply wells (or 400 feet of public water supply wells). Entrega would confirm the locations of areas where such activities are prohibited with the EI prior to site entry with construction equipment. If necessary due to space restrictions, contingency plans for refueling,

3.0 ENVIRONMENTAL ANALYSIS

materials storage, and handling would be verified with the EI before initiating activities in restricted areas that are exceptions to these criteria.

Entrega also would correspond with all landowners prior to construction to obtain the location(s) of known private water supply wells on their property.

Our Procedures require that refueling activities and hazardous material storage occur at least 100 feet from a wetland, waterbody, or designated municipal watershed areas. The SPCC Plan filed by Entrega equals or surpasses this requirement and addresses related issues for avoiding, controlling, reporting and mitigating spills. Other Entrega plans also address related issues of erosion control and procedures for construction and mitigation at wetlands and waterbodies (see appendices). Earlier BLM comments indicated that the separation distance for refueling and storage should be increased to 500 feet in order to minimize impacts on wetlands, waterbodies, and sensitive resources that could be damaged by pipeline construction. A 500-foot setback for parking and refueling on all streams, ditches, wetlands, and waterbodies is likely to prove infeasible in some areas due to spacing between such resources. In addition, Entrega claims that significantly more vehicle traffic would be involved to maintain such a requirement during construction, with potential consequences on other resources. The time involved may lengthen the construction and restoration period.

However, BLM would determine setbacks and other requirements it deems appropriate to the lands and resources it manages. Entrega has agreed to ensure that all equipment is parked overnight and/or fueled at least 100 feet from a waterbody or in an upland area at least 100 feet from a wetland. Based on further consultations with the BLM, Entrega has revised its Procedures to indicate that storage sites for hazardous materials, including but not limited to chemicals, fuels, and lubricating oils must be located at least 500 feet from a wetland, waterbody, or municipal watershed. Further, Entrega must provide a detailed plan to the BLM disclosing the types and quantities of materials to be stored and the spill prevention and containment measures in place for any hazardous material storage site on federal land. Prior to construction, Entrega should discuss and modify the SPCC Plan and other procedures and mitigation commitments with the BLM as needed, so that the agency's requirements are addressed on federal lands.

We believe that implementation of the measures and the procedures contained in Entrega's Plan and Procedures would avoid or minimize potential impacts associated with vehicle and equipment refueling and lubricating activities, hazardous material storage and handling, and responses to spills or leaks of hazardous materials during construction of the project. During future operation and maintenance activities, Entrega would continue to adhere to standards within its Plan, Procedures, and POD to prevent contamination of groundwater resources from potential spills of hazardous materials. Future variances from these procedures would require the approval of the FERC and the affected land management agency or landowner. Given the low probability of a pipeline leak and the physical and chemical properties of processed natural gas, adverse impacts to groundwater resources would not be anticipated during operation and maintenance of the pipeline and its associated facilities. Overall, we believe that construction and operation of the proposed project would not significantly impact groundwater resources.

3.3.2 Surface Water

Major Watersheds

The proposed pipeline would cross two major watersheds basins, the Colorado River and the Platte River Basins. Within these major basins, the route would cross four regional watersheds: the Upper Green River, Yampa and White Rivers, North Platte River, and South Platte River Watersheds. **Figure 3.3-2** illustrates the location of the major basins and their watersheds as well as some of the major rivers within the project area.

Major and/or sensitive waterbodies located along the pipeline route are identified in **table 3.3-2**. The Colorado River Basin contains the White and Yampa Rivers and tributaries of the Green River. Both the White and Yampa Rivers would be crossed by the pipeline route (MPs 15.2 and 50.6, respectively). The Upper Green River, White, and Yampa watersheds are sparsely populated. In these watersheds, the majority of the waterbodies crossed by the proposed pipeline route fully support their designated uses. The North Platte River Basin Watershed is the most densely populated drainage basin in Wyoming. Agricultural, industrial, and recreational uses of the North Platte River are widespread (WDEQ 2002). The South Platte River Basin Watershed has the largest human population of any river basin in Colorado, with approximately 3 million people or 70 percent of the state's population (CDPHE 2004). The flow in the lower third of the South Platte River is almost completely controlled by agricultural water management activities (CDPHE 2004).

In Colorado and Wyoming, 27 perennial waterbodies would be crossed by the proposed pipeline a total of 43 times. Intermittent waterbodies would be crossed a total of 352 times, with some waterbodies being crossed several times by the proposed pipeline route. Of the total number of crossings, 21 perennial waterbody crossings and 174 intermittent waterbody crossings would occur in Colorado. In Wyoming, 22 perennial waterbody crossings and 178 intermittent waterbody crossings would occur. Of the perennial waterbodies that would be crossed, four are greater than 100 feet wide (water's edge to water's edge) at the crossing sites. Entrega proposes to use the HDD method for construction at the White and Yampa Rivers. All other waterbody crossings are proposed to be open-cut. No waterbodies are designated as Section 10 navigable waters under the Rivers and Harbor Act, as defined by 33 CFR, Section 328.

During construction, impacts to surface water resources would be minimized or avoided by the use of standard practices as outlined in Entrega's Plan, Procedures, and POD and as described in section 2.3.2.3. Measures would be implemented at major river crossings and at crossings of deeply incised drainages to ensure that the drainage channel and banks were stabilized to prevent erosion and the possibility of exposing the pipeline (appendices E and F). The Incised Bank Stabilization Restoration Plan indicates the typical approach that would be used at such locations. Our review of field data and photographs indicates that actively incising streambanks are common in the lower reaches of Piceance Creek, to approximately MP 14. Similar conditions occur at other locations along the ROW. The success of streambank stabilization, restoration and ongoing monitoring programs would be especially important in these areas. At other crossing locations along Piceance Creek, sloping banks are relatively stable, vegetated, and incorporated into adjacent pasture or cropland uses. In the Piceance Creek drainage overall, erosion control and site

Non-Internet Public

FINAL ENVIRONMENTAL IMPACT STATEMENT FOR THE
PROPOSED ENTREGA PIPELINE PROJECT

Docket Nos. CP04-413-000, et al.

Page 3-36

Figure 3.3-2

Public access for the above information is available
only through the Public Reference Room, or by e-mail
at public.referenceroom@ferc.gov.

**Table 3.3-2
Major and Sensitive Waterbodies**

State/MP	Waterbody Name	Sensitivity	State Water Quality Classification
COLORADO			
Multiple crossings (2.2 to 13.8)	Piceance Creek	Scientific reference site; adjacent hayfields.	AqLife Warm2; Rec2; Agriculture
15.2	White River	Threatened and/or endangered species present; >100 feet; surface water intakes located approximately 30 miles downstream of the crossing location.	AqLife Cold1; Rec1; Water Supply; Agriculture
50.6	Yampa River	Threatened and/or endangered species present; >100 feet.	AqLife Warm1; Rec1; Water Supply; Agriculture
84.5	Little Snake River	>100 feet.	AqLife Cold1; Rec1; Water Supply; Agriculture
WYOMING			
192.8	North Platte River	>100 feet; surface water intake located within 3 miles downstream of the crossing location.	2AB
225.5	Medicine Bow River	Coldwater fishery.	2AB
237.5	Rock Creek	Surface water intake located within 3 miles downstream of the crossing location.	2AB
260.9	Little Laramie River	Coldwater fishery.	2AB
274.4	Laramie River	Coldwater fishery.	2AB

Colorado

- AqLife Cold 1 = (subset of aquatic life) waters capable of sustaining a wide variety of coldwater biota, including sensitive species, where physical habitat, water flows or levels, and water quality result in no substantial impairments.
- AqLife Warm 1 = (subset of aquatic life) waters capable of sustaining a wide variety of warmwater biota, including sensitive species, where physical habitat, water flows or levels, and water quality result in no substantial impairment.
- AqLife Warm 2 = (subset of aquatic life) waters not capable of sustaining a wide variety of warmwater biota, including sensitive species, due to physical habitat, water flows or levels, or uncorrectable water quality conditions.
- Rec1 = (subset of recreation) waters suitable or intended to become suitable for recreational activities (e.g., swimming, rafting, kayaking, tubing).
- Rec2 = (subset of recreation) waters not suitable or intended to become suitable for primary contact recreation uses, but are suitable for wading, fishing, and other streamside activities.
- Agriculture = waters suitable or intended to become suitable for irrigation of crops and not hazardous for use by livestock.
- Water Supply = waters suitable or intended to become suitable for potable water supplies.

Wyoming

- Class 2 = Waters known to support fish or drinking water supplies. Class 2AB waters support game fish populations and nursery areas and have sufficient water quality and quantity to support drinking water supplies.

restoration activities as identified in Entrega's Plan and Procedures are expected to be successful due to the relatively gentle slopes, deep soils, and agriculturally oriented vegetation types along the drainage. Temporary use areas would be required at waterbody crossings and, unless impractical due to topography

3.0 ENVIRONMENTAL ANALYSIS

or other technical constraint, these areas would be set back at least 50 feet from the edge of the waterbody. Deviations from this 50-foot setback would require approval of the FERC prior to construction.

In our draft EIS, we requested public comment on the use of the PBEP route as an alternative to the first 34 miles of Entrega's proposed route (see section 4.4.1). One of the reasons for considering an alternative to Entrega's proposed route was to avoid or minimize impacts on irrigated pastures and wetlands along Entrega's initial 14 miles of construction through the Piceance drainage. The PBEP route alternative would also avoid multiple crossings of Piceance Creek.

In its comments, the COE expressed its support for selection of an alternative that would follow the proposed PBEP route because it would avoid all crossings of Piceance Creek, as well as reduce the amount of wetland impacted by construction.¹ As discussed in section 4.4.1, we have concluded that the impacts associated with use of the PBEP route alternative would outweigh the impacts associated with Entrega's proposed route. Therefore, we are not recommending that Entrega adopt the PBEP route alternative. However, we believe that it may be possible to significantly reduce the number of Piceance Creek crossings by adopting some minor alterations to the proposed route. In particular, by rerouting along an existing utility on the uplands west of the proposed route between about MPs 6.7 and 8.2, and to adjacent lands east of the proposed route between about MPs 12.8 and 13.8, five crossings of Piceance Creek could be avoided (see **figures 3.3-3 and 3.3-4**). Therefore, **we recommend that Entrega revise its proposed route between MPs 6.7 and 8.2 and MPs 12.8 and 13.8 (as shown in figures 3.3-3 and 3.3-4, respectively) to reduce the number of crossing of Piceance Creek. Revised alignment sheets should be filed with the Secretary for review and written approval by the Director of OEP prior to construction.**

Site-Specific Waterbody Crossing Plans

Entrega prepared Site-Specific Waterbody Crossing Plans proposing HDD crossings for the Yampa and White Rivers and open-cut crossings of the Little Snake River, North Platte River, Medicine Bow River, and Rock Creek.

Entrega filed revised Site-Specific Waterbody Crossing Plans for proposed HDD crossings of the White and Yampa Rivers on April 6, 2005 (see appendix J). Our review of this submittal and the previous plans for open-cut crossings indicates that Entrega has provided sufficient information to assess potential impacts of the proposed crossings. However, to be consistent with the correct Plan and Procedures, Entrega should modify the site-specific HDD crossing plans to reflect a 500-foot setback from wetlands or waterbodies for hazardous materials storage.

As shown in appendix J, drill entry points would be on the north side of the White River and the south side of the Yampa River. Temporary use areas for drilling activities and storage would be associated with the entry points. Room for the drill rig, drill pipe stockpile, instrumentation trailer, lined mud pits and frac-tank, equipment and supplies storage, and additional space for construction activities, traffic, and parking would be included. Access to the sites would be from nearby paved roads. At either HDD crossing, a railroad car or equivalent span bridge may be placed across the river for access. All temporary use areas would be

¹ Entrega's latest alignment sheets, filed May 20, 2005, indicate that Piceance Creek would be crossed a total of 11 times.

Non-Internet Public

FINAL ENVIRONMENTAL IMPACT STATEMENT FOR THE
PROPOSED ENTREGA PIPELINE PROJECT

Docket Nos. CP04-413-000, et al.

Pages 3-39 and 3-40

Figures 3.3-3 and 3.3-4

Public access for the above information is available
only through the Public Reference Room, or by e-mail
at public.referenceroom@ferc.gov.

enclosed by silt fences, and straw bales or other installations would be placed across the ROW and maintained to minimize erosion and sedimentation. Silt fence reinforced with straw bales or equivalent would be placed parallel to both sides of each river, with a 50-foot setback from the waterbody.

The stringing areas for pipeline welding and pullback would be located in temporary use areas associated with the drill exit points on the south side of the White River and the north side of the Yampa River. At the proposed Yampa River site, the pipe stringing area would be located in upland rangelands. On the White River, the exit point and pipe stringing activities would be located on the floodplain, in an area of irrigated agriculture and wetlands (appendix J). Temporary use areas would avoid the wetlands. A 10-foot minimum setback from the large wetland near the temporary use area on the south side would be established and protected with straw bales and/or embedded silt fence as a minimum measure. Smaller wetlands further south on the White River floodplain would be crossed using ROW construction and mitigation procedures (appendix F). Potential impacts to irrigation systems on the Yampa and White River floodplains would be avoided or mitigated according to the proposed Irrigation System Repair and Monitoring Plan (appendix L).

Entrega has indicated that the HDD configuration at the proposed White River crossing is due to a combination of spacing and equipment requirements for the nearby bore under State Highway 64 and advantages of staging the HDD pullback from the south side of the river. There is more space available on higher ground at the proposed drill entry site near Highway 64 on the north side of the river. This space and relatively better drainage would be more suited to the HDD equipment and traffic needs. In contrast, the highway proximity would decrease the length available for pipe stringing and pullback from the north side. In addition, Entrega claims that the exit location on the south side of the river provides a greater available length for pipe stringing, which can lessen the time involved in preparation and pullback and thereby increase the likelihood of a successful HDD crossing. Assuming successful implementation of site-specific protective measures and Entrega's Plan and Procedures, we agree with this rationale.

Entrega has estimated that the volume of water required for each proposed HDD is approximately 35,000 gallons per day, with 7 to 10 days required to complete each drill. Thus, an upper estimate of 350,000 gallons would be needed at each HDD location. An additional 90,000 gallons would be needed for preliminary testing. Thus, approximately 1.3 acre-feet of water will be required for each of the two proposed HDD crossings. The proposed sources of water are the respective rivers. Assuming that there is minimal or no water storage and a 10-hour workday, the steady-state pumping diversion rate would be about 0.13 cubic feet per second during drilling activities. Given recent average historic flow conditions, this would not create an impact to surface flows. The diversion rate for preliminary testing could be more. Assuming a 5,000-gallon per minute pumping rate, about 11 cubic feet per second would be diverted. This would be on the order of 4 to 8 percent of recent average flows for the late summer and early fall.

Entrega should interact with water rights holders and the Colorado Division of Water Resources (State Engineer's Office) to arrange for diversion and use of the water needed for the HDD crossings. In addition, because of potential impacts on flows and water quality from withdrawal and subsequent discharge of surface water used in preliminary testing, **we recommend that Entrega consult with FWS, CDOW, and CDPHE to establish withdrawal and discharge rate guidelines and practices for water used in preliminary testing of the HDD crossings.** We assume that such interactions would parallel those undertaken as a result of similar recommendations made for the withdrawal and discharge of hydrostatic

3.0 ENVIRONMENTAL ANALYSIS

test water here and in section 3.3. To be consistent with the current Plan and Procedures, Entrega should modify the site-specific HDD crossing plans to reflect a 500-foot setback from wetlands or waterbodies for equipment refueling or hazardous materials storage.

Entrega indicates that drilling mud would be stored in lined pits and would be recycled for use during the drills. Any excess mud that is unsuitable for containment in excavated lined pits would be stored in tanks. At the end of the HDD construction, all waste materials (including cuttings) would be removed from the sites and disposed of in approved off-site landfills. Examples of such locations include landfills at Craig, Colorado, or at Baggs and Rawlins, Wyoming. The potential disposal sites include sanitary landfills, demolition landfills, or hazardous waste landfills. Other disposal locations would be considered by Entrega on a case-by-case basis. The construction contractor would require Entrega's approval prior to using a given location.

Entrega has investigated geotechnical conditions for the proposed HDD crossings at the White and Yampa Rivers. At the Yampa River, geotechnical borings indicate unconsolidated sands, silts, and gravels overlying soft sedimentary bedrock. At the White River, unconsolidated clays and sands, and sands and gravels, overlie somewhat harder sedimentary bedrock. Entrega expects that HDD crossings could be successfully installed at both locations.

The estimated depths of burial under the riverbeds at the proposed HDD crossings are approximately 50 feet for the White River and approximately 48 feet at the Yampa River. These depths are well below any anticipated scour or channel degradation depths, and the drill path geometry should provide substantial protection against possible channel migration (i.e., meander shifts). The anticipated depth of drilling also is likely to prevent a frac-out (the escape of drilling fluid, and resultant sediment transport and water quality impacts). Although a frac-out is unlikely at either HDD crossing, the possibility of such an occurrence exists. As part of its overall Plan and Procedures, Entrega has developed an HDD Inadvertent Release Control Plan. Visual inspections of the drill path and continuous examination of drilling mud pressures and return flows would be the primary detection procedures used to monitor the progress of the HDD and identify a possible frac-out. The HDD Inadvertent Release Control Plan identifies sets of notification procedures, regulatory interactions, and corrective actions that would be implemented in the case of drilling fluid seepage into an upland, wetland, or waterbody. Containment equipment would typically consist of lumber for temporary shoring, sandbags, portable pumps, hand tools, silt fence, straw bales, and heavy equipment such as backhoes and bulldozers.

Follow-up procedures for a frac-out would consist of attempts to determine the cause of the drilling fluid seepage, an assessment of corrective measures or abandonment, and an evaluation of an alternative crossing approach. In the case of abandonment, thickened drilling mud and cuttings would be pumped into the drill hole as the drill assembly is extracted. Pending agency approvals, an HDD crossing may proceed along a different alignment or an open-cut crossing approach may be employed.

No public water supplies are located within 3 miles downstream of either proposed HDD crossing. On the basis of Entrega implementing its Plan and Procedures, and with adherence to additional conditions and recommendations presented in this EIS, we believe that minimal impacts to wetlands, waterbodies, and surface water and groundwater resources would result from the proposed HDD crossings of the White and Yampa Rivers.

Site-specific open-cut crossing plans are proposed by Entrega for the Little Snake River (MP 84.5), North Platte River (MP 192.8), Medicine Bow River (MP 225.5), and Rock Creek (MP 237.5) (see appendix J). In addition, contingency plans for open-cut crossings have been prepared for the White and Yampa Rivers. In general, temporary use areas would be located a minimum of 50 feet from the edge of the waterbody at each crossing. Staked straw bales and/or embedded silt fence would be employed at minimum to control sediment at the boundaries of temporary use areas, and sediment control devices would be placed between the spoil areas and the waterbody. Restoration of the stream bed and banks would approximate the original geometry, and would use clean gravel or cobbles in the upper foot of the trench backfill. Containment and recovery supplies and equipment would be on hand in case of material spills or equipment leaks. Additional features of the site-specific crossing plans are presented in appendix J.

In general, the site-specific crossing plans in combination with Entrega's overall Plan and Procedures would avoid or minimize impacts to wetlands and waterbodies associated with these crossing locations. However, impacts from in-stream disturbance would occur during the construction and restoration period at each proposed crossing. The major impact of the open-cut crossings would be disturbance of channel bed and bank geometry, increased sediment transport, and associated effects on turbidity and dissolved oxygen. These impacts are expected to occur at each crossing where flow exists at the time of construction. The duration of impacts is expected to be temporary and would be minimized by implementation of the restoration plan. Impacts would extend downstream dependent on flow and mixing conditions. Construction-related impacts on fisheries and aquatic resources would be primarily dependent on season of construction, and the extent and duration of in-stream activities. Related impacts on fisheries and aquatic resources are discussed further in section 3.5. Construction impacts on wetlands would be minimized by implementation of Entrega's Procedures (appendix F). Related impacts to riparian woodlands are discussed in section 3.4.

Entrega's Procedures state that extra workspaces would be located at least 50 feet away from the water's edge, except where the adjacent upland consists of actively cultivated or rotated cropland or other disturbed land. Site-specific waterbody plans repeatedly state that a 10-foot buffer zone would be maintained between placement of trench spoil and the water's edge. In addition, span bridges would cross the waterbodies as necessary. In general, these provisions are in line with our Procedures. However, for the proposed crossing of the Little Snake River and the open-cut contingency plan for the White River and Yampa River, temporary use areas are proposed at a 10-foot minimum setback from the waterbody or wetland. Further, at the proposed Medicine Bow River crossing, much of the temporary use area is located in a wetland.

Entrega has indicated that the 10-foot minimum setback of the temporary use area at the Little Snake River would lessen impacts to a wetland occurring on the north side of the river, and would reduce the duration of in-stream construction activities. On the north side of the river, which is formed from gently sloping sediments and bars deposited on the inside of a bend, the 10-foot setback variance is warranted on the basis of having a wider, closer area in which to work and deposit trench spoil. This would reduce the number of traffic passes over the narrow, low-lying emergent wetland that fringes the waterbody at that location. Protection of the wetland and the waterbody would be maintained with erosion control devices set back a minimum of 10 feet from the landward edge of the wetland. On the south side of the Little Snake River, however, a high and active cutbank has formed on the outside of the river bend. Streamlain sediments have sloughed off the bank, contributing sediment to the river. Immediately downstream, the

3.0 ENVIRONMENTAL ANALYSIS

Little Snake River is included in the monitoring and evaluation program for Clean Water Act Section 303(d) listing as a sediment-impaired stream segment. Given the eroding conditions at the south side of the river, and the possible low stability and bearing strength of the cutbank, we believe that our standard 50-foot setback is warranted on the south side of the Little Snake River. For the same reason, we believe that the open-cut contingency plans for the White River and Yampa River should maintain the standard 50-foot setback on both sides of the waterbodies. Approval of the Site-Specific Waterbody Crossing Plans cannot be completed without these provisions. Therefore, **we recommend that Entrega file with the Secretary for the review and written approval of the Director of OEP prior to construction, revised Site-Specific Waterbody Crossing Plans (including contingency plans) that include a 50-foot setback for the Little Snake, White, and Yampa Rivers.**

At the proposed Medicine Bow River crossing, wetland impacts from construction activities associated with the temporary use area cannot be avoided as currently routed. Field surveys indicate that the proposed temporary use area is on an emergent wetland used for irrigated or sub-irrigated hayland and dominated by meadow foxtail (an introduced pasture grass). Section 3.4 further discusses impacts associated with the crossing of the Medicine Bow River.

Entrega's proposed crossings of the Yampa and Little Snake Rivers are at the same general locations as the crossings proposed by WIC for its PBEP. In order to minimize disturbance at these crossing locations, **we recommend that Entrega coordinate with WIC regarding the crossings of the Yampa and Little Snake Rivers. This coordination should attempt to minimize in-stream and bank disturbances and should consider the use of a shared crossing bridge at each location. Entrega should file the results of this coordination with the Secretary for the review and written approval of the Director of OEP prior to constructing these crossings.**

Water Supply Watersheds

In Colorado, no surface water intakes are located within 3 miles downstream of waterbody crossings. In Wyoming, there are surface water intakes located within 3 miles downstream of the North Platte River (MP 192.8) and Rock Creek (MP 237.5) crossings (Parker 2004). The surface water intake at the North Platte River is located approximately 1 mile north of the proposed waterbody crossing at a rest area operated by the Wyoming Department of Transportation. Water is used at the rest area for irrigation and as a potable source. The surface water intake located at Rock Creek is located approximately 0.9 mile north (downstream) of the proposed crossing and is used by the Town of Rock River as a potable water source (Lemler 2004).

Based on review of USGS topographic maps, the pipeline route would cross one aqueduct in Colorado at MP 52.3 and three aqueducts in Wyoming (MPs 212.5, 293.0, and 305.3).

Entrega has indicated that it would coordinate with the City of Cheyenne to avoid impacts on existing ranch waterlines and proposed new roads. Elsewhere in Wyoming, the operators of the surface water intakes within 3 miles of the pipeline have indicated that they have flexibility regarding an interruption of water flow or can use alternative intakes buried beneath the river bed to minimize the uptake of turbid water (Jaure 2004; Lemler 2004). Because open-cut construction techniques would result in short-term increases in sediment loads that could temporarily impact surface water quality, **we recommend that Entrega continue**

to consult with the water supply operators and the appropriate federal and state agencies regarding potential impacts on water supplies and the need for specific mitigation measures during pipeline construction.

Water Quality

In order to minimize potential impacts on water quality, Entrega would adhere to the measures contained in its Procedures (appendix F), including, but 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.

The accidental release of hazardous materials (fuels, lubricants, and coolants) used by heavy equipment during pipeline installation could adversely affect aquatic species and contaminate public water supplies that rely on surface water intakes located downstream of the waterbody crossing. Entrega's SPCC Plan (Entrega 2004d) would minimize the potential impact of spills of these hazardous materials. Furthermore, Entrega would immediately notify the operators of any accidental releases of hazardous materials that may impact their water supply. Entrega would comply with NPDES permit requirements for water discharges associated with construction activity.

A comment was received from the Medicine Bow Conservation District requesting that they be consulted concerning total sediment load that enters the Medicine Bow River and Rock Creek during construction and reclamation, and that they be kept apprised of water quality issues. A related comment was received from the Saratoga-Encampment Rawlins Conservation District, concerning water quality, stream crossings, wetland restoration, and Best Management Practices (BMPs). We agree that Entrega should coordinate with conservation districts concerning water quality, construction starts, and restoration issues within their jurisdiction. In addition, Entrega would consult with WDEQ, CDPHE, and any other appropriate agencies on water quality issues before and after construction. Further descriptions of such activities are contained in the appendices.

Public scoping comments raised a concern regarding construction activities and the potential to elevate selenium levels in local waters. High selenium concentrations are often due to naturally occurring conditions, irrigated agricultural land, or the result of resource extraction. Currently, one waterbody crossed by the proposed project, the North Platte River, has been identified as exceeding the water quality standard for selenium (WDEQ 2004; CDPHE 2004). Elevated selenium levels were reported near Casper, Wyoming, which is located approximately 80 miles north of where the pipeline route crosses the North Platte River.

Construction of the proposed pipeline is not anticipated to cause an increase in selenium levels in local waters because construction activities would impact a relatively small area and would be limited in duration. Most importantly, construction would not involve activities suspected of increasing the concentration of selenium in ground and surface waters, such as the prolonged discharge of water to the land surface or the long-term exposure of surficial or bedrock formations to precipitation and/or runoff.

No waterbodies crossed by the proposed pipeline route receive effluent from municipal or industrial wastewater treatment facilities within a 3-mile radius of the proposed crossing locations (EPA 2004c).

3.0 ENVIRONMENTAL ANALYSIS

Sediment Contamination

The proposed pipeline route would not cross any watersheds containing areas of probable concern for sediment contamination (EPA 1997). Additionally, none of the waterbodies crossed by the pipeline route are known to contain contaminated sediments (Vranka 2004; Parker 2004).

Dust Suppression and Equipment Washing

Water use would be required for dust suppression and equipment washing during pipeline construction. The U.S. Department of Interior filed comments on the Draft EIS that requested an analysis of impacts on water resources based on estimated quantities of water that would be used for fugitive dust suppression during construction of the project. Any water withdrawals for dust suppression obtained from surface water sources could have direct impacts on aquatic resources. However, for both dust suppression and equipment washing, water sources would be from existing private and municipal supplies and no water would be withdrawn from surface water flows.

For dust suppression and related activities, Entrega has estimated that no more than 1.2 million gallons (about 3.7 acre-feet) would be used for dust control, topsoil stabilization, and minimizing soil pulverization. Based on current construction schedules, half of the dust-suppression water would be used during 2005, and the remaining half would be needed in 2006.

For equipment washing, Entrega estimates that washing stations would be placed at county lines and possibly at the south side of the Yampa River, to prevent the spread of noxious and invasive weed seeds. Each station would be placed a minimum of 0.25 mile from perennial waterbodies, and would use no more than 150,000 gallons of water (a total of about 4.1 acre-feet for nine stations). Cleaning stations would not allow drain water to flow into any waterbody, wetland, or irrigation canal. Water from drains would flow through energy dissipators such as straw bales, silt fence, stable vegetation, or rock. Each station would be decommissioned by collecting the sediment, framework, filter fabric, waste soil, weeds, and seeds, and transporting these materials to an approved off-site landfill.

Since no water for dust suppression or equipment washing would be withdrawn from surface water flows or released into a waterbody, no impacts to surface waters or dependent resources are anticipated from these activities. Also, because the groundwater amounts anticipated for use are minor in comparison to existing permitted supplies, no impacts to groundwater resources are anticipated. When such sources and corresponding anticipated withdrawals are identified, Entrega should provide the information to the FERC. Entrega understands that the FWS needs to be informed of the sources and amounts of all waters used during the project, and agrees to provide such information to the agency for review when sources are identified by the contractor.

Hydrostatic Test Water

To verify the integrity of the pipeline before placing it into service, Entrega would conduct a series of hydrostatic tests. These tests would involve filling the pipeline with water, pressurizing it, and then checking for pressure losses due to pipeline leakage. As currently proposed, the pipeline would be divided into

14 hydrostatic test sections; see Entrega’s Hydrostatic Test Plan (appendix M). **Table 3.3-3** identifies the surface water sources of hydrostatic test water, the approximate water volumes that would be required, the rate of withdrawal, and the withdrawal and discharge locations.

**Table 3.3-3
Currently Proposed Hydrostatic Test Water Volumes and Sources**

Withdrawal MP	Discharge MP(s)	Days of Use	Max. Withdrawal Rate (gpm)	Volume of Water (approximate gallons)	Potential Water Sources
15.2	15.2	7 14	5,000 gpm 4% of recent average Aug/Sept flow	6,800,000 5,800,000	White River ¹
50.6	50.6	7 10	3,000 gpm 4% of recent average Aug/Sept flow	900,000 8,800,000	Yampa River
84.5	84.5	14 20	1,500 gpm 8% of recent average Aug/Sept flow	1,400,000 6,000,000	Little Snake River
192.8	192.8	14 20	5,000 gpm 4% of recent average Aug/Sept flow	3,900,000 10,200,000	North Platte River (City of Rawlins)
225.5	225.5	20	500 gpm 8% of recent average Aug/Oct flow	9,700,000	Rock Creek
260.9	260.9	25	1,000 gpm 9% of recent average Aug/Sept flow	13,900,000	Little Laramie River
Total				61,600,000	

¹Because of the test section configuration, a total of only 6.8 million gallons would be withdrawn from the White River (see appendix M).

Entrega has stated that it would either purchase water from licensed sources or landowners, or appropriate water from surface waters for construction and hydrostatic testing. If discharge rates of hydrostatic test water are not carefully controlled, discharges into surface waters could cause erosion of the streambanks and streambottoms, resulting in a temporary increase of sediment load and destruction of habitat. Entrega plans to discharge directly back to the source waters. Discharge effects would be minimized through the use of a splash pup system (appendix M). A splash pup is a smaller section of pipeline welded at the end of the discharge line at a 90 degree angle with a splash plate attached. The splash pup is suspended above the river, allowing the discharge to spray into the air and fall onto the flow surface. This can be an effective means of energy dissipation and erosion control. The anticipated discharge rates are presented in the Hydrostatic Test Plan. Discharge activities would be monitored by environmental inspectors, and the outflow rates adjusted if necessary so that erosion impacts would be avoided.

If Entrega could not receive a permit to discharge hydrostatic test water directly into the waterbodies, Entrega may be required to discharge onto nearby upland locations. In this instance, Entrega would use

3.0 ENVIRONMENTAL ANALYSIS

energy-dissipating devices (e.g., filter bag, straw bale structure) that would dissipate and slow the velocity of the discharge water.

The discharge of hydrostatic test water into surface waters could potentially contaminate state water, depending on the waterbody's designated use classification. Contamination in the hydrostatic test waters would likely be low, since the pipeline would be constructed entirely from new internally coated pipe. Nevertheless, Entrega would be required to obtain permits from the appropriate agencies and adhere to the stipulations outlined in its NPDES permits when discharging hydrostatic test water. This would include the requirement for Entrega to test and, if necessary, treat the hydrostatic test water prior to discharging the water.

The Hydrostatic Test Plan (appendix M) and the last portion of the Procedures (appendix F, part VII) present further detail on requirements and proposed practices. No chemical or biological additives would be used during testing, and new pipe would be used throughout the construction. Pipe would be capped at night. Therefore, introduction of contaminants would be minimal. Withdrawal or discharge involving state-designated exceptional value waters, waterbodies providing habitat to federally listed threatened or endangered species, or waterbodies designated as public water supplies would not be used unless written permission was obtained from appropriate agencies. Based on consultations with the FWS and Wyoming Game and Fish Department (WGFD), hydrostatic test water withdrawal would occur between October 1 and March 1 for the White, Yampa, and Little Snake Rivers and between August 1 and September 30 for the North Platte and Little Laramie Rivers and Rock Creek. Water quality testing would be done in accordance with permit requirements prior to discharge.

In Colorado, discharges of test water would be analyzed as required for selected water quality constituents, and results reported to the CDPHE in accordance with the Colorado Discharge Permit System. In keeping with stated preferences from the FWS, discharges in Colorado would be made under the terms of the permit directly to the receiving water (the White, Yampa, or Little Snake River) at the location of the original withdrawal. No reaches of these rivers near the proposed crossings or the intake and discharge locations are listed on Colorado's Section 303(d) list of water-quality-limited segments. However, downstream of the proposed discharge locations, all three rivers are being monitored and evaluated for water quality impairment from sediment. Entrega plans to discharge through a splash pup device directly back into the source in order to prevent scour and prohibit sediment release.

In Wyoming, the WFGD expressed concern that discharge directly into a waterbody could result in alterations to the stream channels, increased sediment loads, and adverse impacts to aquatic biota. Entrega would be required to address this site-specific issue during the discharge permit process with the WDEQ. The reaches of the waterbodies near the proposed crossings or at the intake and discharge locations are not listed on Wyoming's Section 303(d) list of water-quality-limited segments for any constituents associated with pipeline construction activities. Test water would be analyzed for appropriate water quality constituents in accordance with pertinent state agency requirements. Discharges would be conducted at controlled rates, as indicated in the Hydrostatic Test Plan, to avoid accelerated erosion and resulting sedimentation and turbidity effects in the river. However, the exact measures that would be required by the WDEQ for the discharge permit have not yet been finalized. Because of the continuing state-consultation on the issue of hydrostatic test water discharges, **we recommend that prior to construction Entrega finalize their**

Hydrostatic Test Plan in consultation with pertinent state and federal agencies (FWS, WGFD, WDEQ, CDOW, CDPHE) and appropriate conservation districts. Entrega should provide additional descriptions of the discharge/erosion control structures that would be utilized at the discharge locations. Documentation of these consultations along with the finalized Hydrostatic Test Plan should be filed with the Secretary for review and written approval of the Director of OEP prior to construction. To account for changing site-specific conditions, Entrega should consult and coordinate with the appropriate agencies and organizations immediately before and during the hydrostatic testing program (including the discharge phases) to ensure that impacts are avoided or minimized in applicable agency jurisdictions.

Impacts on fisheries resources from sedimentation and water depletions (associated with hydrostatic test water withdrawals) are discussed in greater detail in sections 3.5.1 and 3.6.3.

The WGFD commented on the potential to spread nuisance aquatic species such as New Zealand mud snails, whirling disease spores, or others via construction equipment operating within stream channels. If such dissemination occurred, serious impacts on fisheries and related resources would result. The agency consultations and coordination recommended above should consider this issue, ascertain associated risks along the construction segments, and develop preventative practices that would be implemented during construction and maintenance. We believe that washing construction equipment with water spray to control the spread of weeds, as presented in the Weed Management Plan (appendix H), also may help control the spread of nuisance aquatic species.

With existing plans and procedures and our additional recommendations, overall impacts to surface water resources from construction would be short-term and minimal. Construction would cause temporary increases in sediment, but these impacts would be minimized by setbacks, sediment barriers, and streambank stabilization. Waterbody crossings would be completed within several days, minimizing the duration of the effects.

Surface water would not be required for the operation of the pipeline and aboveground facilities. To minimize sedimentation and to prevent contamination of surface water resources from spills of hazardous materials associated with future maintenance activities conducted along the pipeline ROW, Entrega would be required to adhere to construction and reclamation standards within Entrega's Plan, Procedures, and POD. Future variances from these plans and procedures would require the approval of the FERC, the affected land management agency, and affected landowner. Given the low probability of a pipeline leak (particularly a leak in a location that could enter surface water) and the physical and chemical properties of processed natural gas, adverse impacts on water resources are not expected.

3.3.3 Wetlands

Wetlands occupy about 4.0 miles (1 percent) of the proposed pipeline route (**table 3.3-4**). Of this distance, 0.5 mile of wetlands occur in Colorado and 3.5 miles occur in Wyoming. Wetland vegetation communities occurring along the proposed project area include emergent, scrub-shrub, littoral/playa, and shoreline and aquatic bed wetlands. The most common type of wetland along the proposed project area is emergent. Emergent wetlands are dominated by rooted herbaceous vegetation, while scrub-shrub wetlands are

3.0 ENVIRONMENTAL ANALYSIS

dominated by woody species less than 20 feet in height. Littoral/playa wetlands are shallow wetlands that are most obvious in the spring due to snowmelt, precipitation, and high water table. Shoreline and aquatic bed wetlands are found adjacent to or located within surface waters. Water sources for wetland communities include seepage from ditches and canals, irrigation runoff, sub-irrigation, and ponding on poorly drained soils. Common wetland species identified along the pipeline route are included in section 3.4, table 3.4-1.

**Table 3.3-4
Summary of Wetland Types Affected by Construction and Operation**

State	Wetland Classification ¹	Length of Wetland Crossed (miles)	Wetland Acreage Affected During Construction ²	Wetland Acreage Within Permanent Easement ³
COLORADO	PSS	<0.1	<0.1	<0.1
	PEM	0.5	5.6	0.0
	PFO	0.0	0.0	0.0
	Colorado subtotal	0.5	5.6	<0.1
WYOMING	PSS	0.1	1.4	1.0
	PEM	3.4	38.5	0.0
	PFO	<0.1	<0.1	<0.1
	Wyoming subtotal	3.5	39.9	1.0
PROJECT TOTAL⁴	PSS	0.1	1.4	1.0
	PEM	3.9	44.1	0.0
	PFO	<0.1	<0.1	<0.1
		4.0	45.5	1.0

¹ Wetland Types; classified during wetland survey conducted by Western EcoSystems Technology, Inc. 2005h.

PSS - Palustrine scrub-shrub

PEM - Palustrine emergent

PFO - Palustrine forested

² Wetland impacts are based on delineated wetland data provided by Western EcoSystems Technology, Inc. Wetland boundaries were recorded with a Global Positioning System unit rated for sub-meter accuracy. Acreages for pipeline disturbance were calculated based on a 75-foot-wide ROW centered over the pipeline. Disturbances due to temporary work areas occurring in delineated wetlands were included. Disturbance attributed to temporary workspace areas that fall within the delineated wetlands are included in the total.

³ Based on the amount of wetland within the 50-foot-wide permanent easement. No vegetation maintenance is anticipated in emergent wetlands. Operational impacts to forested wetlands would occur within a 30-foot-wide ROW maintained above the pipeline.

⁴ Note: 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.

Based on survey data (West 2005h), a total of 189 wetlands would be crossed by the proposed pipeline; 56 in Colorado and 133 in Wyoming. These wetlands are identified in appendix N and on the project maps located at the end of this document. Approximately 97 percent of the wetlands crossed are characterized as emergent, with the remaining 3 percent comprised of scrub-shrub and forested wetland types. While no farmed delineated wetlands would be crossed by the proposed project, several wetlands are located in actively grazed rangeland.

Construction in wetlands would primarily 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 to wetlands, Entrega would use a 75-foot-wide construction ROW through wetland

areas, would follow the measures identified in Entrega's Procedures and POD, and would locate the pipeline route immediately adjacent to existing utilities, where possible, to minimize impacts by overlapping the construction ROW along previously disturbed corridors.

Temporary use areas would be required at wetland crossings and, unless impractical due to topography or other constraint, these areas would be set back at least 50 feet from the edge of the wetland. While Entrega's Site-specific Waterbody Crossing Plans identify a setback of less than 50 feet at the Yampa and Little Snake crossings, deviations from the standard 50-foot setback would require approval of the FERC prior to construction.

Entrega originally proposed to seed non-saturated wetlands with annual ryegrass after the pipeline is constructed. While non-native annual ryegrass is not anticipated to persist in wetlands, the BLM expressed concern that ryegrass could become established on nearby upland areas, particularly in wheat fields. Entrega has subsequently agreed to specify that a commercial hybrid (sterile) cover crop be used for temporary stabilization of disturbed wetlands.

Entrega proposes to use a wetland revegetation approach wherein traffic areas in wetlands would not be grubbed, leaving root masses intact over most of the ROW. This would encourage regrowth and revegetation on those areas. On areas to be excavated, Entrega proposes to salvage topsoil and use that material, when replaced, as a source of native seeds and propagules. These procedures would constitute a passive approach to wetland revegetation in the trench and traffic areas. Further, Entrega's Procedures (appendix F) include the commitment to ensure that all disturbed areas successfully revegetate with wetland herbaceous and/or woody plant species. Proposed post-construction maintenance defines this as being at least 80 percent of the type, density, and distribution of vegetation in adjacent undisturbed wetland areas. If revegetation is not successful at the end of 3 years, Entrega would develop and implement (in consultation with a professional wetland ecologist) a remedial plan to actively revegetate the wetlands. The resulting program would be implemented and would continue until wetland revegetation is successful.

Entrega believes that the measures in the Construction Mitigation and Revegetation Plan could potentially serve as a project-specific Wetland Restoration Plan. While we agree with this viewpoint, we believe it is necessary for the final plan to be reviewed by the appropriate land management and state agencies prior to its implementation. Therefore, **we recommend that Entrega file with the Secretary its final Construction Mitigation and Revegetation Plan (including a line list by MP of proposed wetland mitigation measures) for review and written approval by the Director of OEP prior to commencing service. Entrega should include the comments of the land management and state agencies with whom it consulted during plan development and indicate whether reclaiming wetlands with native species was suggested by these agencies.**

Wetland vegetation would be temporarily lost during construction. A total of 45.5 acres of wetlands (5.6 acres in Colorado and 39.9 acres in Wyoming) would be affected by pipeline and aboveground facility construction (**table 3.3-4**). In general, emergent wetland vegetation would be expected to reestablish within 3 years after construction, while scrub-shrub vegetation would likely take somewhat longer.

3.0 ENVIRONMENTAL ANALYSIS

None of the aboveground facilities are located within National Wetland Inventory (NWI)-mapped wetlands. At the Meeker Hub Compressor Station, a portion of the site would be located alongside the Federal Emergency Management Agency-defined 100-year floodplain, however, aboveground facilities at the Meeker Hub Compressor Station do not appear to be located within either the floodplain or wetlands.

Similar to forest areas, Entrega would periodically remove woody species from wetlands to facilitate post-construction inspections of the permanently maintained pipeline ROW. A 30-foot-wide strip centered over the pipeline would be maintained clear of trees taller than 15 feet to facilitate pedestrian and aerial inspections. Additionally, a 10-foot-wide strip centered over the pipeline would be maintained clear of woody vegetation to allow vehicles rapid access along the ROW in case of emergencies. As a result, operational impacts in wetlands would result in the conversion of <1 acre of scrub-shrub wetland to herbaceous wetland within the 10-foot-wide maintained strip (**table 3.3-4**).

3.4 Vegetation

Vegetation Communities

Five general vegetation communities characterize the proposed EPP area: grassland, shrubland, agricultural land, woodlands, and wetlands (**table 3.4-1, figure 3.4-1**). The two predominant vegetation communities that are crossed by the proposed pipeline route are grassland and shrubland, comprising 29 and 59 percent based on acres of disturbance, respectively, of the vegetated lands. Wetlands are discussed in section 3.3.3. Open water and waterbodies (including dry washes, discussed in section 3.3.2), commercial land, and areas with bare rock account for less than 1 percent of the disturbance along the proposed pipeline route and do not display vegetation characteristics; consequently, they are not discussed in this section of the EIS (see section 3.7).

Construction of the proposed pipeline and aboveground facilities (including powerline easement) would disturb approximately 1,554 acres of grasslands, 3,192 acres of shrublands, 212 acres of agricultural land, and 224 acres of woodlands (**table 3.4-2**). 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. Temporary ROW and additional temporary workspace areas cleared for construction would be reseeded and allowed to revegetate naturally with tree and shrub species after construction is completed.

To minimize environmental impacts and ensure site stabilization and revegetation, Entrega would follow construction procedures detailed in its POD, including its Plan and Procedures with approved variances and its Construction, Mitigation, and Reclamation (CM&R) Plan (Entrega 2004c). The CM&R 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, Entrega would follow the measures outlined in the SPCC Plan and the Storm Water Pollution Prevention Plan (Entrega 2004e) to minimize and mitigate potential impacts on wetlands.

Upon completion of construction, disturbed areas would be revegetated in compliance with Entrega's Plan, Procedures, and CM&R Plan or in accordance with site-specific requirements from applicable federal, state, and local agencies. Timely stabilization of the construction ROW and reseeded with an appropriate seed mix would minimize the duration of vegetation disturbance. The FERC and BLM staff would inspect the pipeline ROW for several years to ensure Entrega's compliance with revegetation standards established in Entrega's Plan and Procedures.

After construction, the vegetation along the majority of the pipeline ROW would be allowed to revert to pre-construction conditions. Entrega would reduce the width of the permanently maintained ROW in woodland areas (i.e., pinyon-juniper, ponderosa pine, and riparian woodlands); however, given the long recovery period for woodlands, maintenance of vegetation in the future would be nominal. Impacts to vegetation from permanent aboveground facilities would be limited to those required for the operation of the compressor stations, pigging facilities, meter stations, mainline valves, and permanent access roads (about

3.0 ENVIRONMENTAL ANALYSIS

**Table 3.4-1
Vegetation Communities Crossed by the Entrega Pipeline**

Community Designation	Milepost ¹ (MP)	Vegetation Sub-Community	General Description	Common Species
Grassland	40-42	Sagebrush steppe	<ul style="list-style-type: none"> Combination of shrubs and grasses where grasses are 50 percent or more of the species composition. Density and variety of species in the community is greatly affected by fire suppression. 	big sagebrush, black sagebrush, broom snakeweed, rabbitbrush, prickly pear, mountain mahogany, ephedra, fourwing saltbush, winterfat, blue grama, bottlebrush squirreltail, Indian ricegrass, needle and thread grass, and western wheatgrass
	112-117			
	238-246	Mixed grass prairie	<ul style="list-style-type: none"> Distinguished from short grass prairie by a higher floristic diversity and an absence of buffalo grass. Found throughout eastern Wyoming. 	blue grama, sideoats grama, bluebunch wheatgrass, western wheatgrass, Indian ricegrass, needlegrasses, Sandberg bluegrass, New Mexico feathergrass, green needlegrass, fringed sagewort, prickly pear, prairie sandreed, little bluestem, sand bluestem, common reed, blowout grass, lemon scurfpea, galleta, and foxtail barley
	248-260			
	263-285			
	287-289			
	291-294			
	295-301			
	302-304			
	305-314			
315-327				
Shrub-scrub		Short-grass prairie	<ul style="list-style-type: none"> Bunch grasses with total cover of trees and shrubs less than 25 percent of total vegetation cover. Buffalo grass is an indicator species. Found primarily in northeast Colorado. 	buffalo grass, blue grama, western wheatgrass, needlegrass, prickly pear, fringed sagewort, Indian ricegrass, and broom snakeweed
	2.0-3.0	Sagebrush	<ul style="list-style-type: none"> Combination of dense sagebrush, with a sparse understory of grasses, forbs, and smaller shrubs (<50 percent cover). Occurs throughout central and western Wyoming and northwestern Colorado. 	big sagebrush, black sagebrush, sand sagebrush, broom snakeweed, rabbitbrush, prickly pear, mountain mahogany, horsebrush, spiny hopsage, ephedra, saltbush, Indian ricegrass, needle and thread grass, and western wheatgrass
	15-17			
	20-25			
	27-36			
	39-40			
	42-50	Salt desert scrub/greasewood	<ul style="list-style-type: none"> Occurs as a mosaic within sagebrush communities, dominated by greasewood. Found throughout central and western Wyoming and northwestern Colorado. 	greasewood, saltbush, spiny hopsage, budsage, saltbush, and winterfat
	51-85			
	86-93			
	94-112			
117-212				
213-225	Foothill shrub-scrub	<ul style="list-style-type: none"> Mountain mahogany found within northern mixed prairie and short grass prairie habitats. Gambel oak extends from Colorado into Wyoming on the western slope of the Rocky Mountains. 	mountain mahogany, scrub oak (Gambel oak)	
226-237				
285-287				
314-315				

Table 3.4-1 (Continued)

Community Designation	Milepost ¹ (MP)	Vegetation Sub-Community	General Description	Common Species
Agriculture	-0.5-2.0	Pasture/ hay/ orchard	<ul style="list-style-type: none"> Natural vegetation is not evident. Land currently used for grazing or horticulture. 	irrigated hay and alfalfa fields, livestock feeding areas, horticultural areas
	3.0-12.0			
	50-51			
	212-213			
	246-248			
	260-263			
	304-305			
Woodlands	12-15	Pinyon-juniper woodland	<ul style="list-style-type: none"> Commonly found on dry ridge tops with shallow soils. Highly competitive and supports a highly variable understory. Pinyon component increases at higher elevations. 	Colorado pinyon pine, Utah juniper, Rocky Mountain juniper, big sagebrush, black sagebrush, mountain mahogany, snakeweed, little rabbitbrush, Sandberg bluegrass, needle and thread grass, Indian ricegrass, squirreltail, western wheatgrass, stemless golden weed, oval buckwheat, yellow-eye cryptantha, scarlet gilia, dwarf cateye, brittle prickly pear, claretcup, and heartleaf twistflower
	17-20			
	25-27			
	36-39			
	85-86			
	93-94			
	226			
	235			
	237-238			
	289-291			
Wetlands ²	294-295	Ponderosa pine woodland	<ul style="list-style-type: none"> Patches on rocky soils in eastern Wyoming. 	Ponderosa pine, mountain mahogany, blue grama, sideoats grama, bluebunch wheatgrass, western wheatgrass
	301-302	Riparian woodland	<ul style="list-style-type: none"> Found adjacent to surface waters. 	narrow leaf cottonwood, willow
		Emergent	<ul style="list-style-type: none"> Dominated by rooted herbaceous vegetation. 	baltic rush, inland saltgrass, alkali sacaton, sedges, bluejoint reedgrass, and bent grass
		Scrub-shrub	<ul style="list-style-type: none"> Scrub-shrub wetlands are dominated by woody vegetation less than 20 feet in height. 	willow, thinleaf alder, river birch, red-osier dogwood, and aspen
		Littoral/playa	<ul style="list-style-type: none"> Most obvious in spring due to snowmelt, precipitation, and high water table. Wetlands that have been dry for over a year frequently have a thin layer of grasses and forbs on the bottom. 	Due to their ephemeral nature, the entire composition of these wetlands can change within a day
		Shoreline and aquatic bed	<ul style="list-style-type: none"> Found adjacent to or located within surface waters. 	narrowleaf cottonwood, plains cottonwood, salt cedar, willow, thinleaf alder, river birch, red-osier dogwood, aspen, wild rose, serviceberry, and snowberry

¹Mileposts are broad generalizations. See project maps at the end of this document for more detailed vegetation description by milepost.

²Wetland communities are delineated by vegetation type. Sub-communities indicated in this table are shown in **figure 3.4-1**.

Non-Internet Public

FINAL ENVIRONMENTAL IMPACT STATEMENT FOR THE PROPOSED ENTREGA PIPELINE PROJECT

Docket Nos. CP04-413-000, et al.

Page 3-56

Figure 3.4-1

Public access for the above information is available only through the Public Reference Room, or by e-mail at public.referenceroom@ferc.gov.

Table 3.4-2
Acres of Land Within Construction and Operation Rights-of-Way¹

Facility	Grassland		Shrub-scrub		Agriculture		Woodlands		Other	
	Const.	Oper.	Const.	Oper.	Const.	Oper.	Const.	Oper.	Const.	Oper.
Pipeline (main)										
Colorado	123	59	842	396	120	59	140	61	<1	<1
Wyoming	959	467	1,867	882	59	30	71	34	1	<1
Total ²	1,082	526	2,709	1,278	179	89	211	95	1	1
Pipeline (laterals)										
Colorado	12	6	6	3	0	0	0	0	0	0
Wyoming	0	0	4	2	0	0	0	0	0	0
Total ²	12	6	10	5	0	0	0	0	0	0
Additional Temporary Workspace Areas										
Colorado	10	0	68	0	23	0	7	0	0	0
Wyoming	114	0	185	0	10	0	6	0	0	0
Total ²	124	0	253	0	33	0	13	0	0	0
Pipe Storage and Contractor Yards³										
Colorado	40	0	0	0	0	0	0	0	109	0
Wyoming	276	0	160	0	0	0	0	0	80	0
Total ²	316	0	160	0	0	0	0	0	189	0
Aboveground Facilities^{4,5}										
Colorado ⁶	19	19	32	32	0	0	0	0	0	0
Wyoming	0	0	24	23	0	0	0	0	0	0
Total ²	19	19	56	55	0	0	0	0	0	0
Permanent Access Roads										
Colorado	0	0	0	0	0	0	0	0	0	0
Wyoming	0	0	0	0	0	0	0	0	0	0
Total ²	0	0	0	0	0	0	0	0	0	0
Powerlines										
Colorado	1	<1	0	0	0	0	0	0	0	0
Wyoming	0	0	4	<1	0	0	0	0	0	0
Total ²	1	<1	4	<1	0	0	0	0	0	0
Project Total^{2,7}	1,554	551	3,192	1,338	212	89	224	95	190	1

Table 3.4-2 (Continued)

Footnotes:

- ¹ Const. – construction. Oper. – operation. Construction ROW; based on a 100-foot-wide construction ROW except for a 75-foot-wide ROW in wetlands and riparian woodlands, and an increased construction ROW width for site-specific construction conditions. Operation ROW; based on a 50-foot-wide operational ROW. Acreage totals do not include developed, commercial land, open water, or barren areas that do not display vegetation characteristics.
- ² 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.
- ³ Some yards are located on land (e.g., commercial/industrial) that do not display vegetation characteristics.
- ⁴ Meter stations and pig launchers and receivers would be located within the 20-acre area associated with compressor station sites. Mainline valves would be constructed within the 100-foot-wide construction ROW and operated within the permanently maintained 50-foot-wide operational ROW, or constructed within meter or compressor station sites.
- ⁵ Mainline valves are contained within the 50-foot easement, therefore, they are not included with aboveground facilities.
- ⁶ This includes the Meeker Hub Compressor Station (meter stations, pig launcher, and mainline valve) that would be located on previously developed land purchased by Entrega from one of its affiliates.
- ⁷ Wetland delineation (WEST 2005h) are included within surrounding vegetation types. Refer to appendix N for wetland locations.

55 acres of shrubland and 19 acres of grassland) and mainline valves (about 0.25 acre of grassland, 0.5 acre of shrub-scrub, 0.05 acre of woodlands, and 0.05 acre of agriculture). Permanent impacts due to powerlines would be limited to the footprint of the poles, and are therefore negligible.

Grassland

Grassland occurs along about 83 miles (25 percent) of the proposed pipeline route, with sagebrush steppe being the dominant sub-community. Sagebrush steppe is a semi-closed steppe characterized by an overstory of sagebrush and understory of grasses, forbs, and smaller shrubs. Grass species comprise more than 50 percent of the species composition in this community; big sagebrush is the dominant shrub component throughout. The mixed-grass prairie sub-community occurs throughout most of eastern Wyoming and typically supports a high diversity of grasses, including short-, mid-, and tall-grass species. It is distinguished from the short-grass prairie sub-community by having a much higher floristic diversity and an absence of buffalo grass. The short-grass prairie is dominated by bunch grasses less than 20 inches tall. Buffalo grass is considered the indicator species of short-grass prairie.

Long-term impacts may occur on short-grass prairie and sagebrush steppe, as well as native grasslands and shrublands. Recovery of these habitats may take a minimum of 5 to 7 years due to poor soil and low moisture conditions.

Shrub-scrub

Shrubland accounts for approximately 206 miles (63 percent) of vegetation cover that would be crossed by the pipeline route. This community designation includes sagebrush, salt desert shrub/greasewood, and foothills shrub-scrub sub-communities. Sagebrush is the most widespread shrubland sub-community. This vegetation type is characterized by an overstory of big sagebrush and an understory of grasses, forbs, and smaller shrubs. Salt desert shrub/greasewood occurs as a mosaic within sagebrush communities, frequently on the fringes of playas, desert lakes, ponds, rivers, and streams. Foothills shrub-scrub communities consist of both mountain mahogany and scrub oak sub-communities. Mountain mahogany primarily occurs within northern mixed prairie and short-grass prairie habitats. This deciduous shrub forms dense thickets with sparse understory vegetation. It typically occurs on rocky or shallow soils and is often associated with a limestone, sandstone, or shale substrate. In oak scrub, Gambel oak is the dominant shrub, comprising more than a quarter of the total vegetation cover. This sub community does not occur on the eastern slope, but extends from Colorado into Wyoming on the western slope of the Rocky Mountains.

Long-term construction impacts may occur on shrublands, such as sagebrush. Recovery of these habitats may take a minimum of 20 to 30 years due to poor soil and low moisture conditions.

Agriculture

Agricultural land occurs along about 18 miles (5 percent) of the proposed pipeline route. This community is primarily comprised of irrigated hay and alfalfa fields. These areas are used primarily for livestock grazing.

3.0 ENVIRONMENTAL ANALYSIS

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

Woodlands

Woodlands occur along about 18 miles (5 percent) of the proposed pipeline route. Woodland sub-communities include pinyon-juniper woodland, ponderosa pine woodland, and riparian woodland. Along the pipeline route, the dominant community is pinyon-juniper woodland. Colorado pinyon pine and Utah juniper dominate the pinyon-juniper woodland plant community. Ponderosa pine woodland is commonly found on lower mountain foothills and slopes. Riparian woodlands occur along many perennial waterbodies and are characterized by cottonwood trees and a variety of riparian shrubs.

Clearing of woodland vegetation within the construction ROW would result in long-term and permanent environmental change. In this region, it is anticipated that regrowth of woodlands to mature conditions could take between 50 to 100 years, depending on the species (long-term impact). Permanent impacts to woodlands would be limited to the permanent corridor, which Entrega would maintain in an herbaceous state by occasional mowing or brush clearing.

Six riparian woodland communities would be crossed by the EPP. These areas are associated with the North Platte River, Medicine Bow River (2), a tributary to Foote Creek, and Rock Creek (2) crossings. Entrega also proposes temporary workspaces within riparian woodlands at the Medicine Bow and North Platte River crossings. To minimize impacts, Entrega has prepared a Riparian Woodland Plan (appendix K). In this plan, Entrega has committed to reduce the construction ROW to 75 feet in riparian woodlands, avoid the removal of trees to the maximum extent practical, leave root systems of small woody vegetation intact along the construction ROW, and not use herbicides and pesticides for vegetation maintenance within 100 feet of a waterbody. Entrega has agreed to reduce the permanently maintained ROW to a 10-foot-wide corridor centered over the pipeline. Further, Entrega's vegetation maintenance program would allow a riparian strip of at least 25 feet wide, as measured from the high-water mark and parallel to the waterbody, to permanently revegetate with native plant species across the entire construction ROW.

The Riparian Woodland Plan provides for minimization of topsoil disturbance, reseeding with seed mixtures approved of by the land managing agency and NRCS, and replanting of trees and shrubs to mimic the surrounding vegetation and density. To facilitate the restoration of riparian woodlands, **we recommend that Entrega conduct pre-construction surveys in woody riparian areas to determine the existing vegetation community composition and density. Based on the results of these surveys, Entrega should reseed and replant with these existing tree and shrub species at pre-construction densities, accounting for intact root masses.**

Also, **we recommend that Entrega file site-specific plans for each of the six riparian woodland crossings with the Secretary for review and approval by the Director of OEP prior to construction activities in these riparian woodland communities. In developing these plans, Entrega should locate temporary workspace areas to avoid riparian woodland to the maximum extent practicable. Entrega**

should provide detailed justification for any temporary workspace area that is not sited to avoid disturbance of riparian woodland. At a minimum, each plan should include:

- i. an inventory of the area of disturbance, based on the preconstruction survey;
- ii. site-specific measures to avoid or reduce the extent of riparian woodland disturbance;
- iii. site-specific measures to restore all riparian woodland disturbance to near-preconstruction conditions;
- iv. an aerial-photo based plot plan showing all areas of disturbance, environmental controls, and restoration measures (scale 1:1,200); and
- v. specific criteria for assessing restoration success.

At the Medicine Bow River, about 140 trees would require removal from the right-of-way. They range in diameter from 8 inches to 48 inches with a mean diameter of 18 inches. About 76 trees range in diameter from 13 to 20 inches, 10 trees range in the diameter from 21 to 30 inches, and 1 tree would be greater than 30 inches in diameter. Where possible, Entrega intends to avoid removal of the trees greater than 21 inches in diameter. Entrega would provide a final number of trees to be removed prior to construction. Entrega proposes to plant about 800 replacement trees from non-rooted willow and aspen cuttings at 10 feet-on-center and rooted cottonwoods at 15 feet-on-center.

We believe that the magnitude of impact on the riparian woodland at this crossing warrants consideration of alternatives to Entrega's proposal. Alternatives which have not yet been seriously considered include the possibility of an HDD crossing or rerouting the pipeline away from the existing corridor to cross the river in an area with fewer mature trees. While replanting trees may return the area to a near pre-construction condition at some time in the distant future, we are not prepared to adopt this approach without seriously evaluating alternatives that would avoid or significantly reduce the number of mature trees removed by construction. As a result, we believe that additional analysis of the Medicine Bow River crossing is needed. In order to confirm that all options to minimize impacts on mature woodlands near the Medicine Bow River have been considered, **we recommend that prior to construction at the Medicine Bow River, Entrega prepare and file with the Secretary for review and written approval of the Director of OEP a report indicating whether an HDD crossing is feasible at this site, and evaluating another route(s) for crossing the river that would avoid or minimize the number of trees to be removed by construction.**

While impacts resulting from construction of the EPP would result in the long-term and permanent loss of forest and woodland vegetation, and would cause a small incremental increase in woodland fragmentation. However, except for the Medicine Bow River crossing, the effects would generally be small relative to the available habitat in the region.

Unique, Sensitive, and Protected Vegetation Communities

No unique, sensitive, or protected vegetation communities have been identified within the project area.

3.0 ENVIRONMENTAL ANALYSIS

3.5 Fish and Wildlife

3.5.1 Fishery Resources

The proposed EPP route would cross a total of 32 different waterbodies in Colorado and Wyoming that support fish species, including 8 that support warmwater fisheries, and 24 that support coldwater fisheries. Waterbodies that provide persistent habitat or are being managed for fish species are presented in **table 3.5-1**. In addition to these perennial waterbodies, the project would cross perennial and intermittent waterbodies a total of 395 times in Colorado and Wyoming. No waterbodies are present within the boundaries of the proposed aboveground facilities.

**Table 3.5-1
Fisheries Crossed by the Proposed Project**

Waterbody	Intermittent (I)/ Perennial (P)	Fishery Classification	Maximum Crossing Width	Number of Times Crossed	Proposed Crossing Method
Colorado					
Piceance Creek	P	Warmwater	40	11	Open Cut
Tributary to Piceance Creek	P	Warmwater	<10	1	Open Cut
Broad Channel Fed by Jack Hill Spring	P	Warmwater	10	1	Open Cut
White River	P	Coldwater	110	1	HDD
Deep Channel Creek	P	Warmwater	13	3	Open Cut
Tributary to Deep Channel Creek	P	Warmwater	<10	1	Open Cut
Yampa River	P	Warmwater	120	1	HDD
Little Snake River	P	Coldwater	120	1	Open Cut
Lone Tree Creek	P	Warmwater	18	1	Open Cut
Wyoming					
North Platte River	P	Coldwater	100	1	Open Cut
North Platte River East Fork	P	Coldwater	50	1	Open Cut
Medicine Bow River	P	Coldwater	28	1	Open Cut
Bear Creek	P	Coldwater	<10	1	Open Cut
Wagonhound Creek	P	Coldwater	20	1	Open Cut
Tributary to Foote Creek	P	Coldwater	<10	1	Open Cut
West Fork Foote Creek	I	Coldwater	<10	1	Open Cut
Rock Creek	P	Coldwater	50	1	Open Cut
Onemile Creek	P	Coldwater	10	1	Open Cut
Threemile Creek	P	Coldwater	<10	2	Open Cut
East Fork Dutton Creek	P	Coldwater	12	1	Open Cut
Cooper Creek	P	Coldwater	<10	1	Open Cut
Fourmile Creek	P	Coldwater	<10	1	Open Cut
Sevenmile Creek	I	Coldwater	<10	1	Open Cut
Little Laramie River	P	Coldwater	28	1	Open Cut
Alsop Ditch	I	Coldwater	18	1	Open Cut
Browns Creek	P	Coldwater	20	1	Open Cut
Tributary to Browns Creek	I	Warmwater	<10	1	Open Cut
Laramie River	P	Coldwater	69	1	Open Cut
Dale Creek	I	Coldwater	<10	1	Open Cut
Lone Tree Creek	P	Coldwater	<10	2	Open Cut
Goose Creek	I	Coldwater	<10	1	Open Cut
Duck Creek	I	Coldwater	40	1	Open Cut

Representative fish species that are managed within coldwater waterbodies crossed by the proposed pipeline route include brook trout, brown trout, and rainbow trout. Non-game fish species known to occur in these coldwater waterbodies include: brassy minnow, carp, creek chub, common shiner, fathead minnow, Johnny darter, longnose dace, longnose sucker, sand shiner, and white sucker. Trout species, along with walleye that occur in the North Platte and Medicine Bow Rivers and smallmouth bass, channel catfish, and pike that occur in the Yampa River, are game species that offer the potential for recreational or commercial fishing opportunities along the proposed route. Representative fish species that occur within the warmwater waterbodies crossed by the proposed project route include catfish, crappie, bass, yellow perch, white sucker, Iowa darter, and creek chub.

No waterbodies affected by the project contain or have the potential to contain species managed by National Marine Fisheries Service, nor do they support essential fish habitat (EFH) as defined under the Magnuson-Stevens Fishery Conservation and Management Act (Public Law 94-265 as amended through October 11, 1996). Therefore, no EFH would be affected by the project.

Construction-related impacts on fisheries would be primarily dependent on season of construction, duration of in-stream activities, and stream crossing methods. As stated in Entrega's Procedures, construction activities at coldwater fisheries would occur from June 1 to September 30, and from June 1 to November 30 for warmwater fisheries, unless otherwise permitted or restricted by the FWS, WGFD, and/or the CDOW. For example, to protect streams that have both spring and fall salmonid spawning, the WGFD has stated that the crossing of waterbodies classified as coldwater fisheries would occur between May 16 and October 14.

Construction-related impacts at waterbody crossings could result from sedimentation and turbidity, streambank erosion, and contamination from fuel and chemical spills. These impacts primarily relate to perennial waterbodies. The extent of impacts on fisheries, if any, would depend on the construction method used to cross the waterbody, duration of instream activity, and the seasonal timing of in-stream construction.

Entrega proposes to use the open-cut crossing method to construct across all perennial waterbodies along the proposed pipeline route, with the exception of the White and Yampa Rivers, which would be crossed by HDD. If successful, an HDD crossing would result in no impact on fisheries. All non-HDD methods would increase sediment loads and turbidity that could have an effects on fishery resources. Increased sediment loads can alter a stream's substrate composition and fill inter-gravel spaces and pool habitats. Increased sediment loads can degrade the existing aquatic habitat by reducing spawning habitat, available rearing habitat, and benthic invertebrate production (the primary food supply of many fish). Increased sediment loads also can adversely affect fish populations by suffocating eggs and newly hatched larvae living in gravels and by abrading sensitive gill membranes of both young and adult fish. However, an open cut crossing is typically the quickest crossing method, involving 1 day or less of in-stream construction for smaller streams and 2 to 3 days for larger waterbodies. Therefore, sedimentation and turbidity resulting from construction would be short-term and generally limited to periods of active construction within a waterbody. Adverse effects to aquatic biota would tend to be localized. Additionally, most of the waterbodies that would be crossed are intermittent and likely would have little to no flow during the mid-summer to late fall construction period. Crossing such waterbodies would have little to no impact on fisheries.

3.0 ENVIRONMENTAL ANALYSIS

To minimize sedimentation and turbidity impacts during open-cut, flume, or dam-and-pump waterbody crossings, Entrega would adhere to its Procedures, which would ensure that Entrega would store trench spoil at least 50 feet from streambanks, use sediment barriers such as silt fence to prevent or significantly reduce runoff into streams, and complete construction as quickly as possible to shorten the duration of sedimentation and turbidity. Following completion of construction, Entrega would immediately stabilize the construction site, including the streambanks. If circumstances required a construction delay, Entrega would employ adequate site stabilization measures in accordance with its Procedures and permit conditions. In addition, Entrega has agreed to construct during low-flow periods for stream crossings or adhere to the construction windows to avoid spawning periods, as required by the appropriate agency, and would implement crossing methods to avoid or minimize potential sedimentation and turbidity impacts on aquatic species during spawning seasons, as discussed above.

Clearing and grading of vegetation within the construction ROW and additional temporary workspace areas during construction could increase erosion along streambanks and turbidity levels in the waterbodies, as well as cause localized changes in water temperature and light penetration, which could affect aquatic habitat, primary and secondary production, and fish use patterns. Alteration of the natural drainages or compaction of soils by heavy equipment near streambanks during construction could accelerate erosion of the banks, runoff, and the transportation of sediment into waterbodies. The degree of impact on aquatic organisms due to erosion would depend on sediment loads, stream velocity, turbulence, streambank composition, and sediment particle size. Additionally, localized changes in water temperature and light penetration caused by the removal of boulders, woody debris, streambank vegetation, and undercut banks could temporarily displace fish that utilize these features for cover, nesting, and feeding. However, these impacts would be temporary and relatively minor due to the limited amount of total stream bank area affected per waterbody. As discussed in section 2.3.1, erosion would be minimized by installing temporary erosion controls (e.g., silt fencing or strawbales) prior to vegetation removal, and rootstock would be left in the ground where possible. Further discussion on reducing impacts along streambanks can be found in Entrega's Procedures (appendix F), CM&R Plan (appendix G), and the Riparian Woodland Plan (appendix K).

To minimize impacts associated with streambank erosion during construction, Entrega would use equipment bridges, mats, and pads to support equipment that must cross the waterbody or work in saturated soils adjacent to the waterbody. In accordance with its Procedures and where topography allows, Entrega would locate additional temporary workspace areas at least 50 feet from the edge of flowing waterbodies, except where site-specific approval has been granted, and limit clearing of vegetation between additional temporary workspace areas and the edge of the waterbody to the certificated construction ROW. Entrega would implement erosion and sediment control measures (e.g., silt fence) to minimize erosion and prevent sediments from leaving the construction site and entering waterbodies. To minimize sedimentation and channel instability impacts to fishes and their habitats, Entrega also would complete in-stream construction activities for open-cut waterbody crossings within 24 hours for minor waterbodies (less than 10 feet wide), within 48 hours for intermediate waterbodies (10 to 100 feet wide), and within 72 hours for major waterbodies (more than 100 feet wide).

State wildlife agencies have expressed concerns about open-cut construction across some waterbodies. In response to these concerns, Entrega has prepared Site-Specific Waterbody Crossing Plans (appendix J).

These plans would help minimize sedimentation and ensure channel bank stabilization. The withdrawal and discharge of hydrostatic test water also could affect fisheries. Hydrostatic test water is discussed in detail in section 3.3.2, and the potential effects of water withdrawal and discharge on special status species is discussed in section 3.6. Entrega has identified the White River (MP 15.2), Yampa River (MP 50.6), Little Snake River (MP 84.5), North Platte River (MP 192.8), Rock Creek (MP 237.5), and Little Laramie River (MP 260.9) as the sources of hydrostatic test water (appendix M). To avoid uptake of organic debris or entrainment of aquatic species during water withdrawals, Entrega would install test water intakes with filtering and screening devices, and would suspend the intakes above the stream bottom. Entrega would not use chemical additives during hydrostatic testing.

If discharge rates are not carefully controlled, the discharge of large volumes of hydrostatic test water to surface water sources could temporarily affect the biological uses of the resource. Hydrostatic discharges could result in a change in water temperature and dissolved oxygen levels, increase downstream flows, and contribute to streambank and substrate scour. As described in section 3.3.2, Entrega would use energy dissipating devices and/or filter bags to prevent erosion, streambed scour, suspension of sediments, and excessive streamflow during test water discharges. Entrega would discharge test water directly into surface waters unless otherwise authorized or required by its NPDES permits. Discharge of hydrostatic test water would be conducted at the same location as the withdrawal point, as specified in Entrega's Hydrostatic Test Plan (appendix M). Based on the current construction schedule, hydrostatic testing and discharge would avoid the brown trout spawning period. However, in the event that the schedule is delayed or modified, **we recommend that Entrega consult with the FWS and appropriate state agencies to determine appropriate mitigation for discharging hydrostatic test water within the brown trout spawning season.** Further discussion of hydrostatic test water withdrawals and associated impacts on federally listed species is included in sections 3.6.1 and 3.6.4.

A direct spill of fuel, drilling fluids, or other hazardous materials into a waterbody could adversely affect aquatic resources. To minimize the potential for spills, Entrega would implement its SPCC Plan, which specifies preventive measures such as personnel training, equipment inspection, and refueling procedures to reduce the likelihood of spills, as well as mitigation measures, such as containment and cleanup, to minimize potential impacts should a spill occur. The SPCC Plan restricts the location of fuel storage, fueling activities, and construction equipment maintenance along the construction ROW and provides procedures for these activities. Training and lines of communication to facilitate the prevention, response, containment, and cleanup of spills during construction activities also are described in the SPCC Plan.

Adherence to the SPCC Plan would prevent a large spill from occurring near surface waters because construction equipment fueling by mobile tankers or mobile tanks is prohibited within 100 feet of the waterbody bank and hazardous material storage is prohibited within 500 feet of waterbodies. If a small spill were to occur, adherence to measures in the SPCC Plan would decrease the response time for control and cleanup of the spill, thus avoiding or minimizing the effects of a spill on aquatic resources.

3.5.2 Wildlife Resources

The predominant wildlife habitats along the proposed pipeline route consist of grassland (sagebrush steppe, mixed grass prairie, short-grass prairie), shrub-scrub (sagebrush, salt desert shrub/greasewood, mountain

3.0 ENVIRONMENTAL ANALYSIS

mahogany), woodlands (pinyon-juniper, riparian), wetlands, and agricultural land. These vegetation types support a diversity of wildlife species. This section focuses on species of high economic and/or recreational importance and those that are considered sensitive to human disturbance.

In total, surface disturbing activities would be conducted within approximately 5,371 acres of wildlife habitat. However, due to the linear nature of the project over a large geographic area, these acreages represents far less than 1 percent of available wildlife habitat on a regional basis.

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).

Less mobile or burrowing species may be killed as a result of crushing from construction vehicles and equipment. Other potential impacts include habitat loss or alteration, habitat fragmentation, and animal displacement. Individuals may be permanently displaced and perish due to increased competition or other effects of being forced into sub optimal habitat. Indirect impacts from increased noise and additional human presence also could lead to displacement and lowered fitness. Although the habitat adjacent to the construction zone may support some displaced animals, any species that is at or near its carrying capacity could exhibit increased localized mortality.

Habitat fragmentation is frequently a concern when clearing ROWs. In general, fragmentation can result in an altered wildlife community as species more adaptable to edge habitats establish themselves, while species requiring undisturbed habitats are subject to negative effects. However, fragmentation disturbance to wildlife and wildlife habitats from the proposed EPP is not expected to be significant because a majority of the construction would be adjacent to or overlap an existing cleared natural gas ROW. Approximately 86 percent of the EPP would be collocated (within 300 feet) with existing pipeline, utility, or road ROWs. About 45.4 miles or 583 acres (14 percent) of the proposed route would be newly created ROW (not collocated with other ROWs). Thus, new edge habitat would replace existing edge habitat along the majority of the route. In addition, most of the pipeline would cross relatively open habitat types (e.g., shrubland, grassland, agriculture). As such, we believe the effects of habitat fragmentation would be minimal. Entrega's Procedures, CM&R Plan, and Riparian Woodland Plan have been developed to reduce the extent and duration of impacts on habitats along the project ROW.

In order to reduce potential impacts on wildlife from pipeline construction, Entrega has committed to the following measures on federal land:

- Entrega would place earthen ditch plugs, with ramps on either side, at 1-mile intervals along the trench and at well-defined livestock and wildlife trails intersected by the trench. These plugs would provide a

means for wildlife to escape if individuals fall into the trench and also would provide a bridge for other wildlife to cross the open trench.

- Entrega also would leave breaks in the strung and welded pipe, topsoil, and spoil piles at locations that correspond to the earthen trench plugs to allow movement of wildlife and livestock across the construction ROW.
- The pipeline trench would be inspected on a regular basis during construction and immediately prior to backfilling to identify entrapped animals. Wildlife found in trenches during construction would be coaxed to the nearest ramp and either be encouraged to exit the trench, removed by hand, or trapped (if other methods are unsuccessful). If any animal in the trench is determined to be a sensitive species, only authorized individuals would be allowed to remove it from the trench.
- Entrega would limit the duration that welded pipe would be left above the ditch by lowering the pipe no later than 7 days after pipe segments are joined.

Other alternative measures that Entrega states it would consider on a case-by-case basis include raising the welded pipe string to provide a minimum 5-foot clearance or establishing earthen ramps across the pipe.

In general, we believe that implementing these measures would provide adequate opportunity for wildlife in most situations to cross or escape from the pipeline trench. However, we do not agree that such measures should be limited only to federally managed land. Thus, in order to ensure project-wide protection of wildlife, **we recommend that the mitigation measures listed above be uniformly applied throughout the project.**

Further, we believe that depending on the season of construction and the specific location, spacing the trench plugs/pipeline breaks closer together may be warranted. For example, closer spacing may be needed if construction timing encroached on occupied critical big game winter ranges. In order to provide the opportunity for the spacing of trench plugs/pipeline breaks to be modified to facilitate wildlife crossover/escape from the ditch, **we recommend that Entrega's EIs should, as needed and in conjunction with the federal agencies' compliance monitors, modify the spacing of ditch-plug bridges/escape ramps and breaks in the strung and welded pipe at specific locations where the 1-mile spacing is found to be inappropriate.**

Potential indirect impacts on general wildlife (big game, nesting birds, small game, etc.) could result from increased noise levels from the operation of the proposed Bighole Compressor Station in Moffat County, Colorado. 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 aecibels on the A-weighted scale (dBA), while a New Mexico study in a piñon-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

3.0 ENVIRONMENTAL ANALYSIS

(LaGory et al. 2001). To minimize potential noise impacts on wildlife, Entrega has committed to reducing the noise level of the Bighole Compressor Station to a 55 dBA day-night equivalent sound level (L_{dn}) at the facility boundary. This mitigation would reduce noise impacts to nesting birds to within 631 feet (59 acres) (based on a 47 dBA threshold level for potential effects to birds) of the facility over the life of the project.

Operation of the proposed pipeline would require the permanent maintenance of a 50-foot-wide ROW corridor. In wetlands, a 30-foot-wide ROW would be maintained clear of trees taller than 15 feet, with 10 feet of this permanent ROW maintained clear of all woody vegetation. In addition, 84 acres associated with aboveground pipeline facilities (e.g., compressor stations and meter stations) and permanent access roads also would be maintained during the operation of the project. As a result, approximately 2,074 acres of wildlife habitat would experience incremental long-term or permanent impacts; however, disturbance was calculated based on the 50-foot increment along the entire pipeline. These acreages represent far less than 1 percent of available wildlife habitat on a regional basis but would provide an incremental contribution to habitat fragmentation. In many cases, the acres affected by operational impacts would be included in the acres of long-term impacts attributed to construction, given the long recovery period of vegetation in the region.

Operation of the pipeline also could result in future surface disturbance activities due to maintenance of the pipe (e.g., pothole inspections, repair of pipe, replacement of rectifier beds). Entrega would follow its POD and other measures referenced in this EIS to minimize impacts to wildlife and their habitats during pipeline operation.

Big Game

The primary big game species that occur within the project area are elk, mule deer, and pronghorn antelope (pronghorn). Other less prominent big game species that could potentially occur along the project route are white-tailed deer and Rocky Mountain bighorn sheep. Certain habitat ranges for these species are considered crucial for maintenance of game populations. In Wyoming, the WGF and the BLM have established several categories based on seasonal use of the habitat. For example, crucial winter range areas are considered essential in determining a game population's ability to maintain itself at a certain level over the long term. Other regions may not usually be a part of a herd's range, but are used as survival areas during extremely harsh winters. Likewise, the CDOW has identified critical winter habitat ranges for elk, mule deer, and pronghorn in Colorado. **Table 3.5-2** summarizes the linear miles and acreage of disturbance that would occur within important big game ranges along the project route.

Elk inhabit a variety of habitats along the project route including grassland, shrubland, coniferous forests, aspen, and, to a lesser extent, agriculture and pastureland. Approximately 29.4 miles of critical winter range for elk would be crossed by the project ROW in Rio Blanco and Moffat Counties in western Colorado. Two critical winter range areas of particular importance along the project route were identified by the CDOW. The most important of these areas occurs from the north end of the Deception Creek Canyon in Moffat County through the Spring Creek Canyon, north of the Yampa River. A considerable portion of this critical area is located on the Bitter Brush State Wildlife Area (SWA). The second area of concern is located in the vicinity

**Table 3.5-2
Crucial Big Game Habitats Affected by the Entrega Pipeline Project**

State/Habitat Type	Milepost Locations	Total Length Crossed (miles) ¹	Acreage Affected During Construction ²	Acreage Affected by Permanent Facilities ³
COLORADO				
Elk, Mule Deer, and Pronghorn Critical Winter Habitat	15.1 to 28.0 39.5 to 56.0	29.4	425	<1
WYOMING				
Mule Deer Crucial Winter/Yearlong Habitat	85.7 to 89.2 179.8 to 187.6 188.1 to 189.2 192.9 to 197.1 202.0 to 207.7 221.6 to 231.4 252.0 to 252.8	33.4	484	<1
Pronghorn Crucial Winter/Yearlong Habitat	85.7 to 90.1 134.7 to 152.6 192.8 to 201.6 220.5 to 223.5 242.0 to 259.0	51.2	737	22
Elk Crucial Winter Habitat	242.0 to 249.5	7.5	89	0

¹ Length crossed includes increased pipeline length due to reroutes.

² Based on the pipeline construction ROW, aboveground facilities, powerline easements, and additional workspace areas, but does not include pipe contractor yards or temporary access roads.

³ Permanent aboveground facilities include: compressor stations, pigging facilities, meter stations, mainline valves, and permanent access roads.

of White River Dome/Indian Valley located north of the White River in Rio Blanco County. In addition to these areas specifically identified by the CDOW, approximately 7.5 miles of crucial winter range would be crossed by the project ROW in Carbon and Albany Counties in southern Wyoming. In Colorado, critical winter range also encompasses some severe winter ranges as well as some winter concentration areas.

Mule deer occur throughout the majority of the project region, inhabiting virtually all vegetation types, but reach the greatest densities in shrublands on rough, broken terrain, which provides abundant browse and cover habitat. Critical winter ranges for mule deer in Colorado are the same as described above for elk. In addition, approximately 33.4 miles of crucial winter/yearlong range would be crossed by the project route in Sweetwater, Carbon, and Albany Counties in southern Wyoming.

Pronghorn are generally found in prairie grassland and semi-desert shrubland habitats on flat to rolling terrain with good visibility. They are most abundant in short- or mid-grass prairies and are least common in xeric habitats. Critical winter ranges for pronghorn in Colorado are the same as described above for elk and mule deer, including two important winter ranges, as described above for elk. In addition, approximately 51.2 miles of crucial winter/yearlong range would be crossed by the project route in Sweetwater, Carbon, and Albany Counties in southern Wyoming.

3.0 ENVIRONMENTAL ANALYSIS

In Colorado, the proposed pipeline route would cross three SWAs; the Piceance SWA, Rio Blanco Lake SWA, and Bitter Brush SWA, which are owned by the CDOW. The Piceance SWA would be crossed by the pipeline ROW at several locations along Piceance Creek, from the vicinity of Horse Draw north to the White River. Disturbance within the Rio Blanco Lake SWA would be limited to a drill box that would be utilized to bore under the White River to the south and Highway 64 to the north. The Bitter Brush SWA is located along Deception Creek, south of the Yampa River. The Bitter Brush SWA is one of the big game critical winter range areas described above, and CDOW has indicated that no construction activity should occur on this SWA between October 10 and November 21 due to heavy hunter concentrations. In Wyoming, the proposed pipeline route would cross WGFD property on the Red Rim-Daley WHMA and the Wick/Beumee WHMA in Carbon County. These state lands are discussed further in section 3.7.1.

The Piceance SWA was purchased by the CDOW to provide hunting opportunities and winter range for deer and elk, and the Wick/Beumee WHMA was purchased by the WGFD for elk management. Both purchases were made with Federal Aid in Wildlife Restoration Act grant funds. The CDOW and WGFD will need to obtain the approval of the Regional Director, Region 6, FWS, through grant amendments, prior to their approval of easements for the construction of the pipeline through these areas.

Entrega's proposed ROW would cross the Piceance SWA at two locations (approximate MPs 2.1 to 5.8 and MPs 11.2 to 12.7), the Wick/Beumee WHMA at one location (MPs 230.7 to 232.7), and the Red Rim-Daley WHMA at one location (MPs 163.6 to 165.7). Protected wildlife known to inhabit the area of the proposed route through the Piceance SWA and Wick/Beumee WHMA include two golden eagle nests, two red-tailed hawk nests, and two great horned owl nests. These areas also provide habitat for special status species such as mountain plover, sage grouse, and black-footed ferret. A portion of the Wick/Beumee WHMA crossing (MPs 230.7 to 231.4) also is located in crucial winter range for mule deer. Protection and mitigation measures for these species are discussed in section 3.6, as well as Entrega's Conservation Measures Plan (appendix O).

In Colorado, construction activities would result in the long-term incremental reduction of approximately 67 acres of habitat in the Piceance SWA, approximately 11 acres in the Rio Blanco Lake SWA, and approximately 39 acres of habitat in the Bitter Brush SWA in Rio Blanco and Moffat Counties, Colorado. A portion of the Bitter Brush SWA that would be crossed by the proposed ROW includes elk, mule deer, and pronghorn winter habitat as discussed above. In Wyoming, the proposed pipeline route would cross approximately 38 acres of habitat on the Red Rim-Daley WHMA and approximately 27 acres of habitat on the Wick/Beumee WHMA in Carbon County. However, on a regional basis, these acreages of disturbance would represent a small percentage (less than 1 percent) of the overall available habitat within these areas.

Construction 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 small percent of the overall 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 20 years). In the interim, herbaceous species may become established within 3 to 5 years, depending on future weather conditions and grazing management practices 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.

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 (Ward et al. 1980; Ward 1976). This displacement would be short-term and animals would return to the disturbance area following construction activities. 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 (e.g., big game) as a result of construction could cause some unquantifiable reduction in wildlife populations. Entrega would minimize potential blasting impacts on wildlife by adhering to sensitive big game habitat timing restrictions. Entrega also has committed to consulting with FWS prior to blasting activities.

In order to reduce potential impacts to big game species, Entrega has committed to avoiding construction and non-emergency maintenance activities in designated crucial winter/yearlong big game ranges between November 15 and April 30 in Wyoming, and in designated critical winter big game range areas between December 1 and April 30 in Colorado, unless otherwise permitted by the BLM. In order to further minimize impacts to big game species during winter, **we recommend that:**

- **Entrega avoid WHMA lands during non-emergency maintenance activities from November 15 through April 30; and**
- **in addition to the winter constraint periods, Entrega avoid construction in the CDOW Bitter Brush SWA from October 10 through November 21 to avoid heavy hunter concentration areas.**

Operational activities occurring from permanent aboveground facilities (i.e., compressor stations, pigging facilities, meter stations, mainline valves, and permanent access roads) would result in the permanent loss of less than 1 acre of critical winter habitat for elk, mule deer, and pronghorn in Colorado. In Wyoming, operational activities occurring from permanent aboveground facilities would result in the permanent loss of less than 1 acre of mule deer crucial winter/yearlong habitat and approximately 22 acres of pronghorn crucial winter/yearlong habitat. No permanent aboveground facilities would be constructed within elk crucial winter habitat in Wyoming.

Small Game Species

Small game species that occur within the project region include upland game birds, waterfowl, and furbearers and other various small mammals. Furbearers include beaver, muskrat, mink, badger, bobcat, coyote, red fox, and swift fox. Small game species include greater sage grouse, mourning dove, white-tailed jackrabbit, desert cottontail, Nuttall's cottontail, and a number of migratory waterfowl. The greater sage grouse is considered the most sensitive small game species along the project route and is discussed further in section 3.6.

3.0 ENVIRONMENTAL ANALYSIS

Potential impacts on small game from the proposed project would include the incremental loss of habitat and increased habitat fragmentation until reclamation has been completed and native vegetation is reestablished. Potential direct impacts to small game species would include nest or burrow abandonment or loss of eggs or young. Indirect impacts could include the temporary displacement of small game from the disturbance areas as a result of increased noise and human presence. Displacement of small game animals from disturbance areas would be short-term and animals would return to the disturbance areas following construction activities.

Nongame Species

A diverse number of nongame species (e.g., small mammals, amphibians, and reptiles) occupy a variety of trophic levels and habitat types along the proposed pipeline ROW. Common wildlife species include small mammals such as bats, voles, squirrels, gophers, prairie dogs, rabbits, woodrats, and mice. These small mammals provide a substantial prey base for the area's predators including larger mammals (coyote, badger, bobcat); raptors (eagles, hawks, accipiters, owls); and reptiles.

In order to minimize potential impacts to smaller, less mobile species, Entrega has committed to capping uncovered pipe that has been placed in the trench at the end of each workday to prevent animals from entering the pipe. In addition, EIs or biological monitors would remove animals from open trenches during construction.

Raptors and Other Migratory Birds

Migratory birds are protected under the Migratory Bird Treaty Act (MBTA) (16 USC 703-711) and EO 13186 (66 FR 3853). The MBTA serves to protect migratory birds from deleterious impacts. EO 13186 was enacted to, among other things, ensure that environmental analyses of federal actions evaluate the impacts of actions and agency plans on migratory birds.

Other elements of EO 13186 state that the federal agency should restore and enhance the habitat for migratory birds and abate the detrimental alteration of the environment from pollution. EO 13186 also states that emphasis should be placed on species of concern, priority habitats, and key risk factors. General impacts to migratory birds and Entrega's proposed measures to minimize such impacts are discussed below. Federally listed and other sensitive bird species are discussed in section 3.6.2.

This EIS discusses several plans (e.g., Entrega's Procedures, CM&R Plan, SPCC Plan, Riparian Woodland Plan, and BLM Conservation Measure Plan) that would reduce the extent and duration of impacts on migratory bird habitat, actively and naturally allow a great majority of the construction ROW to return to pre-construction condition, and avoid or limit the potential effects from spills or environmental contamination.

Migratory birds are considered integral to natural communities and act as environmental indicators based on their sensitivity to environmental changes caused by human activities. Some of the more visible bird species that occur within the project region are lark bunting, brewer's sparrow, and chipping sparrow.

Approximately 86 percent of the proposed EPP would be collocated (within 300 feet) with existing pipeline, utility, or road ROWs. About 45.4 miles (14 percent) of the proposed route would be newly created ROW (i.e., not collocated with other ROWs). The non-collocated ROW consists of four general vegetation communities: shrub-scrub (approximately 25.1 miles; 331 acres), grassland (12.6 miles; 164 acres), agriculture (2.8 miles; 39 acres), and woodland (3.8 miles; 44 acres). Migratory bird species that use the shrub-scrub habitat type for nesting in the project area include Brewer's sparrow, sage sparrow, and sage thrasher (Nicholoff 2003). Grassland is frequented by such migratory birds as the horned lark, lark bunting, and vesper sparrow (Beidleman 2000). Common migratory birds within the woodland community (mainly pinyon-juniper) include the gray flycatcher, Bewick's Wren, chipping sparrow, and blue-gray gnatcatcher. Habitat fragmentation and "edge effects" are concerns for nesting migratory birds along the EPP ROW. These effects result 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 depends 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 a majority of the construction would be adjacent to or overlap 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, we believe the effects of habitat fragmentation to migratory birds and their habitats from the proposed project would not be significant. Further discussions on the habitats that would be affected by the EPP are included in section 3.4.

Representative raptor species that occur as residents or migrants within the project region include eagles (bald and golden eagles), buteos (red-tailed hawk, Swainson's hawk, ferruginous hawk), falcons (peregrine falcon, prairie falcon, American kestrel), accipiters (northern goshawk, Cooper's hawk, sharp-shinned hawk), owls (great-horned owl, burrowing owl, long-eared owl, short-eared owl), the northern harrier, and the turkey vulture. Based on historical raptor data obtained from the CDOW, WGFD, and Wyoming BLM-Rawlins FO, a total of 54 historic nest sites have been documented within 1 mile of the ROW. These 54 historic nest sites were as follows: 2 bald eagles, 16 ferruginous hawk, 10 golden eagle, 2 red-tailed hawk, 1 rough-legged hawk, 1 Swainson's hawk, 2 northern harrier, 6 prairie falcon, 4 American kestrel, 2 great-horned owl, 5 burrowing owl, and 3 short eared owl. We note that historic raptor information for Colorado was limited to data obtained from the CDOW, as no historic raptor data were received from the Colorado BLM FOs. As a result, only one historic raptor nest site (bald eagle) was documented along the project route in Colorado. It is likely that additional historic raptor nest sites occur along the project route in Colorado. The BLM has recently indicated that approximately 186 historic raptor nest sites occur with 1 mile from the ROW in Wyoming. **We recommend that Entrega coordinate with the BLM to obtain applicable historic raptor nest locations, prior to conducting preconstruction surveys for raptors.**

In order to assess current nest activity, Entrega conducted preliminary aerial breeding raptor surveys along the proposed ROW using inventory procedures. The aerial raptor surveys were conducted between April 23 and May 4, 2004, to identify occupied territories or active nest sites located within 1 mile of the outside edge of the construction ROW. Aerial surveys focused on cliff nesters (e.g., golden eagle, falcon species), species that commonly build nests on deciduous trees or on promontory points (e.g., red-tailed hawk,

3.0 ENVIRONMENTAL ANALYSIS

Swainson's hawk, ferruginous hawk, great-horned owl), and ground nesters (e.g., northern harrier). The preliminary raptor surveys did not concentrate on cavity nesters (e.g., American kestrel), subterranean nesters (e.g., burrowing owl), or most conifer nesters (e.g., accipiters), based on visibility limitations from the helicopter. Entrega has committed to conducting preconstruction raptor surveys for cavity and subterranean nesters during periods when the nests, or activity at these nests, would be most visible. More information regarding nest surveys can be found in Entrega's Conservation Measures Plan and Survey Plan (appendix O).

Based on the results of the year 2004 breeding raptor surveys, a total of 40 active nest sites (Colorado-10, Wyoming-30) were documented within 1 mile of the ROW. The active nest sites were occupied by red-tailed hawk (14), golden eagle (11), ferruginous hawk (9), great-horned owl (3), and bald eagle (2); one raptor nest was occupied by a common raven.

Because raptors may change nesting locations from year to year, Entrega has committed to completing pre-construction raptor surveys in spring 2005, in accordance with established raptor survey protocol as identified in the "Utah Field Office Guidelines for Raptor Protection from Human and Land Use Disturbances" (FWS 2002a) and Entrega's BLM Survey Plan. These surveys would enable Entrega to identify specific areas where construction may affect active nests (and, in the case of burrowing owls, cause direct impacts on nesting habitat) and where buffer zones may be required. Entrega would confirm the appropriate buffer zone radius and seasonal restriction through consultation with the FWS, BLM, WGFD, and CDOW, as applicable, and would implement appropriate protection measures such as seasonal constraints and establishment of buffer zones, as discussed in Entrega's BLM Conservation Measure Plan. Survey results and buffer zone information would be filed with the FERC as a part of Entrega's construction Implementation Plan.

Northern harriers would likely not be detected by aerial surveys. This species prefers areas of tall, dense herbaceous vegetation. Surveyors would note presence when conducting wetland or other surveys in suitable habitat. Likewise, burrowing owls would not be detected by aerial surveys. Burrowing owls inhabit open, dry areas with low-growing vegetation such as grasslands and prairie dog towns. Surveyors would note Northern harrier and burrowing owl presence when conducting habitat surveys and when surveying for mountain plover, prairie dogs, and black-footed ferret, as indicated in Entrega's BLM Survey Plan.

In order to minimize this type of impact on raptors, the BLM usually recommends seasonal and distance restrictions for raptor nests. The seasonal restriction is typically from mid-February to mid-August, although the period may be adjusted based on site specific factors (e.g., distance, topography, and natural barriers; pre-existing conditions such as highways; and the specific activity of a given nest). In Wyoming, Entrega would follow FWS protection measures, which require 1.0 mile avoidance zones for ferruginous hawks and bald eagles (including roosts), and 0.5 mile avoidance zones for all other raptors. Avoidance zones in Colorado have been established by the CDOW and are acceptable to the FWS. These avoidance zones range from 75 yards for burrowing owls to 0.5 mile for bald eagles and ferruginous hawks (FWS 2005). Avoidance zones may be adjusted based on local state and federal raptor protection guidelines and site-specific factors discussed above. Raptor nests and roosts on federally managed land may have different buffers, based on BLM requirements. Certain sensitive non-raptor bird species also have seasonal and spatial considerations (e.g., mountain plover and sage grouse—see section 3.6). On federal land, the

BLM is the agency responsible for including BLM-approved land use stipulations or conditions consistent with BLM RMPs for protecting nesting raptors.

The removal of suitable foraging and nesting habitat also can be considered a type of direct impact. This type of impact cannot be avoided altogether during construction; however, Entrega has proposed measures that would minimize it to the extent practicable. For example, Entrega has committed to reducing the construction ROW width in riparian woodlands (favorable habitat for many bird species) and would restore upland vegetation habitats (e.g., grassland, shrub-scrub, woodlands) in the construction ROW to preconstruction conditions, as discussed in Entrega's CM&R Plan. See also our discussion and recommendations in chapter 5.0 regarding woodland habitat, and potential alternate crossing methods/locations at the Medicine Bow River.

Other direct impacts to migratory birds include construction-related destruction of nests and mortality of individuals. We believe these types of impacts would be small for tree-dwelling birds, given the minimal amount of woodland that would be affected by the project (approximately 225 acres, or 4 percent of the total project disturbance) and the raptor protections discussed above. The greatest chance for "take" (i.e., the unintended death, harm, or harassment) of a nest is for ground-nesting and shrub-nesting species.

Entrega's proposed construction schedule for Phase 1, Spread 3 and 4, would overlap the breeding season for many migratory bird species. Thus, the EPP could cause direct and indirect effects to raptors and other migratory birds. Indirect effects are associated with increased human presence and noise from construction activity near enough to active nests to disturb the birds. These impacts could include interruption of foraging, roosting, and nesting patterns and behaviors. We do not believe this type of impact would be significant for non-nesting birds, as individuals temporarily relocating to avoid construction activity is an impact of limited duration. However, disturbance of nesting birds could cause nest abandonment or otherwise reduce the productivity of a nest for that breeding season. The specific impact for a particular nest would depend on a number of variables including the distance of the nest site from construction activity, the species' relative sensitivity to disturbance, breeding phenology, and possible topographic shielding. **We recommend that Entrega conduct pre-construction clearing of suitable habitat for shrub-nesting species for the proposed 2006 construction. Such clearing would be conducted in late fall 2005 or winter 2005/early 2006 (prior to the 2006 migratory bird nesting season), which would make the cleared areas unattractive to potential nesters and thus avoid destruction of active nests during actual construction. Suitable habitat (scrub-shrub) for shrub nesters is primarily located along the western portion of Phase 1, Spread 3 and 4 (between MP 135.5 to 236.68 and MP 285.2 to 286.9). Entrega should file a preconstruction clearing plan with the Secretary for the review and written approval of the Director of OEP prior to initiating clearing. This plan should identify mileposts to be cleared and provide results of consultations and any applicable permits and authorization from the BLM and/or WGFD that address the extent and method of clearing and fall/winter project activity in big game ranges, as applicable.**

We believe that blasting is proposed, blasting effects to nesting birds and other wildlife should be taken into consideration and minimized to the extent practicable, including establishing protective buffers as appropriate. Entrega has committed to consulting with the FWS to develop mitigation measures to avoid or minimize blasting impacts on nesting birds. **We recommend that prior to conducting blasting at any**

3.0 ENVIRONMENTAL ANALYSIS

location along the EPP ROW, Entrega file the results of its FWS consultation with the FERC for review and approval of the Director of OEP. The filing should specify the specific locations (by MP) where blasting may occur, known raptor and other migratory bird nest locations within the general vicinity of the blasting, and mitigation measures that would be implemented to minimize impacts on nesting birds.

We note that 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 (see also our discussion on the burrowing owl, an underground-dwelling raptor, in section 3.6.2). We conclude that the EPP would not result in population-level impacts to migratory bird species.

Three new electrical powerline segments would provide electrical power to the Meeker and Wamsutter Compressor Stations and the Cheyenne Hub (see **table 2.3-1**). These electrical powerline segments would incrementally increase the collision potential for migrating and foraging bird species (e.g., raptors and migratory birds [APLIC 1994]). However, collision potential typically is dependent on variables such as the line location in relation to high use habitat areas (e.g., nesting, foraging, and roosting), line orientation to flight patterns and movement corridors, species composition, visibility, and line design. In addition, these new powerline segments (one 25-kV powerline, one 34.5-kV powerline, and one 7.2-kV powerline could pose an electrocution hazard for raptor species attempting to perch on the structure. Configurations less than 1 kV or greater than 69 kV typically do not present an electrocution potential, based on conductor placement and orientation (APLIC 1996). To minimize potential collision and electrocution impacts to migrating and foraging bird species, Entrega has committed to the following protection measures, which would be implemented project wide:

- The electrical service providers will incorporate standard, safe designs as outlined in Suggested Practice for Raptor Protection on Power Lines (APLIC 1996) into the design of electrical distribution lines in areas of identified avian concern to prevent electrocution of raptor species attempting to perch on the power poles and lines. These measures would include, but would not be limited to, a 60-inch separation between conductors and/or grounded hardware and recommended use of insulating materials and other applicable measures depending on line configuration (APLIC 1996).
- The electrical service providers will incorporate standard raptor-proofing designs as outlined in Mitigating Bird Collision with Power Lines (APLIC 1994) into the design of the electrical distribution lines to prevent collision to foraging and migrating raptors within the project area, as applicable.
- The electrical service provider will use adequate raptor proofing designs to minimize the potential use of power poles by foraging raptors that cross sage grouse habitat and prairie dog colonies.

3.6 Special Status Species

Special status species are those species for which state or federal agencies afford an additional level of protection by law, regulation, or policy. Included in this category are federally listed and federally proposed species that are protected under the ESA, as amended, or are considered as candidates for such listing by the FWS, and those species that are state-listed as threatened or endangered. For this EIS, special status species also include those species that have been designated by the BLM as sensitive.

Entrega, acting as the FERC's non-federal representative for the purpose of complying with Section 7(a)(2) of the ESA, initiated informal consultation with the FWS on October 7, 2003, regarding federally listed species with the potential to be affected by the proposed project. Initial consultations concluded that the Wyoming FO of the FWS would serve as the lead office for project consultations.

In accordance with the ESA, the lead agency in coordination with the FWS must ensure that any action authorized, funded, or carried out does not jeopardize the existence of a federally listed threatened or endangered species, or result in the adverse modification of the designated critical habitat of a federally listed species. We are requesting that the FWS consider this EIS as our BA for the proposed project. Pending additional surveys and related information from Entrega, we may have to enter formal consultation for one or more species in order to fulfill our Section 7 obligations. Our recommendations (detailed below, as applicable) would ensure that Entrega would not be authorized to begin project work until any necessary comments, concurrence, or formal consultation is completed between the FERC and the FWS regarding the proposed action.

In addition, as stated in Special Status Species Management Policy 6840 (Policy 6840) (Rel. 6-121), it is BLM policy "to conserve listed species and the ecosystems on which they depend, and to ensure that actions requiring authorization or approval by the BLM are consistent with the conservation needs of special status species and do not contribute to the need to list any special status species, either under the provisions of the ESA, or other provisions" identified in the Policy 6840.

The construction impact analysis for special status plant and wildlife species focused on those species that were identified as potentially occurring within the project area. Special status plant and animal species considered for the proposed project are presented in appendix P.

Applicant-committed protection measures that have been developed for the project to prevent or minimize direct impacts on special status species include survey plans (Entrega Pipeline Special Status Species Survey Plan and BLM Survey Plan) and corresponding conservation measure plans (Entrega Pipeline Conservation Measure Plan and BLM Conservation Measure Plan). These survey plans and conservation measure plans are presented in appendix O.

The Entrega Pipeline Special Status Species Survey Plan includes survey protocols for a number of special status species including federally listed and proposed species, federal candidate species, and other species of concern identified by the FWS (e.g., sage grouse, mountain plover, and raptors). This survey plan was approved by the FWS on June 23, 2003. The Entrega Pipeline Conservation Measure Plan includes measures that would be implemented if federally listed species or species of concern were identified along

3.0 ENVIRONMENTAL ANALYSIS

the proposed pipeline route during project-specific surveys. In coordination within the FWS, the Conservation Measure Plan includes the appropriate measures that would prevent or minimize potential impacts to protected species, such that the proposed project would not be likely to adversely affect these species (see appendix O).

The BLM Survey Plan includes survey protocols for BLM sensitive species that were identified for the project. This survey plan was approved by the Rawlins, Little Snake, and White River BLM FOs. The BLM Conservation Measure Plan includes measures that would be implemented if BLM sensitive species were identified along the proposed pipeline route during project-specific surveys. In coordination with the BLM, the conservation measure plan includes measures that would prevent or minimize impacts on sensitive 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 (see appendix O).

3.6.1 North Platte River Threatened and Endangered Species

The FWS has expressed concern about the potential downstream impacts on seven federally listed species (bald eagle, whooping crane, piping plover, Eskimo curlew, interior least tern, pallid sturgeon, and western prairie-fringed orchid) resulting from water withdrawal from hydrostatic testing and other consumptive water use in the North Platte River Basin in southern Wyoming. Other than the bald eagle which occurs throughout the project area (see section 3.6.3), the other six species would not be expected to occur within or near the project area. These species occur in the middle Platte River Drainage, more than 100 miles downstream from the project area. As a result, no direct impacts to the whooping crane, piping plover, Eskimo curlew, interior least tern, pallid sturgeon, and western prairie-fringed orchid would occur from the EPP.

It has previously been determined by the FWS that any depletion² to the Platte River is likely to adversely affect the seven above-referenced federally listed species and would contribute to the destruction or adverse modification of designated critical habitat for the whooping crane and the northern Great Plains breeding population of the piping plover. Thus, any consumptive use of water from the Platte River Basin would be considered a depletion requiring formal consultation under Section 7 of the ESA (Abbott 2004).

Entrega plans on withdrawing approximately 115.7 acre-feet (about 37.7 million gallons) of water from three locations within the North Platte River drainage in Wyoming. Specifically, the water would be withdrawn from the North Platte River, Rock Creek, and the Little Laramie River in Carbon and Albany Counties in August and September (see **table 3.3-3**). Hydrostatic testing for the various test sections is currently planned to occur over a multiple-day period. The actual duration of hydrostatic testing for a given test section would be dependent on the rate of withdrawal and the section of pipe that would be tested. Entrega would return the water to the basin after testing is completed. Entrega's hydrostatic testing plan is included as appendix M of this EIS.

² The FWS defines a "depletion" as consumptive loss plus evaporative loss of surface or groundwater within the affected basin. A minor depletion occurs when the average annual consumptive use is 25 acre-feet or less; a major depletion is when the average annual consumptive use is greater than 25 acre-feet.

Entrega would minimize the potential effects of hydrostatic testing on surface water resources by adhering to the measures in its Procedures and Hydrostatic Testing Plan. See appendix M and section 3.3 of this EIS for specific descriptions and our discussion on measures Entrega would employ to avoid adverse impact on aquatic resources, streambeds, and downstream flows during test water withdrawal and return.

We note that Entrega originally planned to purchase about 98 acre-feet of water from the Bureau of Reclamation for use in 2005. This withdrawal would have been considered consumptive use, for which Entrega would have paid a set mitigative fee to the National Fish and Wildlife Foundation as a part of the Platte River Cooperative Agreement that the Department of the Interior has entered into with several western states. Entrega now proposes to complete hydrostatic testing in the Platte River Basin in 2006 and no longer proposes to take a consumptive-use withdrawal. Rather, Entrega now proposes to return to water to the source waterbody in accordance with its Hydrostatic Testing Plan (appendix M). Because the water would be returned with minimal loss from evaporation or consumptive use, Entrega contends that this is a “non-depletion” use of the water. However, it is our understanding that regardless of the volume consumed Entrega may be required to pay a mitigative fee based on the actual volume of water withdrawn from the Platte River.

Determination Statement

Effect on the Species and Critical Habitat: We conclude that Entrega’s withdrawal and temporary use of approximately 115.7 acre-feet of water from the Platte River Drainage would not constitute a depletion. Thus, we have determined that the Entrega Pipeline Project *is not likely to adversely affect* the bald eagle, whooping crane, piping plover, Eskimo curlew, interior least tern, pallid sturgeon, and western prairie-fringed orchid or their critical habitat. However, we recognize that the FWS may, after reviewing Entrega’s proposal, determine that the proposed temporary water use would be defined as a depletion. If so, we request that the FWS consider this EIS/BA our initiation of formal consultation under Section 7 of the ESA for these seven species. Entrega would not be authorized to contribute to a depletion in the Platte River Basin until any necessary formal consultation is completed.

3.6.2 Plant Species

A total of 17 sensitive plant species were originally identified as potentially occurring within the project area. These species, their associated habitats, and their potential for occurrence along the project route are summarized in appendix P. Occurrence potential along the project route was evaluated for each species based on its habitat requirements and/or known distribution. Based on these evaluations, five plant species (Park rockcress, ephedra buckwheat, Utah genetian, narrow-leaf evening primrose, and Rollins cryptanth) were eliminated from detailed analysis. The EPP would not affect these five species. The remaining 12 plant species are analyzed in greater detail.

Potential impacts on sensitive plant species from surface-disturbing activities could include the loss of individuals as a result of crushing from construction vehicles and equipment. Construction-related impacts also could result in the incremental long-term disturbance of habitat for these species along portions of the project route and at ancillary facilities (i.e., compressor stations, meter stations, mainline valves, temporary use areas, and pipe and contractor yards). Because surface disturbance within the project area would be

3.0 ENVIRONMENTAL ANALYSIS

localized and distributed over a large geographic area, population-level impacts on sensitive species are not anticipated. Nevertheless, construction activities could potentially reduce local populations of special status plant species within the project area. Species-specific impact summaries, Entrega's committed conservation measures, additional mitigation measures, and our recommendations and determination statements (as applicable) are presented below.

Federally Listed Plants

Colorado Butterfly Plant, Dudley Bluffs Bladderpod, Blowout Penstemon, Dudley Bluffs Twinpod, and Ute Ladies'-tresses³

Potential impacts on these federally listed plant species could include the loss of individuals or local populations as a result of crushing from construction activities. Impacts also would result from the incremental long-term disturbance of habitat until reclamation is completed and native vegetation has become reestablished. Indirect impacts could include invasion of the habitat by invasive or noxious plant species.

Entrega's 2004 surveys identified Dudley Bluffs twinpod between MPs 0 to 1; however the plants were outside of the proposed construction corridor (West 2004). Entrega did not identify any other federally listed plant species in the project area. However, potentially suitable habitat was identified within the project ROW. Thus, Entrega would conduct preconstruction field surveys in accordance with its Special Status Species Survey Plan (see appendix E). Prior to the start of construction, **we recommend that Entrega conduct preconstruction field surveys for federally listed plant species (i.e., the Colorado butterfly plant, Dudley Bluffs bladderpod, blowout penstemon, Dudley Bluffs twinpod, and Ute ladies'-tresses) in areas subject to project-related disturbance in accordance with its Special Status Species Survey Plan. Prior to construction, Entrega should file the following information with the Secretary:**

- **name(s) and qualifications of the person(s) conducting the survey;**
- **method(s) used to conduct the survey;**
- **date(s) of the survey;**
- **area surveyed (include the MPs surveyed); and**
- **results of the surveys, to indicate species presence or absence.**

If plants are identified along the edge of the ROW, Entrega would place exclusion fencing around the plants so they would be avoided by construction activities. If plants are located within the ROW, Entrega would evaluate the potential for a route realignment or change to the ROW configuration (e.g., reducing the width of the ROW) to avoid the population. In order for us to complete our Section 7 obligations, if a federally listed

³ One additional federally listed plant, the western prairie fringed orchid, is discussed in section 3.6.1. Potential impacts on this species are associated with downstream effects of water withdrawals rather than direct construction-related impacts.

plant species is found during the preconstruction surveys, **Entrega must notify the Commission staff and the FWS before commencing any project construction activity. This notification shall contain Entrega's evaluation of whether or not the plant(s) could be avoided by reroute or by the use of a horizontal bore. Further, Entrega shall not begin construction activities until:**

- a. **the staff receives comments from the FWS regarding the proposed action;**
- b. **the staff completes formal consultation with the FWS, if required; and**
- c. **Entrega has received written notification from the Director of OEP that construction or use of mitigation may begin.**

Determination Statement

Effect on Critical Habitat: No effect. No critical habitat for these plants has been designated within the project area.

Effect on the Species: We conclude that the EPP *may affect, but is not likely to adversely affect* the Colorado butterfly plant, Dudley Bluffs bladderpod, blowout penstemon, Dudley Bluffs twinpod, and Ute ladies'-tresses. Our determination is based on 1) negative results for the 2004 surveys (with the exception of the Dudley Bluffs twinpod, which was outside of the project corridor), 2) our analysis of Entrega's proposed action and mitigation plans (e.g., Entrega's Plan and Procedures, POD, Weed Management Plan), 3) Entrega's Special Status Species Survey plan and Conservation Measure Plan, and 4) our recommendations.

BLM Sensitive Plant Species

Debris Milkvetch, Nelson Milkvetch, Narrow-stem Gilia, Piceance Bladderpod, Gibben's Beardtongue, and Laramie False Sagebrush

Potential impacts to these BLM sensitive plant species could include the loss of individuals or local populations as a result of crushing from construction activities. Impacts also would result from the incremental long-term disturbance of habitat until reclamation is completed and native vegetation has become reestablished. Indirect impacts may include invasion of the habitat by invasive or noxious plant species.

Entrega's 2004 surveys identified Gibben's beardtongue between MPs 97 to 99; however, the plants were outside of the proposed construction corridor (West 2004).

If suitable habitat for these sensitive plant species is identified within the project ROW on federal lands, a field survey would be conducted in accordance with the BLM Survey Plan (see appendix E). If plants are found immediately along the edge of the ROW, exclusion fencing would be placed around the plants so they are avoided by construction activities. If plants are located within the ROW, Entrega would evaluate the potential to change the ROW configuration to avoid plants located on the edge of the ROW. If a

3.0 ENVIRONMENTAL ANALYSIS

reconfiguration of the ROW is not possible and it is determined that a plant population would be impacted from construction activities, the following protection measures would be included in the BLM ROD and ROW Grant for federal lands:

- Entrega would coordinate with the BLM to determine if additional mitigation measures or other appropriate actions would be required to reduce potential impacts to the population. Entrega would not be authorized to proceed with construction until any BLM-required mitigation had been implemented in accordance with the BLM ROW Grant.
- The Field Manager may grant an exception if an on the ground plant inventory is conducted and an analysis indicates that the nature or conduct of the action as proposed would not directly or indirectly contribute to the need to list or perpetuate listings under the ESA or the BLM Special Status Species policy provisions. An inventory would determine, to the extent practical, the occurrence, distribution, population dynamics and habitat condition and significance on federal lands with respect to maintaining or restoring those species.

Entrega would monitor and implement the conservation plan to ensure actions are consistent with recovery needs and the topsoil shall be segregated for ditchline and spoil storage areas containing sensitive plants to ensure adequate topsoil is segregated and would replace the topsoil to ensure the seed bank is returned to the affected area.

Implementation of Entrega's Weed Management Plan would minimize the introduction and/or spread of invasive plant species. We believe that the EPP may impact individuals but is not likely to cause a trend to federal listing or loss of viability for these plant species.

3.6.3 Terrestrial Animal Species

A total of 28 sensitive terrestrial species (mammals, birds, reptiles, amphibians) were originally identified as potentially occurring within the project area. These species, their associated habitats, and their potential for occurrence along the project route are summarized in appendix P. Occurrence potential along the project route was evaluated for each species based on its habitat requirements and/or known distribution. Based on these evaluations, three species (northern goshawk, yellow-billed cuckoo, and western boreal toad) were eliminated from detailed analysis. The EPP *would not affect* these three species. Species-specific impact summaries, applicant-committed conservation measures, mitigation measures, and determination statements (if applicable) are presented below.

Potential impacts to sensitive species from surface disturbance activities would include the loss (short-term, long-term, or permanent), alteration, or fragmentation of potential breeding and/or foraging habitats. 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.

Federally Listed Animal Species**Black-footed Ferret**

The federally endangered black-footed ferret was once distributed throughout the high plains of the Rocky Mountains and western Great Plains regions, but is now thought to be the rarest mammal in the U.S. In general, ferrets are secretive, primarily nocturnal, and rarely observed. Black-footed ferrets are found in association with prairie dog colonies in grasslands and shrublands, and are highly dependent on prairie dog colonies for both food and shelter. All active prairie dog colonies or complexes of towns large enough to support ferrets are considered to be potential habitat. Although the project area occurs within the historic range of the species, there have been no recent sightings of wild black-footed ferrets within the project region. However, according to the Wyoming Natural Diversity Database, a ferret skull was found in Sweetwater County in 2000.

The black-footed ferret was considered extirpated from the U.S. until a small population was discovered in Wyoming in 1981. A captive breeding and re-introduction program, guided by the FWS, established some experimental/nonessential populations in Wyoming, Montana, South Dakota, and Arizona. Relative to the project area, a nonessential/experimental population of black-footed ferrets occurs within the Shirley Basin/Medicine Bow management area located approximately 30 miles north of the project ROW in Carbon County, Wyoming. However, through personal communications with Martin Grenier of the WGFD, the FWS has determined it would be highly unlikely that individual ferrets from the Shirley Basin/Medicine Bow management area would be present along the project ROW. As a result, we believe no impacts to individual ferrets from this management area would occur from the EPP.

The FWS has block-cleared all prairie dog colonies in the Colorado portion of the project area. In Wyoming, all black-tailed prairie dog colonies in the project area have been block cleared. Therefore, no surveys are necessary for these locations. The FWS also has block-cleared several white-tailed prairie dog colonies that would not require ferret surveys. For those white-tailed prairie dog colonies that have not been block-cleared by the FWS, surveys are required if certain size and density requirements are met. Specifically, a prairie dog colony is defined as a group of prairie dog burrows for which density meets or exceeds eight burrows per acre. According to FWS protocol, surveys for black-footed ferrets are required for prairie dog colonies or complexes larger than 200 acres. Colonies less than 4.3 miles apart are considered part of the same complex for survey threshold purposes. When assessing burrow density, the burrows need not be active to be counted, but must be recognizable and intact (i.e., not caved in or filled with debris) (see appendix E).

Entrega reports that 11 white-tailed prairie dog colonies or complexes of sufficient size and density to require black-footed ferret surveys are present in Wyoming between MPs 87 and 147 totaling approximately 2,945 acres (West 2004). Potential impacts on ferrets could result from abandonment of underground nursery dens and the potential loss of adults and young from the compaction of prairie dog burrows during project construction, if present. Indirect impacts could occur from the increase in noise levels and other disturbances related to construction and human presence.

3.0 ENVIRONMENTAL ANALYSIS

Entrega conducted black-footed ferret surveys in these prairie dog colonies in 2004 in accordance with the survey plan. No black-footed ferret observations or signs were identified during the survey period. As a result, no direct impacts to the black-footed ferret would be anticipated from the proposed project.

Determination Statement

Effect on Critical Habitat: No effect. No critical habitat has been designated for this species.

Effect on the Species: We conclude that the EPP *may affect, but is not likely to adversely affect* the black-footed ferret. This determination is based on the disturbance of prairie dog towns, but the low potential for ferrets to occur within the project area and negative survey results for this species.

Preble's Meadow Jumping Mouse

Favorable Preble's meadow jumping mouse habitat consists of areas where woody riparian vegetation and dense herbaceous understory is present along perennial streams. Preble's meadow jumping mice are known to stay close to stream edges in dense vegetation but will venture into nearby upland herbaceous and/or grassy habitat to forage and possibly winter. Potentially suitable habitat for the Preble's meadow jumping mouse was identified at eight areas along the project ROW between MPs 289.7 and 320.3. Habitat also was located along two Class A (paved) access roads for the project (West 2004).

Potential direct impacts on the Preble's meadow jumping mouse during construction could include displacement, injury, or death of individuals at stream crossings during clearing, trenching, while the trench is open prior to pipe lowering-in and backfilling, and during general vehicle movement along the ROW. Other impacts could result from the temporary loss of habitat until reclamation is complete, soil compaction (which may limit revegetation success), and the permanent loss of habitat as a result of vegetation maintenance within the pipeline corridor. Indirect impacts on the Preble's meadow jumping mouse could occur from the increase in noise levels and other disturbances related to construction and human presence.

Entrega would evaluate the potential for a route realignment upstream or downstream or a change to the ROW configuration (e.g., using the opposite side of the ROW to operate vehicle traffic) to avoid Preble's meadow jumping mouse habitat. If Entrega determines that a reroute or configuration change is not feasible, it would conduct live trapping field surveys in accordance with FWS protocols.

Entrega has developed a set of conservation and mitigation measures it would use in the event the presence of Preble's meadow jumping mouse was confirmed at a particular location. These are:

1. The width of the ROW would be reduced, as practical.
2. No equipment would be parked closer than 100 meters from the stream crossing.
3. Permitted biologists (person(s) that holds the applicable FWS permit to conduct live trapping of the Preble's meadow jumping mouse) would clear the area of mice prior to commencing construction of the crossing. To do this, the biologist would search the area and trap it for one night prior to

3.6 Special Status Species

construction initiation using live traps. Any Preble's mouse captured would be moved upstream or downstream at least 100 feet away from the edge of the ROW.

4. If the crossing occurs during the breeding season (in June or July), captured adults would be released at the trap site and followed to attempt to determine if they have young in a nest. If a nest is located within the ROW, a decision would be made to move the ROW and avoid the nest or delay the crossing until late July when the young should be mobile and able to be trapped and moved from the immediate area.
5. If the route is moved to avoid an identified nest but still occurs in suitable habitat, surveys would be conducted as necessary and the above measures would be implemented.
6. Whenever a piece of equipment needs to cross the area, the biologist would walk in front of the equipment to clear the area. Each subsequent piece of equipment would require having the biologist walk in front of it to make sure no mice have come back into the ROW.

Construction through areas of suitable habitat would be conducted as quickly as is practical.

Following construction, areas of suitable habitat would be restored by broadcast seeding the banks with a seed mix that includes native species and is acceptable to the landowner, local NRCS office, or other applicable agencies. In addition, Entrega would replace plugs of willow and/or preexisting shrub species from the riparian area with one plant (willow sprig or bare root stock) every square foot. If it is possible for cattle to graze in replanted riparian areas and the landowner provides consent, Entrega would fence the area to exclude grazing until vegetation is reestablished.

To prevent the permanent loss of Preble's meadow jumping mouse habitat, Entrega would modify its plan for long-term maintenance of the permanent ROW within suitable habitat. Generally, Entrega's Procedures allow for a 10-foot-wide corridor centered over the pipeline to be maintained in an herbaceous state to facilitate periodic pipeline corrosion/leak surveys. In addition, trees greater than 15 feet in height within 15 feet of the pipeline are typically removed from the permanent ROW. In modifying its plan for long-term maintenance, Entrega would allow for the revegetation of native shrub species in addition to herbaceous species within the 10-foot-wide corridor, and would only remove trees over 15 feet tall as necessary. **We recommend that Entrega should not begin construction of Phase I, Spread 4 activities until:**

- a. **Entrega files with the Secretary for review and written approval by the Director of OEP its evaluation of possible ROW re-alignments to avoid Preble's meadow jumping mouse habitat;**
- b. **the staff receives the Preble's meadow jumping mouse survey report as well as comments from the FWS on the survey report and the proposed action's effects on the Preble's meadow jumping mouse;**
- c. **the staff completes formal consultation with the FWS, if required; and**

3.0 ENVIRONMENTAL ANALYSIS

- d. Entrega has received written notification from the Director of OEP that construction or use of mitigation may begin.

Determination Statement

Effect on Critical Habitat: No effect. No critical habitat has been designated within the project area.

Effect on the Species: We conclude that the EPP *may affect, but is not likely to adversely affect* the Preble's meadow jumping mouse. This determination is based on Entrega's commitment to either 1) avoiding Preble's meadow jumping mouse habitat or conducting surveys to determine the presence of the species; 2) in the event surveys are positive, implementing conservation measures (including those in its Riparian Woodland Plan); and 3) our recommendations here and in section 3.4.1.

Bald Eagle

The bald eagle is currently federally listed as threatened. Historically, populations of bald eagles were drastically reduced principally due to low productivity as a result of the bioaccumulation of pesticides. Since the banning of organochlorine pesticides such as DDT, bald eagle numbers have been increasing, leading to the species being proposed for federal delisting on July 4, 1999, as recovered. The bald eagle will, however, remain protected under the ESA until delisting is finalized. Bald eagles also are protected under the MBTA and the Bald and Golden Eagle Protection Act.

Because the bald eagle's diet consists mostly of fish, individuals tend to be found associated with bodies of water such as lakes, rivers, and reservoirs. Eagles also may forage opportunistically, especially in winter, feeding on waterfowl, dead fish, jackrabbits, and big game carrion.

Bald eagles may be present in the project area, where they typically roost communally during the winter and nest during the summer. Winter roosts in the project area may be occupied from November 1 to April 15. Typically, bald eagles will select roost sites such as large, stoutly limbed trees, snags, broken-topped trees, or rocks or cliff facings near water that provide easy access to hunting or feeding areas. Eagles tend to use the same roosts each year.

The bald eagle nesting season in the project area is generally from November 15 to August 15, but the specific dates vary, depending on location (i.e., Colorado or Wyoming). Migrant (non-nesting) individuals also could be present during the summer in appropriate habitat. Nests are usually large and conspicuous stick assemblages, and are built in habitat similar to that used for roosting. In Colorado and Wyoming, nest tree habitat can include old-growth ponderosa pine as well as narrow strips of riparian vegetation surrounded by rangeland.

Potential direct impacts on bald eagles during construction could include displacement of individuals to adjacent habitats or damage to occupied and/or unoccupied nests. If construction were to occur during the nesting season, impacts also could include abandonment of eggs or nestlings, injury to nestlings, destruction of eggs, or mortality of nestlings. Additionally, construction could potentially affect the availability of the bald eagles' primary food sources, thereby indirectly affecting individuals.

Two bald eagle nest sites were identified in Colorado during Entrega's 2004 raptor surveys (West 2004). If construction were to occur during the breeding season for the bald eagle, Entrega would conduct pre-construction bald eagle nest surveys at known nest sites and within suitable nesting habitat during the appropriate period in accordance with the survey plans (see appendix E). On May 11, 2005, the FWS recommended that Entrega adopt state-specific buffer zones for nesting and roosting bald eagles in the project area (FWS 2005). Therefore, **we recommend that Entrega should not construct within 0.5 mile of active bald eagle nest sites in Colorado during the nesting season.** In Colorado, bald eagles generally nest from November 15 through July 31. However, buffer zones may be adjusted upon consultation with the FWS on a site-specific basis depending on topography and line-of-sight factors, the specific project activity (e.g., active construction vs. a one-time pass-through), other features in the area (e.g., a highway between the nest site and the construction zone), and the status of the nest (e.g., downy eaglets vs. fully fledged young). Entrega would have a monitor present to evaluate these and other factors to determine whether or not to request a buffer zone variance from the FWS.

If a new bald eagle nest is found in Wyoming during the pre-construction bald eagle surveys, **we recommend that Entrega should not construct within 1 mile of active bald eagle nest sites in Wyoming during the nesting season.** In Wyoming, bald eagles generally nest from February 1 through August 15.

Entrega further states that if a previously unidentified active bald eagle nest were discovered during construction, Entrega would stop work in the area and contact the FWS. **We further recommend that if Entrega encounters a previously unidentified active bald eagle nest within 1 mile of the construction ROW in Wyoming or within 0.5 mile of the construction ROW in Colorado, Entrega should concurrently notify the Commission staff, the BLM (if on federal land), and the FWS, and file such information with the Secretary. Entrega should not continue with construction until the staff has reviewed the information, completed any necessary consultation with the FWS, and the Director of OEP notifies Entrega in writing that construction may proceed or use of mitigation may begin.** The BLM is the agency responsible for including BLM-approved land use stipulations or conditions consistent with RMPs for the area to mitigate impacts to nesting bald eagles.

In the event that an active bald eagle nest is located within the specified buffer zone, Entrega would provide an experienced biologist to monitor the nest prior to construction to determine when young birds are no longer dependent on the natal nest or nest area, in accordance with Entrega's Conservation Measure Plan (see appendix E).

Impact on roosting bald eagles generally occurs in either of two ways: 1) construction activity directly disturbs roosting eagles, or 2) construction results in the clearing of potential roost trees in suitable habitat.

Non-nesting bald eagles may be temporarily displaced during construction, but this is not usually considered a significant impact. Individual eagles could find other suitable roosts in the general area until construction activity has passed. However, the FWS often recommends measures to minimize the amount and extent of such displacement. Examples of such measures include a 0.25-mile (or a 1-mile) spatial buffer around roosting eagles, timing construction to certain portions of the day, or having a waiting interval to see if

3.0 ENVIRONMENTAL ANALYSIS

eagles will leave the area on their own accord. (Typically, if construction is ongoing and an eagle enters the project activity area, construction would not have to stop.) As discussed above for bald eagle nests, the FWS recommended that Entrega adopt state-specific buffer zones for nesting and roosting bald eagles in the project area (FWS 2005). Therefore, in order to minimize impacts to roosting bald eagles, **we recommend that Entrega conduct surveys for roosting eagles within potential winter roost areas if construction occurs between November 15 and March 15 in Colorado or between November 1 and April 15 in Wyoming. In the event that occupied bald eagle winter roost sites are identified within 0.25 mile of construction areas in Colorado (within 1 mile of construction areas in Wyoming), Entrega should coordinate with the BLM (if on federal land) and the FWS to determine if protection measures (e.g., timing restrictions and/or buffer areas) would be required. Entrega should report the results of the coordination in a filing with the Secretary, and should not begin construction until the staff has reviewed the information, completed any necessary consultations with the FWS, and the Director of OEP notifies Entrega in writing that construction or use of mitigation may begin.** On federal land, BLM is the agency responsible for including BLM-approved land use stipulations or conditions consistent with RMPs for the area to mitigate impacts to roosting bald eagles.

Entrega's Riparian Woodland Plan commits to reducing the construction ROW width to 75 feet in riparian woodlands and to avoiding the removal of trees in these areas to the maximum extent practical. Entrega further states that it would consider measures to avoid or minimize impact on roost trees if such trees may be affected during construction. However, we believe there should be a stronger commitment to avoiding the removal of trees within bald eagle roosting and nesting habitat. Therefore, **we recommend that Entrega should identify all potential bald eagle roosting trees on or immediately adjacent to the ROW and assess measures to avoid any trees that could be damaged by construction. Any potential bald eagle roosting tree that Entrega believes could not be avoided should be identified to the staff with a justification as to why the tree must be removed and what measures Entrega considered before determining that removal was necessary. This information should be filed with the Secretary for review and written approval of the Director of the OEP before construction or use of mitigation may begin.**

Determination Statement

Effect on Critical Habitat: No effect. No critical habitat has been designated for this species.

Effect on the Species: We conclude that the EPP *may affect, but is not likely to adversely affect* the bald eagle. This determination is based on the implementation of Entrega's proposed conservation measures and our recommendations.

Wyoming Toad

The Wyoming toad historically occurred in wet and moist habitats within the Laramie Basin in Wyoming. However, the current known distribution is restricted to a few lakes in the basin. The closest known recent occurrences of the Wyoming toad relative to the proposed project route are the Mortenson Lake National Wildlife Refuge (6.9 miles away) and the Hutton Lake National Wildlife Refuge (4.8 miles away).

Entrega's proposed route would not cross within 2 miles of either of these refuges; therefore, no surveys are proposed. If any route realignments were to come within 2 miles of either wildlife refuge, Entrega would conduct species-specific surveys for the Wyoming toad. We note that if Entrega's proposed route changes such that federally listed species habitat is crossed or new surveys are required, Entrega would not be authorized to commence construction until we have had the opportunity to review the realignment, evaluate potential impacts to federally listed species (including survey reports and correspondence with the FWS), and complete any Section 7 consultation necessary.

Determination Statement

Effect on Critical Habitat: No effect. No critical habitat has been designated for this species.

Effect on the Species: We conclude that the EPP *would not affect* the Wyoming toad. This determination is based on the lack of suitable habitat in the proposed project area.

BLM Sensitive Animal Species

Townsend's Big-eared Bat, Fringed Myotis, and Yuma Myotis

No historic communal bat roost sites (e.g., hibernacula, nursery colonies, bachelor roosts) have been recorded along the project route. Much of the project route would occur adjacent to or within previously disturbed ROW; thus we do not anticipate any direct impacts to communal roosts. Potential direct impacts to individual bats could occur as a result of crushing by vehicles and equipment during ROW clearing and other project-related construction. Impacts also would result from the incremental long-term reduction of potential foraging habitat (including habitat fragmentation) until reclamation is completed and native vegetation has become reestablished. Indirect impacts could result from increased noise levels and human presence. Entrega would minimize potential direct and indirect impacts on bats by implementing BLM BMPs.

The proposed project may impact individuals but is not likely to cause a trend to federal listing or loss of viability of these bat species.

Swift Fox

Potential impacts to breeding swift fox could result from abandonment of den sites and the potential loss of adults and young from the compaction of dens during project construction. Impacts also could result from the incremental short-term disturbance of grassland habitat until reclamation is completed and native vegetation has become reestablished. Indirect impacts would result from the increased noise levels and human presence related to construction.

Entrega would document swift fox observations and den sites within the project area during other survey efforts, in accordance with the survey plans. If an active den is identified within the ROW, Entrega would evaluate the potential for a route realignment or reconfiguration of the ROW (e.g., reduce the width of the

3.0 ENVIRONMENTAL ANALYSIS

ROW) to avoid the den. If an active den is identified outside of the ROW boundary, Entrega would minimize impacts to the den area by reducing the width of the ROW, as practical.

We believe the proposed project may impact individuals but is not likely to cause a trend to federal listing or loss of viability of the swift fox.

White-tailed Prairie Dog and Black-tailed Prairie Dog

Prairie dogs live in colonies and inhabit dry, flat, open grasslands with low, relatively sparse vegetation, including areas overgrazed by cattle. Fine-to-medium textured soils are preferred, presumably because burrows and other structures tend to retain their shape and strength better than in coarse, loose soils. White-tailed prairie dogs typically live at higher elevations and in meadows with more diverse grass and herb cover than do black-tailed prairie dogs.

During the 2004 field survey, 43 active white-tailed prairie dog colonies were identified along the project ROW between MPs 44.6 and 246.7, and 1 active black-tailed prairie dog colony was identified at MP 320.7. In addition, 42 white-tailed prairie dog colonies were identified along proposed access roads (West 2004).

The potential effects of construction through a prairie dog colony may include temporary loss of forage and shelter due to vegetation clearing, collapsing of burrows, and temporary disruption of foraging and nesting activities due to disturbance associated with construction equipment. Direct mortality of prairie dogs could result if active burrows are occupied at the time of construction. If construction occurs later in the prairie dog's reproductive season, in late May to early June, most prairie dogs are expected to be mobile and able to avoid construction traffic; however, some individual prairie dogs may be injured or killed during construction. Following construction and restoration, the revegetated ROW would provide foraging habitat for prairie dogs, and the unconsolidated soils along the trench would likely provide a good substrate for burrowing.

Larger white-tailed prairie dog colonies have been found in the proposed project area between MPs 86.0 and 152.0, while smaller, scattered towns have the potential to occur between MPs -0.5 and 86.0 and between MPs 152.0 and 300. For those prairie dog colonies that occur within the ROW footprint, Entrega would evaluate the potential for a route realignment or change to the ROW configuration (e.g., using the opposite side of the ROW to operate vehicle traffic). If it is not possible to avoid the population, Entrega would reduce the width of the ROW as practical given the extent of the colony. In addition, if a colony only occurs along the edge of the ROW, the colony edge would be flagged or exclusion fencing would be placed so that construction could avoid impacting the colony, if possible. Entrega would avoid siting staging areas, temporary workspaces, or pipe yards within active colonies. Following construction, areas of potential habitat would be restored to preconstruction conditions. Thus, we believe that the EPP may impact individuals but is not likely to cause a trend to federal listing or loss of viability of these prairie dog species.

Golden Eagle, Ferruginous Hawk, Swainson's Hawk, American Peregrine Falcon

Potential impacts to these raptors are discussed along with other migratory birds in section 3.5.2, above.

Western Burrowing Owl

Burrowing owls typically use burrows made by prairie dogs and other small mammals. Destruction of burrows could result in displacement of owls into less suitable habitats, potentially increasing susceptibility to predation, reducing cover or forage habitat, or reducing reproductive success. Displacement, injury, or direct mortality could result if active burrows are occupied at the time of destruction.

While Entrega has not proposed species-specific surveys for the burrowing owl, surveyors would note owl presence when conducting habitat surveys and when surveying for mountain plover, prairie dogs, and black-footed ferret. Burrowing owls were observed at six different locations (between MPs 113.0 to 122.5 and at MP 163.2) during Entrega's 2004 habitat surveys (West 2004). Entrega's on-site EI or biological monitor would take note of any occurrences sighted during active construction. If active burrows are identified, Entrega has committed to adhering to the appropriate spatial and seasonal buffers as identified for Colorado and Wyoming. Thus, we believe that the EPP may impact individual burrowing owls but is not likely to cause a trend to federal listing or loss of viability to this species.

Greater Sage Grouse

The greater sage grouse is designated as a sensitive species by the BLM, and has been petitioned for federal listing consideration. In April 2004, the FWS determined that listing the sage grouse under the ESA may be warranted and initiated a status review. However, based on a 12-month finding for petitions to list the greater sage grouse as threatened or endangered, the FWS subsequently determined that the listing is not warranted (70 FR 2244).

Sage grouse are highly dependent on sagebrush for cover and food. Sagebrush also serves as the critical component in leks (strutting grounds), nesting, feeding sites, rearing sites, and wintering grounds. Although the sage grouse typically prefers taller sagebrush plants and stands for nesting and roosting cover, lekking grounds are generally open areas with low, sparse sagebrush, such as swales, meadows, and burned areas. Lekking grounds are generally surrounded by areas of 20 to 50 percent low-height, sagebrush cover. Secondary to sagebrush habitat, sage grouse require moist wetland and wet meadows to aid in brood rearing.

Potential direct impacts of construction on sage grouse may include the loss of lekking grounds and other sage grouse habitat. Although the EPP would not result in a permanent loss of habitat along the pipeline ROW, the regeneration of sagebrush would likely be slow and could take up to several decades. However, potential impacts on sage grouse habitat would be minimized by locating the proposed ROW within previously disturbed areas (i.e., adjacent to existing pipelines and/or roads) to the extent possible. Given the abundant suitable habitat in the general area, it is not likely that the minor, yet long-term loss of habitat along the pipeline ROW would affect sage grouse populations in the vicinity of the proposed project.

Depending on the timing of construction, the proposed project could potentially impact sage grouse during lekking activities or brood rearing, and could cause displacement, injury, or direct mortality of individuals. Sage grouse are particularly sensitive to disturbances while they gather on lekking grounds on mornings and evenings from early March to early May. Construction activities and associated noise occurring in early

3.0 ENVIRONMENTAL ANALYSIS

morning and late afternoon or early evening in the vicinity of lekking grounds could disrupt and potentially displace sage grouse that have gathered for breeding activities. In addition, once breeding activities have concluded, sage grouse hens create their nests on the ground underneath sagebrush plants in proximity to the lekking grounds. The proposed project could potentially impact nesting sage grouse by destroying nests, causing nest abandonment, or causing injury or direct mortality to the young. In addition, brood rearing habitat could potentially be impacted by causing injury or direct mortality to the young.

A total of 38 historic sage grouse lek sites have been identified as occurring within 2 miles of the project ROW in Colorado and Wyoming (CDOW 2004a; West 2004; WGFD 2004). Of these historic sites, 11 leks (5 leks in Colorado and 6 leks in Wyoming) occur within 0.25 mile from the ROW. Surveys for breeding sage grouse were conducted within 2 miles of the project ROW during the 2005 breeding season, in accordance with survey plans (see appendix E). A total of 21 occupied lek sites (leks with birds present during surveys) were documented during these surveys in Colorado (10) and Wyoming (11). Of the occupied leks that were documented during the 2005 survey, four leks were located within 0.25 mile from the ROW. Entrega has committed to conducting additional full surveys for sage grouse leks during the year of constructing each phase/segment of the pipeline.

For an occupied lek identified by the surveys within 0.25 mile of the construction ROW, Entrega would minimize impacts to the lek and its associated nesting habitat by avoiding construction between March 1 and June 30, or as otherwise permitted by the appropriate resource agency. In addition, Entrega would minimize impacts to the lek by avoiding permanent surface development within 0.25 mile of a known lek. **We further recommend that where the construction ROW is within 0.25 mile of a sage grouse lek site (whether actived or inactive), Entrega should reduce its construction ROW width to 75 feet.**

For suitable nesting habitat associated with an active lek identified by the surveys within 2 miles of the construction ROW, Entrega would minimize direct impacts to nesting habitat by avoiding construction between March 1 and June 30 and reducing the width of the ROW as practical, or as otherwise permitted by the appropriate resource agency. No permanent aboveground facilities would be constructed within 0.25 mile of a known lek site along the project route.

For suitable brood-rearing habitat associated with an active lek identified by the surveys within 2 miles of the construction ROW, Entrega would minimize direct impacts to brood-rearing habitat by beginning construction after July 15 and reducing the width of the ROW as practical, or as otherwise permitted by the appropriate resource agency.

Following construction, the project area would be restored to preconstruction contours and areas of suitable habitat would be restored by broadcast seeding with a seed mix that includes native species and is acceptable to the landowner, local NRCS, or other applicable agencies.

In addition, for those leks where the clearing limits encroach the lek boundary or where clearing is proposed immediately adjacent to the lek on federal lands, the BLM intends to require Entrega to implement the following sagebrush planting requirements: 1) Entrega would contact the BLM and the appropriate state wildlife agency after the ROW has been reclaimed to assist Entrega in identifying and marking the lek boundaries on federal lands; 2) Entrega would transplant young sagebrush plugs from surrounding areas or

obtain containerized sagebrush to be planted on the ROW in late fall when plants are dormant; and 3) planting 4 or 5 rows of sagebrush plugs on 5-foot staggered centers, starting along the original boundary of the lek. Should transplanting be unsuccessful, the BLM would require Entrega to increase sagebrush seeding efforts to establish the vegetative visual barrier around the perimeter of the leks. According to the 2005 field surveys, there is one lek site at approximate MP 211 that would be crossed during construction (within clearing limits), which is located on private property. According to the 2005 lek surveys, the clearing limits of the ROW do not encroach any known lek sites on federal land.

The CDOW and WGFD also have expressed concerns about potential impacts to breeding and nesting sage grouse from low intensity preconstruction activities (e.g., surveying and staking). We note that there are spatial and timing differences for the protection for sage grouse during the breeding season in Colorado and Wyoming. As a result, in Colorado, **we recommend if low-intensity preconstruction (e.g., surveying and staking) work is necessary within 2 miles of known sage grouse leks between March 1 and June 30, activities should occur only between 9:00 a.m. and 4:00 p.m. In Wyoming, we recommend if low-intensity preconstruction work is necessary within 0.25 mile of known sage grouse leks between March 1 and May 15, activities should occur only between 8:00 a.m. and 8:00 p.m.**

Potential indirect impacts to the sage grouse could result from increased noise levels from the operation of the proposed Bighole Compressor Station in Moffat County, Colorado. Noise levels attributable to operation of the facility are estimated to be a L_{dn} of approximately 82 dBA at the station fenceline. Based on existing sage grouse lek data for the project area, three lek sites have been documented approximately 2 miles from the proposed station site. **Table 3.6-1** shows the noise attributable to station operation extrapolated out to 2 miles from the site.

**Table 3.6-1
Estimated Noise Attributable to the Proposed Bighole Compressor Station**

Distance	0	1 mile	1.5 miles	2 miles
Noise Level, L_{dn} (dBA)	82.0	49.9	45.6	43.9

As shown in the table, noise level quickly drops below the “ambient” L_{dn} 47.8 dBA at the 2 miles (as identified in section 3.10, Air and Noise Quality). However, it should be noted that the A-weighted scale is weighted specifically for human hearing sensitivity and that there are currently no data on the range of frequency or noise impact thresholds applicable to sage grouse. Studies suggest a noise level of approximately 47 dBA to be the threshold effect for bird species in grassland and woodland habitat (LaGory et al. 2001; Reijnen et al. 1997, 1996) and that reducing continuous noise levels to 49 dBA or less would minimize indirect effects to songbirds and raptors during the breeding season (WGFD 2004). To minimize potential noise impacts on wildlife, Entrega has committed to reducing the noise level of the Bighole Compressor Station to 55 dBA (L_{dn}) at the station property line. This mitigation would minimize noise impacts to known sage grouse lek sites in the general facility area⁴ and would further reduce

⁴ The closest known leks to the Bighole Compressor Station are located approximately 10,170 feet southwest of the station (lek site “Bighole Butte A”) and 10,385 feet northeast of the station (lek site “Bighole Holmstead”).

3.0 ENVIRONMENTAL ANALYSIS

noise impacts to nesting and brooding sage grouse habitat to within 631 feet (59 acres) (based on a 47 dBA threshold level for potential effects to birds) of the facility over the life of the project. As such, we do not believe that the operation of the Bighole Compressor Station would result in adverse impacts to known lek sites within the project area, and would only result in a minor impact to sage grouse habitat.

Mountain Plover

The mountain plover is a migratory species whose breeding habitat includes prairie grasslands, shrub-steppe communities, dry land farmlands, and prairie dog towns. Plovers usually nest on level terrain occupied by sparse, short vegetation (typically 4 inches or less in height). The sparse vegetation is commonly caused by herbivore grazing (domestic livestock and prairie dogs), and surface disturbance from human activities (e.g., well pads, bladed lay down areas) (FWS 2002b). Suitable shrub-steppe and grassland habitats for this species are crossed by a long EPP segment in Colorado and Wyoming.

The primary mountain plover nesting period is from May 1 through June 15. Young chicks commonly stay on the nest or freeze in place to avoid detection from about June 15 through July 10, resulting in a higher potential for losses from excavation equipment traversing over nest sites. After July 10, the chicks are sufficiently mobile to move away from construction equipment.

Approximately 193 miles of potentially suitable mountain plover habitat was identified along the project ROW at disjunct locations between MPs 44.0 and 327 (West 2004). Mountain plover habitat also was identified along 44 proposed access roads and at the Cheyenne pipe yard. A total of 23 individuals were observed between MPs 113.3 and 124.2 and between MPs 264.9 and 325.0 during the 2004 field surveys.

If construction were to occur during the breeding season (mid-April through early July), impacts to nesting mountain plover could include abandonment of a breeding territory or nest site or the potential loss of eggs or young as a result of construction activities (e.g., ground disturbance, noise, human presence).

Impacts also would result from the incremental short-term disturbance of grassland habitat until reclamation is completed and native vegetation has become reestablished. Indirect impacts would result from the incremental increase in noise levels and human presence.

Surveys for mountain plover would be conducted within suitable habitat, in accordance with the survey plans. Survey procedures would be based on the Mountain Plover Survey Guidelines (FWS 2002b) for large scale/long term linear projects. Mountain plover habitat would be surveyed 3 times during the survey window (May 1 to June 15), with each survey separated by at least 14 days, if possible. Surveys would be conducted within 0.25 mile of the pipeline centerline by driving and making visual observations of overlapping transects. The timeframe of the surveys would be sunrise to 10 a.m. and 5:30 p.m. to sunset. The location of active plover nests would be recorded on maps using Global Positioning System coordinates. If an active mountain plover nest is found, the nest would be recorded and reassessed immediately before construction, if construction is expected to occur between May 1 to June 15. If the nest is still active at that time of construction, construction would be prohibited within 0.25 mile of the nest until the young have fledged.

If a plover family group is identified during surveys or immediately before construction, the group would be monitored by a biologist to determine its use pattern. The area being used by the family group would be marked with signs designating the area as sensitive if the group does not move at least 200 meters from the proposed centerline. Construction equipment would be allowed a one-time pass through the area with the biologist present to monitor plover location and response.

The proposed project may impact individual mountain plovers but is not likely to cause a trend to federal listing or loss of viability.

Loggerhead Shrike

This species was identified during Entrega's 2004 field surveys at six locations along the project ROW between MPs 81 and 174 (West 2004). Potential impacts to this migratory bird species would be the same as discussed for other migratory bird species in section 3.5.2, above.

Great Basin Spadefoot, Northern Leopard Frog, and Midget Faded Rattlesnake

Potential impacts to amphibian and reptile species include direct mortalities of individuals from construction activities, ground compaction, and vehicle traffic within suitable habitat. Impacts also would result from the incremental long-term reduction of potential habitat until reclamation is completed and native vegetation has become reestablished.

Entrega's 2004 surveys identified multiple northern leopard frogs between MPs -0.5 and 14.0. The other two species were not found during surveys (West 2004).

Occurrences of these amphibian and reptile species within the project area would be documented during other survey efforts, in accordance with the survey plans (see appendix E). If these species are identified, biological monitors would clear the construction ROW of individuals prior to construction and install exclusion fencing to a depth of 6 inches into the ground in the area of suitable habitat containing the population to keep individuals from entering the construction ROW.

The proposed project may impact individual amphibians and reptiles but is not likely to cause a trend to federal listing or loss of viability.

3.6.4 Fish Species

Nine sensitive fish species were originally identified as potentially occurring within the project area. These species, their associated habitats, and their potential for occurrence along the project route are summarized in appendix P. The potential for occurrence at stream crossings and downstream reaches was evaluated for each species based on its habitat requirements and/or known distribution. The federally listed bonytail chub, humpback chub, and razorback sucker do not occur in the project area but are included in the detailed analysis based on the project's potential water depletion activities (i.e., hydrostatic testing and HDD) in the Colorado River Drainage. The federally listed Colorado pikeminnow could occur at the proposed crossing location of the Yampa River and downstream reaches in the White River. In addition, designated critical

3.0 ENVIRONMENTAL ANALYSIS

habitat for the Colorado pikeminnow occurs at the proposed White and Yampa River crossing locations (MPs 15.2 and 50.6, respectively). The remaining four fishes (bluehead sucker, flannelmouth sucker, mountain sucker, and roundtail chub) are BLM sensitive species that potentially occur in the White and Yampa Rivers.

A potential leak or rupture under the White and Yampa Rivers during drilling could accidentally release muds (called a “frac-out”) or disturb bottom sediments in a localized area near the rupture site. The release of drilling muds (primarily bentonite and cellulose) could cause localized increases in sediment loads and could fill interstitial gaps in the streambed, smothering habitat for benthic invertebrates, larval fish, and eggs. The amount of area impacted by a release of drilling muds would be relatively small since the consistency of the drilling muds would limit widespread dispersal along the streambed. To reduce the impacts of a frac-out, Entrega has prepared a Horizontal Directional Drilling Inadvertent Release Control Plan (HDD Plan; Entrega 2004f) that identifies detection and monitoring procedures, response equipment, notification procedures, and corrective actions. By implementing the measures in this plan, potential impacts to sensitive fish species in the White and Yampa Rivers would be minimized and short-term in duration.

Federally Listed Species

Bonytail Chub, Humpback Chub, Razorback Sucker, Colorado Pikeminnow (impacts from water depletions)

The FWS has expressed concern about the potential downstream impacts on federally listed species resulting from hydrostatic test water withdrawals from the Upper Colorado River Basin. The federally endangered bonytail chub, humpback chub, razorback sucker, and Colorado pikeminnow are known to occur in downstream portions of the White, Yampa, and Little Snake Rivers, which are part of the Upper Colorado River Basin. These fishes could be adversely affected by any action causing water depletions to the Colorado River system.

Habitat for the bonytail chub, humpback chub, and razorback sucker does not occur at the proposed crossings of the White, Yampa, and Little Snake Rivers (FWS 1994). However, habitat is present for these species at varying distances below the proposed crossings. The closest occupied or critical habitat is located at the following approximate distances downstream of the proposed crossings: 30 to 40 miles downstream of the Yampa River crossing (razorback sucker, humpback chub, and bonytail chub); 60 miles downstream of the White River crossing (razorback sucker); and at least 30 miles downstream of the Little Snake crossing (razorback sucker). Consequently, project effects to these fish species would be limited to potential water depletions from hydrostatic testing and HDD within the Colorado River drainage. The Colorado pikeminnow likewise occurs downstream of the proposed White and Yampa River crossings and could be affected by water depletions; however, this species also could occur at the location of the proposed Yampa River crossing. Direct effects to this species and its critical habitat are discussed later in this section.

Water depletion impacts resulting from the withdrawal of approximately 73 acre-feet (23.9 million gallons) for hydrostatic testing and 2.6 acre-feet for HDD could include a slight temporary reduction of potential spawning and rearing habitat in the Upper Colorado River Basin due to changes in downstream water flow. No changes in water temperature or dissolved oxygen would be anticipated as a result of the relatively small

3.6 Special Status Species

water volume. Potential impacts would be greatest during the spawning periods for these species in spring and early summer. The FWS defines a “depletion” as consumptive loss plus evaporative loss of surface or groundwater within the affected basin. Any water depletion would represent an adverse impact on habitat for the Colorado pikeminnow, razorback sucker, humpback chub, and bonytail, and must be considered in formal Section 7 consultation.

However, if water is returned to the source waterbody within a certain amount of time after withdrawal, the threshold for “depletion” and formal consultation may not be reached. Factors to consider in determining downstream effects to listed fishes include what time of the year water is withdrawn, whether the water has been treated, other water uses at the time of withdrawal (cumulative impact), and how close to the withdrawal source the water is returned (i.e., a source location return vs. a “basin return”).

Entrega plans on withdrawing approximately 73 acre-feet (23.9 million gallons) of water from the Colorado River Basin, which include the White, Yampa, and Little Snake Rivers (see **table 3.3-3**). Hydrostatic testing for the various test sections is currently planned to occur over a multiple-day period during August and September. The actual duration of hydrostatic testing for a given test section would be dependent on the rate of withdrawal and the section of pipe that would be tested. Entrega’s hydrostatic testing plan is included as appendix M of this EIS. In order to avoid or minimize potential impacts to Colorado River endangered fish species from water withdrawal in the Colorado River basin, the FWS would prefer that water withdrawal activities occur between October 1 and March 1. In addition, the FWS indicated that water withdrawal would probably not be permitted along the Yampa River between September 1 and September 15 since water has been purchased in that drainage to supplement flows to the Colorado River under action identified in the Colorado River Fishes Recovery Plan (Abbott 2004). We acknowledge these dates are in conflict with Entrega’s proposed water withdrawal activities. Entrega has committed to withdrawing water from the White, Yampa, and Little Snake Rivers between October 1 and March 1, and water would be withdrawn from the North Platte, Rock Creek, and Little Laramie Rivers between August 1 and September 30.

The *Recovery Implementation Program for Endangered Fish Species in the Upper Colorado River Basin* (Recovery Plan) was established in 1988 to mitigate for water depletion impacts to for Colorado River federally endangered 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 Program. The current depletion fee (through September 2005) is \$15.93/acre-foot. In 1995, an intra-FWS Opinion determined that the fee for depletions less than 100 acre-feet (annual average) would no longer be required (FWS 1995).

Entrega would further minimize the potential effects of hydrostatic testing on surface water resources by adhering to the measures in its Procedures and hydrostatic testing plan. These measures include screening intake hoses to prevent the entrainment of fish and other aquatic organisms and regulating the rate of withdrawal of hydrostatic test water to avoid adverse impact on aquatic resources or downstream flows. Entrega would not withdraw the hydrostatic test water from waterbodies at a rate that would alter the river’s flow.

Entrega proposes to discharge hydrostatic test water withdrawn from surface waters directly back into those sources immediately following hydrostatic testing by utilizing a splash pup. Discharges would be governed by the volume of water in a test section and the discharge rate. Potential impacts from water discharge

3.0 ENVIRONMENTAL ANALYSIS

could result in increased erosion of the stream banks and stream bottoms, resulting in a temporary increase of sediment load and destruction of habitat. Entrega would minimize the potential for these effects through the use of energy-dissipating devices that would disperse and slow the velocity of any discharges. We do not anticipate the introduction of contaminants because Entrega would test only new pipe and would not chemically treat the water.

Colorado Pikeminnow (impacts from waterbody crossings)

The Colorado pikeminnow inhabits medium to large rivers in the Upper Colorado River Basin including the Colorado, Gunnison, Green, White, and Yampa Rivers. The adults use deep, turbid, strongly flowing eddies, runs, flooded bottoms, or backwaters (especially during high flow), while juveniles prefer small, quiet backwaters.

HDD activities would disturb a total of approximately 5 to 10 acres per crossing within the 100-year floodplain of the Yampa and White Rivers. These areas would be located within designated critical habitat for the Colorado pikeminnow. Surface disturbance would be required for the bore pits, drilling equipment, and pipe strings. However, the HDD work areas would be located outside of the water level of the river, which would avoid instream impacts. Construction techniques and reclamation would be designed to minimize potential increased sedimentation during future high water events. Since construction equipment would be refueled and lubricated outside of the 100-year floodplain, no fuel spills or leaks would affect habitat for Colorado pikeminnow.

Entrega's proposed HDD crossings of the White and Yampa Rivers would avoid instream impacts and thus would have little to no effect on the Colorado pikeminnow or its designated critical habitat. If a rupture or leak occurred during drilling, short-term sedimentation and bottom disturbance could occur at the crossing, as described earlier in this section. By implementing the measures in HDD Plan, potential impacts to Colorado pikeminnow would be minimized and short-term in duration.

However, if an HDD crossing could not be completed at a particular location, Entrega would likely request to cross using an open-cut technique. A non-HDD crossing would have the potential for greater impact on the Colorado pikeminnow. We typically require an applicant to file a site-specific alternate crossing plan for our review before a non-HDD crossing could begin (see appendix J). We note in this case that Entrega originally proposed to cross the White and Yampa Rivers by open cuts; thus, certain mitigation measures applicable to the open cut technique are already on file for this project. Such measures would help minimize instream impacts from sedimentation and turbidity. Entrega's originally proposed measures included expedited crossings in accordance with Entrega's Procedures, storage of trench spoil and locating extra workspaces at least 50 feet from the streambank, use of sediment barriers, limiting the clearing of vegetation as practical, performing immediate post-construction stabilization of streambanks, and returning stream channels and banks to preconstruction contours

Although we believe Entrega's originally proposed crossing plans provide a good framework for an evaluation of impacts on the Colorado pikeminnow from an open-cut crossing, our determination of effect for this species is dependent on the crossings being completed by HDD. We would still need to evaluate a non-HDD crossing and consult further with the FWS in order to comply with Section 7 of the ESA.

Therefore, **we recommend that in the event that Entrega cannot complete an HDD crossing of the White or Yampa Rivers, Entrega shall not begin a non-HDD crossing until the staff completes any necessary Section 7 consultation with the FWS, and the Director of OEP notifies Entrega in writing that it may proceed with an alternate river crossing method.**

Determination Statement

Colorado Pikeminnow (impacts from water crossings)

Effect on the Species and Critical Habitat: Entrega's crossing of the Yampa and White Rivers, as proposed, *may affect, but is not likely to adversely affect* the Colorado pikeminnow or its critical habitat. This determination is based on Entrega's proposed HDD crossings of the White and Yampa Rivers, its HDD Plan to minimize sedimentation impacts of a frac-out, and reclamation to restore surface disturbance within the 100-year floodplain.

Colorado Pikeminnow, Razorback Sucker, Humpback Chub, and Bonytail Chub (impacts from water depletions)

Effect on the Species and Critical Habitat: Entrega's withdrawal of approximately 73 acre-feet of water from the Upper Colorado River Drainage *may affect, but is not likely to adversely affect* the Colorado pikeminnow, razorback sucker, humpback chub, and bonytail chub or their critical habitat. By implementing the Recovery Plan, the effects of water withdrawal on habitat for these species would be mitigated. In addition, Entrega would adhere to the timing window identified by the FWS (conducting hydrostatic testing between October 1 and March 1) to avoid or minimize potential water depletion impacts during the Colorado pikeminnow spawning season. Although Entrega's temporary use of about 73 acre-feet of water would be returned to the same locations and source waterbodies, it may still be considered a "depletion" by the FWS. If so, we request that the FWS consider this EIS/BA our initiation of formal consultation under Section 7 of the ESA for the bonytail chub, humpback chub, razorback sucker, and Colorado pikeminnow. Entrega would not be authorized to contribute to a depletion in the Colorado River basin until any necessary consultation is completed.

BLM Sensitive Species

Bluehead Sucker, Flannelmouth Sucker, and Mountain Sucker – These native species occur in the Yampa and White Rivers and Piceance Creek. They utilize a variety of habitats that include riffles, pools, runs, and backwater areas in larger streams and rivers. Spawning occurs in the spring or early summer at lower elevations (Woodling 1985).

Roundtail Chub – This species also inhabits a variety of habitats in the White and Yampa Rivers. Adults prefer pools associated with undercut banks and other types of cover, while young fish occur in shallower water with lower velocities. All age groups prefer cobble-rubble, sand-cobble, or sand-gravel substrates (Woodling 1985). Runs and riffles are used primarily during feeding. Spawning occurs in the spring or early summer.

3.0 ENVIRONMENTAL ANALYSIS

Since these species potentially occur at and downstream of the proposed crossings, impacts of water withdrawal and stream crossing construction would be the same as described for the Colorado pikeminnow.

We believe the EPP may impact individual fish but is not likely to cause a trend toward federal listing or loss of viability for these species.

3.7 Land Use, Recreation, Visual Resources

3.7.1 Land Use

Land Ownership

About 45 percent (147 miles) of the land crossed by the proposed EPP route and aboveground facilities is managed or owned by public entities. Of the public land total, the majority is federally managed, while a smaller portion is managed or owned by the State of Colorado, the State of Wyoming, or local municipalities. The federal lands are entirely managed by the BLM. State lands in Colorado crossed by the proposed pipeline route are owned or managed by CDOW or the Colorado Land Board. State lands that would be crossed in Wyoming are owned or managed by the WGFD or the Wyoming Board of Land. Local government owners/managers consist of municipalities, such as Rawlins, and Laramie. **Table 3.7-1** summarizes public land ownerships that would be crossed by the proposed pipeline route.

**Table 3.7-1
Summary of Federal, State, and Local Government Owned Lands
Crossed by the Proposed Pipeline Route**

State/Ownership	Approximate Crossing Length (miles)	Percent of Total Length
COLORADO		
Federal	26.5	8
State	17.0	5
Local	<u>0.4</u>	<1
Colorado Subtotal	43.9	
WYOMING		
Federal	78.0	24
State	16.2	5
Local	<u>8.2</u>	3
Wyoming Subtotal	102.4	
Project Total	146.3	45

The remaining 55 percent (180 miles) of the proposed pipeline route would cross privately owned land.

Land Use Plans and Policies

The proposed project would cross about 105 miles of land managed by three BLM FOs: the White River FO in Meeker, Colorado; the Little Snake FO in Craig, Colorado; and the Rawlins FO in Rawlins, Wyoming. Federal land accounts for about 32 percent of the total pipeline route. In general, the BLM manages these lands for multiple uses, including recreation, wildlife management, livestock grazing, wild horses, and mineral resources under guidelines set forth in the three Resource Management Plans (RMPs) that BLM uses for management direction (BLM 1997, 1990, 1986).

3.0 ENVIRONMENTAL ANALYSIS

Construction of the proposed project would be consistent with the existing BLM RMPs and would not preclude the management objectives set forth for BLM offices. Entrega's POD is being developed in coordination with BLM FOs. The POD is a construction plan that includes procedures for the use of BLM roads, soil and water protection measures, revegetation and weed control/management standards, biological and cultural resource protection measures, livestock and wild horse management measures, and post-construction monitoring requirements (see section 2.3, Construction Procedures).

Land owned by the states of Colorado or Wyoming that would be crossed by the proposed pipeline route is managed for wildlife habitat, recreational uses, or leased to private tenants for livestock grazing. Some state lands are special interest areas and are discussed in section 3.7.3. The remaining scattered portions of state owned or managed lands not identified as special interest areas are leased to private entities for livestock grazing and ranching. Entrega would acquire the necessary permits and approvals for construction on state lands. Environmental protection measures attached to lease agreements would be similar to those described for the BLM above.

Project Land Requirements

The EPP would require land for the construction ROW, permanent ROW, additional temporary workspace areas, access roads, pipe and contractor yards, and construction and operation of aboveground facilities. Land use calculations were based on a 100-foot-wide construction ROW, except in wetlands and riparian woodlands where the construction ROW would be reduced to 75 feet. As outlined in chapter 2.0, a 50-foot-wide permanent easement would be acquired by Entrega. This 50-foot-wide portion of the easement, referred to as the permanent ROW, would be maintained in an open condition (i.e., generally free of trees and aboveground structures) for the life of the pipeline facilities. Impacts on land use for operation of the pipeline facilities were calculated based on the 50-foot ROW width. Land use calculations for additional temporary workspace areas were based on typical requirements. Access roads, pipe and contractor yards, and aboveground facilities were based on each feature's dimensions.

In a number of areas, Entrega proposes to expand the width of its construction ROW to 125 feet to facilitate side-hill construction or to cross deeply incised drainages. These areas are listed in **table 2.2-2**. Overall, these areas amount to more than 70 miles of the total 328.1-mile-long pipeline, or more than 21 percent of the route. We have examined a number of these areas and are unable to confirm that topographic features requiring extra work space occur at the locations identified by Entrega. In addition, it is uncommon that topographic features would require extra work space for the extended distances identified. Therefore, **we recommend that prior to construction, Entrega provide a detailed justification for any area where it proposes to use a 125-foot-wide construction ROW for more than 0.5 mile at a time. The justification should be filed with the Secretary for review and written approval by the Director of OEP.**

The principal land use that would be affected by the proposed pipeline route and its associated facilities is rangeland (about 294 miles, or 90 percent of the total pipeline length). Other land uses that would be crossed by the proposed pipeline include forest land (13 miles; about 4 percent); agricultural land (18 miles; about 5 percent); open land (5 miles; about 2 percent); and residential/commercial land (less than 2 miles; <1 percent).

3.7 Land Use, Recreation, Visual Resources

Construction of the proposed EPP would temporarily disturb 5,371 acres. Of that total 2,074 acres would be retained by Entrega as permanently maintained pipeline ROW and for operation of the proposed aboveground facilities (including powerlines and permanent access roads) (**table 3.7-2**). The predominant land use that would be affected by construction is rangeland (4,672 acres). Additionally affected land use includes forest land (177 acres), agricultural land (185 acres), residential/commercial land (258 acres), and open land (79 acres). Operation of the proposed project would affect 1,854 acres of rangeland, 77 acres of forest land, 90 acres of agricultural land, 24 acres of residential/commercial land, and 29 acres of open land.

Rangeland. In areas where rangeland is used for grazing, construction activities could reduce the carrying capacity of BLM grazing allotment and privately held pastures, and could hinder the movement of livestock across those allotments. To minimize impacts on grazing areas, Entrega has agreed to implement the following BLM-approved mitigation measures:

- fences crossed by the proposed pipeline route would be cut in a manner to prevent slack, and gates would be installed across the opening to prevent livestock passage, if required;
- temporary fencing would be installed to prevent livestock from entering the construction area;
- trench plugs would be installed across the trench where it crosses livestock trails to allow passage, and ramps would be installed to allow for the escape of livestock should they fall into the trench; and
- natural barriers removed during pipeline activities would be repaired or restored to pre-construction condition or if repair is not feasible, a fence would be installed in its place.

Following construction, temporary fences would be removed, the ROW restored to its pre-construction condition, and livestock would be allowed to graze and roam freely over the permanent ROW. Given the narrow, linear nature of the project, livestock forage reductions would be minor in comparison to the forage available on large BLM allotments and large private ranches that would be crossed. Pre- and post-construction weed management programs, and reseeding with mixtures approved by the BLM and state agencies would be applied. Although easement agreements may vary among landowners, similar weed control and revegetation measures would likely be included in private landowner easement agreements. The BLM and the FERC would conduct post-construction monitoring to verify revegetation success, and to identify any areas along the post-construction ROW that require further stabilization.

Operation of aboveground facilities would require the permanent conversion of about 61.9 acres of rangeland to industrial use for three compressor and meter stations plus 17 mainline valves located along the pipeline ROW.

Agricultural Land. Agricultural land crossed by the EPP consists of both dryland pastures and irrigated pastures and haylands. Of particular concern are soil replacement and drainage restoration across irrigated fields and pastures. Entrega would implement its irrigation restoration plan to insure that post-construction productivity matches that of pre-construction conditions. Hay crops may be lost for one season where haylands are crossed by the pipeline construction ROW, and it may require 1 to 2 years for disturbed,

3.0 ENVIRONMENTAL ANALYSIS

Table 3.7-2
Summary of Land Uses Affected by Construction and Operation of the Entrega Pipeline Project
(Acres)¹

State/ Facilities	Rangeland		Forest Land		Agricultural Land		Residential/ Commercial Land		Open Land		Total ⁶	
	Const ²	Oper ³	Const ²	Oper ³	Const ²	Oper ³	Const ²	Oper ³	Const ²	Oper ³	Const ²	Oper ³
COLORADO												
Pipeline (main)	960	454	110	48	137	66	5	2	11	5	1,223	574
Pipeline (lateral)	18	9	0	0	0	0	0	0	0	0	18	9
Aboveground ⁴	39	39	0	0	0	0	13	13	0	0	52	52
Permanent Access	0	0	0	0	0	0	0	0	0	0	0	0
Roads	100	0	2	0	0	0	<1	0	5	0	107	0
ATWS ⁵	40	0	0	0	0	0	108	0	0	0	148	0
Yards	<1	<1	0	0	0	0	0	0	0	0	1	<1
Powerlines	<1	<1	0	0	0	0	0	0	0	0	0	0
Colorado Subtotal ⁶	1,158	502	112	48	137	66	126	15	16	5	1,549	635
WYOMING												
Pipeline (main)	2,779	1,327	64	29	48	24	18	9	49	24	2,958	1,414
Pipeline (lateral)	4	2	0	0	0	0	0	0	0	0	4	2
Aboveground	24	23	0	0	0	0	0	<1	0	0	24	23
Permanent Access	0	0	0	0	0	0	0	0	0	0	0	0
Roads	292	0	1	0	0	0	9	0	14	0	315	0
ATWS ⁵	411	0	0	0	0	0	105	0	0	0	517	0
Yards	4	0	0	0	0	0	0	0	0	0	4	0
Powerlines	3,514	1,352	65	29	48	24	132	9	63	24	3,822	1,439
Wyoming Subtotal ⁶	4,672	1,854	177	77	185	90	258	24	79	29	5,371	2,074
Project Total^{6,7}												

¹ Does not include temporary access roads.
² Const – construction. Based on a 100-foot-wide construction ROW, except in wetlands where a 75-foot-wide ROW would be used, and where construction ROW is increased due to site-specific conditions.
³ Oper – operation. Based on a 50-foot-wide permanent ROW. Includes aboveground facilities, permanent access roads, and transmission lines.
⁴ Aboveground facilities include compressor stations, pig launchers and receivers, and/or meter stations, and, where constructed within compressor station sites, mainline valves. Does not include a total of 0.9 acre of rangeland that would be permanently converted to commercial land for 17 mainline valves located along the pipeline route and outside of compressor or meter station sites.
⁵ Additional temporary workspace areas (only used during construction).
⁶ The numbers in this table have been rounded for presentation purposes. As a result, the totals may not reflect the exact sum of the addends in all cases.
⁷ Wetland acreages as determined by wetland delineations (WEST 2005n) are included within surrounding land use types. Refer to appendix N for wetland locations.

reseeded areas to return to pre-construction productivity levels. No aboveground facilities would occupy agricultural land.

Forest Land. The EPP would not cross any land that is specifically managed for forest products (e.g., timber). The primary forest land types are pinyon-juniper woodland in western Colorado, scattered patches of ponderosa pine between Laramie and Cheyenne, Wyoming, and cottonwood riparian communities at the major river crossings. Depending on agreements with landowners, it is anticipated that mature juniper trees would be salvaged for fenceposts, and both juniper and pinyon pines would be stacked adjacent to the construction ROW for recovery as firewood. Removal of mature ponderosa pine and cottonwood would be very infrequent, and avoided where possible. Following construction, trees and shrubs would be allowed to regenerate within the areas that would not be retained as part of the 50-foot-wide permanently maintained ROW. In riparian woodlands, the permanent ROW would be limited to a 10-foot-wide strip centered over the pipeline. The permanent ROW would be maintained to support primarily herbaceous or shrub dominated communities. The rate of forest reestablishment would vary depending on species and weather conditions, but would generally exceed 50 years. No aboveground facilities would be located within forested or woodland areas.

Residential and Commercial Areas. The proposed route would traverse rural residential areas between Laramie and the crossing of I-25 south of Cheyenne. The EPP would be located within an existing pipeline corridor in this segment. The EPP would be within 50 feet of one existing residence at MP 304.7. Prior to construction, Entrega plans to acquire the structure for removal as it is dilapidated and has been confirmed to be vacant. The landowner has approved of and has requested removal of the structure due to its severely dilapidated condition. At this site, a total of about 300 feet of residential land would be crossed. Two residential out-building structures (sheds) are located within 50 feet of the construction ROW at MP 35.3. The access roads to these two out-buildings would be crossed by the pipeline. Construction in the vicinity of the residences and residences at greater distances could potentially cause brief increases in fugitive dust, equipment noise, and brief delays along existing county and private roads crossed by the pipeline. The EPP has committed to control fugitive dust along its construction ROW, and to maintain at least one lane of traffic open across roads that are trenched to lay pipe. No commercial structures are located within 50 feet of the EPP construction area.

Entrega has consulted with the counties crossed by the proposed pipeline route and towns located near the proposed project to request information about planned future residential and commercial developments. As a result of these consultations, one future residential development, Willasden Estates, was identified as being located within 0.25 mile of the proposed project area. The Willasden Estates residential development would be crossed between about MPs 305.1 and 306.0 in Laramie County, Wyoming. The development is subdivided into 36 residential lots. The proposed pipeline would be located adjacent to an existing pipeline ROW through the development. The timeframe for construction of this residential development is currently unknown. However, Entrega would consult with the City of Laramie and the developer to minimize impacts on future construction and development within the Willasden Estates development.

The City of Laramie, Wyoming, is planning to construct a landfill near the route between MPs 307.7 and 308.7 on property referred to as the Belvoir Ranch. The landfill would be greater than 0.25 mile from the proposed pipeline construction ROW. The timeframe for construction of this landfill is currently unknown.

3.0 ENVIRONMENTAL ANALYSIS

Given the distance from the pipeline, we do not anticipate that the proposed pipeline would affect the future construction of the landfill. Aboveground facilities would occupy about 13 acres of residential/commercial land use types.

Open Land. The proposed route will cross a small amount of open land (approximately 2 percent of the total). Open land is characterized by bare rock, sand, clay, dry wash areas, and non-forested wetlands.

3.7.2 Recreational and Public Interest Areas

The proposed pipeline route would cross a total of 13 recreation and special interest areas (one area would be crossed twice and one feature would be crossed six times) (**table 3.7-3**). One additional recreation and special interest area is within 0.25 mile of the proposed project. The route does not cross any ACECs, Wilderness or Wilderness Study Areas, or Wild and Scenic Rivers. Of the 13 recreation and special interest areas that would be crossed by the proposed route, 3 are located in Colorado, and the remainder in Wyoming. The pipeline would not cross any developed recreation areas (i.e., campgrounds, picnic grounds, or organized recreation areas such as baseball fields).

Pipeline construction would have temporary impacts on recreational traffic and use patterns. Sight seers, hikers, wildlife viewers, off-highway vehicle users, and mountain bikers would be displaced from the immediate area during construction. Issues in common to all these recreational and special interest areas are soil disturbance and revegetation, repair and maintenance of public access roads, and Entrega coordination with the agency managers to minimize conflicts between construction activities and the recreational uses for which these special areas were established. It is anticipated that lease agreements between Entrega and the BLM state land managers would include measures to ensure that the ecological functions of these areas are maintained, and recreational conflicts are avoided or minimized. Of most concern are:

1. Rio Blanco Lake SWA in Rio Blanco County, where lake fishing is provided. The pipeline would cross the White River downstream of the lake, and at least 500 feet from developed facilities, so it is expected that most conflicts with recreational uses could be avoided.
2. Piceance Creek SWA, and Bitter Brush SWA in Colorado, and the Red Rim-Daley Wildlife Habitat Management Area, Simpson Ridge Hunter Management Area, Wick/Beumee Wildlife Habitat Management Area, and Strouss Hill Hunter Management Area in Wyoming. The Piceance SWA in Rio Blanco County, Colorado, was purchased by the CDOW to provide hunting opportunities and winter range for deer and elk. The Wick/Beumee WHMA in Carbon County, Wyoming, was purchased for elk management by the WGFD. Both of these areas were purchased with Federal Aid in Wildlife Restoration Act grant funds administered by the FWS and as such the FWS must grant approval through amendments prior to state approval of easements. Special use permits would be required for activities within WHMAs. The pipeline route has been evaluated to minimize surface disturbance, including collocation with pipeline corridors to the extent possible. Potential conflicts could occur between hunter use and pipeline construction if Entrega constructs across these areas during the

**Table 3.7-3
Recreation and Special Interest Areas Crossed by
or Within 0.25 Mile of the Proposed EPP Route**

State/County	Start/End MP	Crossing Length (feet)	Construction Acres Affected ¹	Name	Ownership
COLORADO					
Rio Blanco	2.1 to 5.8	19,500	46.3	Piceance Creek SWA	CDOW
Rio Blanco	11.2 to 12.7	7,900	20.6	Piceance Creek SWA	CDOW
Rio Blanco	15.0 to 15.3	1,729	28.1	Rio Blanco Lake SWA	CDOW
Moffat	46.3 to 49.2	15,300	38.9	Bitter Brush SWA	CDOW
WYOMING					
Sweetwater	118.1 ²	25	0.1	Overland Trail	BLM
Carbon	163.6 to 165.7	11,000	37.9	Red Rim-Daley Wildlife Habitat Management Area	WGFD
Carbon	167.5 to 169.7	11,600	44.2	Red Rim Coal Area	BLM and Private holdings
Carbon	176.1	100	0.2	Continental Divide National Scenic Trail	BLM
Carbon	192.5 to 192.9	2,100	8.3	North Platte River SRMA	BLM
Carbon	213.5 to 220.4	36,500	101.4	Simpson Ridge Hunter Management Area	BLM / Wyoming Board of Land and Private holdings
Carbon	228.6 ²	25	0.4	Overland Trail	Private holdings
Carbon	230.7 to 232.7	30,000	27.3	Wick/Beumee Wildlife Habitat Management Area	BLM / WGFD
Carbon	234.3 ²	25	1.1	Overland Trail	WGFD
Carbon	235.1 ³	25	0.1	Overland Trail	WGFD
Carbon	242.4 ³	25	0.1	Overland Trail	Private holdings
Albany	247.2 to 255.3	42,700	109.5	Strouss Hill Hunter Management Area	BLM / Wyoming Board of Land and Private holdings
Albany	255.2 ³	25	0.3	Overland Trail	State of Wyoming Board of Land
Albany	269.2 to 271.4	11,600	30.8	Big Hollow National Natural Landmark	Private holdings
Albany	277.1 to 280.8	19,500	49.9	Monolith Ranch Hunter Management Area	Private holdings
Albany	291.9	Not crossed but within 0.25 mile	N/A	Medicine Bow National Forest	U.S. Forest Service (FS)

¹ Calculated based on a 100-foot construction ROW except in wetlands where a 75-foot ROW would be used, and where construction ROW is increased due to site-specific conditions. Disturbance for additional temporary workspace areas is included.

² Locations identified during cultural resource surveys.

³ Locations identified on USGS topographic maps.

3.0 ENVIRONMENTAL ANALYSIS

hunting season. Entrega would coordinate with the wildlife managers in both states to insure continued hunter access during hunting seasons. Entrega has agreed to incorporate mitigation measures to reduce impacts to hunters in its Winter Construction Plan.

3. Overland Trail and Continental Divide National Scenic Trail. There are no historic interpretation signs or areas at the proposed EPP Overland Trail crossings, and no well-preserved wagon ruts are evident. The EPP would cross the Continental Divide National Scenic Trail where the trail coincides with Wyoming State Route 71, which is a paved highway on the outskirts of Rawlins. Depending on the season of the crossing, and the level of recreational use, a detour around the work area would be provided.
4. White, Yampa, and North Platte Rivers. Entrega proposes to cross the White and Yampa Rivers by HDD, which would not result in channel disturbance, except for installation of temporary bridges across these rivers to move equipment. Entrega proposes to open-cut the North Platte River. The pipeline would cross the North Platte River Special Recreation Management Area (SRMA), which is owned and managed by the BLM and provides access for recreational uses such as fishing, rafting, canoeing, and camping. Construction activities would likely coincide with peak summer use of the recreational area. Construction could temporarily disrupt recreational access and use of the area, primarily as a result of construction-related traffic and equipment, noise, and air quality. Carbon County Road (CR) 347 runs adjacent and parallel to the west side of the North Platte River at the proposed crossing location (MP 192.8). The road is the only access to the Rochelle Easement, which provides public access for fishing, recreational use, and waterfowl hunting south of I-80. During warmer months, river floaters put in upstream of the proposed crossing point and then send their shuttles downstream of the construction area to takeout points accessed by this road. Entrega has recognized that its open-cut crossing of the North Platte River could interfere with recreational travel, and proposes to maintain public access along CR 347 during construction by leaving a lane of traffic open or providing a detour.

We believe that measures to minimize impacts on recreational boaters should be included as part of Entrega's Site-Specific Waterbody Crossing Plans. Therefore, **we recommend that Entrega revise its Site-Specific Waterbody Crossing Plan for the North Platte River to include specific measures to avoid or minimize impacts on recreational boat users. If an open-cut crossing is ultimately necessary at the White or Yampa Rivers, Entrega should similarly revise the site-specific crossing plans for these locations. All revised site-specific waterbody crossing plans should be filed with the Secretary for review and written approval by the Director of OEP prior to construction.**

3.7.3 Visual Resources

Visual impacts associated with the construction ROW and additional temporary workspace areas 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 may result from the removal of large individual trees that have intrinsic aesthetic value; the removal or alteration of vegetation that may currently provide a visual

3.7 Land Use, Recreation, Visual Resources

barrier; or landform changes that introduce contrasts in visual scale, spatial characteristics, form, line, color, or texture.

Visual impacts would be greatest where the proposed pipeline route parallels or crosses roads, trails, or Key Observation Points, and where the pipeline ROW may be seen by passing motorists or other recreational users. 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 less than 5 years). The impact would be greater on shrub rangeland, which may take more than 5 years to regenerate. The greatest potential visual impact would result from the removal of mature pinyon pine, Utah Juniper, ponderosa pine, and cottonwood 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 may 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 age and begin to blend with the surrounding landscape.

Visual Resource Management (VRM) classes are assigned to the various landscapes managed by BLM. The BLM VRM classes range from Class I to Class IV, with Class I being the most restrictive and Class IV being the least restrictive. In general, the proposed project would cross lands designated as Class III or Class IV. Private lands that would be crossed by the proposed pipeline route are not subject to federal or state visual management standards. The Class III designation applies to the BLM-managed lands administered by the White River FO and to the majority of the BLM-managed lands administered by the Rawlins FO. A Class III designation allows for changes in the visual landscape caused by a management activity, but should remain an insignificant portion of the visual strength of the existing landscape. The area that would be crossed by the proposed pipeline route along I-80 to the west of Rawlins, Wyoming, has been designated by the BLM as a VRM Class IV. VRM Class IV lands may undergo management activities that significantly alter the characteristic landscape and dominate the view.

To minimize construction impacts on visual resources, Entrega has aligned the proposed pipeline route, where feasible, adjacent to existing utility corridors. This alignment would minimize impacts on visual sightlines and contrasts with adjacent vegetation communities. In areas where collocation is not possible for engineering and/or construction reasons, Entrega would align the pipeline to avoid aesthetic features to the extent possible. Following construction, topographical contours would be returned to their preconstruction condition. Therefore, construction and operation of the proposed Entrega pipeline facilities would be consistent with the objectives and definitions of VRM Class III and VRM Class IV designations. Entrega has consulted with the BLM to ensure that the proposed project would not conflict with the VRM designations.

During agency scoping meetings and field visits with staff from the BLM FOs, Entrega committed to additional mitigation measures that would reduce the effects of project activities on visual resources at three locations, including MP 39.1 along Pine Tree Gulch, the North Platte River crossing at MP 192.8, and the SeaWest Windfarm crossing at MP 236.2. Specifically, Entrega would reduce the construction ROW from 100 feet in width to 75 feet at MPs 192.7 and 236.2. Entrega would continue to consult with the BLM and other agencies during the construction period regarding impacts on visual resources.

3.0 ENVIRONMENTAL ANALYSIS

For aboveground facilities, the impacts on visual resources from each individual facility would depend on the pre-construction condition and the visibility from the surrounding area. The following discussions provide the landscape context for each compressor station, which are the major project aboveground structures.

1. Meeker Compressor Station. This station would be located on private land next to a Rio Blanco County road that parallels Piceance Creek and associated irrigated pastureland. While agricultural uses are dominant in the foreground, existing oil and gas development (pipeline ROWs) is evident in the background, extending in several directions from the proposed site. Although the facility is located on private land, Entrega would comply with the objectives of BLM VRM Class III, which is to partially retain the existing character of the landscape by painting the compressor station a non-reflective Shale Green, or other color approved by the BLM.
2. Bighole Compressor Station. This station would be located on private land adjacent to a county road in a remote area of Moffat County. The area is characterized by low hills and valleys dominated by sagebrush. The compressor station would represent an isolated industrial development within a relatively natural nearby landscape. However, oil and gas drilling (well pads, gathering lines) are evident within 2 miles north and south of the proposed compressor station site. Although the facility is located on private land, Entrega would comply with the objectives of BLM VRM Class III, which is to partially retain the existing character of the landscape by painting the compressor station a non-reflective Shale Green, or other color approved by the BLM.
3. Wamsutter Compressor Station. This station would be located on private land adjacent to I-80 and the Union Pacific Railroad approximately 2 miles west of the community of Wamsutter. Natural gas development is highly evident in the vicinity of the station site, including a wide existing natural gas pipeline corridor, surface tanks, and existing compressor stations. Entrega would comply with the objectives of BLM VRM Class IV, which allows land disturbing structures and activities that repeat the form, line, color, and texture of the characteristic landscape. Aboveground facilities would be painted in neutral colors. The specific paint colors used for aboveground facilities on BLM properties have been identified in the BLM's POD.

Other aboveground facilities (metering station sites, some block valves) are located at or adjacent to compressor stations. Remaining block valves would be located next to lightly traveled roads that would generally be out of public view. These aboveground facilities also would be painted in neutral colors.

3.8 Cultural Resources

Section 106 of the NHPA of 1966, as amended, requires that the Commission take into account the effects of its undertakings (including the issuance of permits or Certificates) on historic properties listed on or eligible for listing on the NRHP, and afford the ACHP an opportunity to comment on the undertaking. The FERC is using the services of the applicant (Entrega) to prepare information, analyses, and recommendations necessary to meet our responsibilities under Section 106 and the ACHP's implementing regulations at 36 CFR 800. The FERC also consults with SHPOs pursuant to Section 101(b)(iii) of the NHPA and 36 CFR 800.3 through 800.6.

3.8.1 Results of Cultural Resources Survey

As part of its application, Entrega provided the FERC with its inventory reports and initial consultations with the Colorado and Wyoming SHPOs, the BLM, and Native American tribes. In addition, the application included Entrega's Monitoring and Unanticipated Discovery Plan. The inventory reports document the results of literature reviews, site file searches, cultural resources inventory, and test excavations for Entrega's proposed facilities in Colorado and Wyoming (Redman and Chandler 2004; Greiser 2004). The inventory reports are currently being reviewed by the FERC and the BLM.

The Colorado portion of the proposed pipeline route will measure 94.8 miles in length, of which 79.1 miles parallel existing pipelines, utilities, or road ROWs. Approximately 74.9 miles of the proposed route will parallel a previously inventoried pipeline. Where the proposed pipeline route parallels a previously inventoried pipeline, Entrega surveyed a 240-foot-wide corridor. The edge of the 240-foot-wide corridor was located 40 feet from the proposed centerline on the side with the existing pipeline and 200 feet from the centerline on the other side. The one exception was where Entrega paralleled the CIG Trailblazer Pipeline. Cultural resources investigations conducted in the 1980s for the Trailblazer Pipeline do not meet current inventory standards. Therefore, where Entrega paralleled the Trailblazer Pipeline (8 miles), a 300-foot-wide corridor centered on the staked centerline of the proposed pipeline route was surveyed. Where the proposed pipeline route did not parallel a previously inventoried pipeline, Entrega surveyed a 300-foot-wide corridor centered on the staked centerline of the pipeline route. In addition to the proposed pipeline route, Entrega surveyed 35.9 acres of temporary use areas that extend beyond the 240- to 300-foot-wide centerline inventory corridor, 37.8 miles (873.2 acres) of access roads, and 527.7 acres for aboveground facilities including compressor stations, meter stations, pipeyards, and contractor yards.

The Wyoming portion of the proposed pipeline route will measure 233.3 miles in length, of which 203.6 miles parallel existing pipelines and fiber optic ROWs. Approximately 123.3 miles of the proposed route will parallel a previously inventoried pipeline. Where the proposed pipeline route parallels a previously inventoried pipeline, Entrega surveyed a 250-foot-wide corridor. The edge of the 250-foot-wide corridor was located 40 feet from the proposed centerline on the side with the existing pipeline and 210 feet from the centerline on the other side. Where the proposed pipeline route did not parallel a previously inventoried pipeline, a 300-foot-wide corridor centered on the staked centerline of the pipeline route was surveyed. In addition to the proposed pipeline route, Entrega surveyed 263.9 acres of temporary use areas that extend beyond the 250- to 300-foot-wide centerline inventory corridor, 54.1 miles (324.9 acres) of access roads,

3.0 ENVIRONMENTAL ANALYSIS

and 244.7 acres for aboveground facilities including compressor stations, meter stations, pipeyards, and contractor yards.

For both Colorado and Wyoming, a 100-foot-wide corridor was surveyed along each access road that may require blading and filling as a result of use by construction equipment and vehicles. For additional temporary workspace areas, compressor stations, meter stations, mainline valve sites, and other ancillary facilities, Entrega surveyed the footprint of each area plus a 100-foot-wide buffer zone. Access was denied to five segments of the pipeline corridor (totaling 15.5 miles) in Wyoming. As of March 2005, these areas are now inventoried and will be reported on separately in an addendum report.

Colorado

The Class III cultural resource inventory in Colorado located 73 cultural resource sites and 48 isolated finds. These include 40 previously recorded sites identified during the site file searches. The isolated finds and 33 of the sites are recommended or have been officially determined not eligible for listing on the NRHP. No additional investigation of these resources is recommended. Forty of the sites are recommended or have been officially determined eligible for the NRHP. Avoidance is recommended for these 40 sites (Redman and Chandler 2004). Entrega has provided information that indicates it currently would be able to avoid 19 of the 40 eligible sites by various methods, such as reroutes, bore, or crossing non-contributing segments of the sites. Entrega filed an addendum to the Class III cultural resource inventory of the Colorado segment of the proposed Entrega pipeline (Redman et al. 2005) for numerous reroutes and additional access roads, contractor/pipe yards, and extra workspace. The survey of reroutes resulted in the identification of three newly recorded sites and two isolated finds. All three of the sites are recommended eligible for the NRHP. The isolated finds are recommended not eligible for the NRHP. Entrega continues to explore reroutes to avoid additional eligible sites. For those sites that cannot be avoided by rerouting the pipeline, Entrega also is investigating the possibility of avoiding these sites through other means, including boring and directional drilling. Treatment plans for those eligible sites that cannot be avoided would be filed with the Commission. Cultural resources surveys still need to be completed for one access road in Colorado.

An additional 60 sites are thought to be present in the pipeline corridor based on file search data. Of these, 9 are recommended or have been officially determined eligible for the NRHP, 41 sites are recommended as needing additional data, and 10 sites are recommended or have been officially determined not eligible for the NRHP. Entrega proposed testing be conducted at 42 of the potentially eligible and eligible sites, and sites needing additional data, to determine whether they extend into the Entrega pipeline corridor and to evaluate their research potential. Testing was not proposed at the ineligible sites or at those sites that previously had been subjected to data recovery. Entrega filed an addendum to the Class III cultural resource inventory for testing at the 42 potentially eligible and eligible sites, and sites needing additional data (Eckman 2005). Testing was conducted at 28 of the proposed 42 sites. The remaining 14 sites could not be tested due to denied access. Of the 28 sites tested, nine sites produced enough evidence to recommend them eligible for the NRHP. Additional data is needed before eligibility can be determined for the remaining 19 sites.

The FERC provided the Colorado SHPO with combined federal agency (FERC and BLM) determinations of eligibility. With the exception of four sites which the agencies recommended as eligible rather than ineligible,

the FERC and BLM concurred with the recommendations in the Class III cultural resource inventory report and addendum reports. On April 13, 2005, the Colorado SHPO concurred with the agencies' determinations.

Wyoming

The Class III cultural resource inventory in Wyoming located 147 cultural resource sites and 60 isolated finds. These include 103 previously recorded sites identified during the site file searches. The isolated finds and 85 of the cultural resources are recommended or have been officially determined not eligible for listing on the NRHP. No further investigations are recommended for these resources. Forty-five of the cultural resources are recommended or have been officially determined as eligible for listing on the NRHP. Seventeen sites have been unevaluated. Avoidance is recommended for 15 of the 45 cultural resource sites recommended or officially determined eligible for the NRHP (Greiser et al. 2005). Entrega provided information that indicates it currently would be able to avoid 40 of the 45 eligible sites by various methods, such as reroutes, bore, or crossing non-contributing segments of the sites. Several segments of five NRHP-eligible historic linear sites (Cherokee Trail, Overland Trail, Old Union Pacific Railroad Grade, Lincoln Highway, and Rawlins-Baggs Road) would be crossed by the proposed Entrega pipeline; however, not all of the segments contribute to the site's overall NRHP eligibility. Adverse effects to those segments that contribute to the site's eligibility would be avoided by boring under the segments. The BLM requested additional testing at numerous sites. Entrega plans to file addendum Class III inventory reports with the Commission that present the results of the surveys of reroutes designed to avoid eligible sites and the results of additional testing. Entrega continues to explore reroutes to avoid additional sites. For those sites that cannot be avoided by rerouting the pipeline, Entrega also is investigating the possibility of avoiding these sites through other means, including boring and directional drilling. Treatment plans for those eligible sites that cannot be avoided would be filed with the Commission after Entrega has received all agency comments on the inventory and testing reports for the project and determinations of eligibility have been made by the agencies for all sites located within the APE.

A total of 74 previously recorded sites were not relocated during the cultural resources surveys. Sixty-five of the sites are presumed destroyed or possibly plotted incorrectly and nine of the sites are buried sites with no surface expressions. Entrega has recommended additional testing at five of the sites and open trench inspection for the one of the sites. Although these 6 sites could not be relocated during surveys, previous investigations have demonstrated that the sites have the potential to contain buried features. Intensive surface reconnaissance is recommended for one site to identify the position of the site relative to the project area.

The City of Cheyenne (Preservation Planner) and a citizen expressed concern regarding an historic cultural resources site, and indicated that this site should be avoided. Entrega would fence and avoid the site.

3.8.2 Native American Consultation

Entrega sent initial consultation letters to 18 Native American tribes on April 14, 2004. The letters described the project and provided the tribes with the opportunity to comment on the project and identify sites or places that might be of religious or cultural significance to the tribes. Entrega also has conducted telephone

3.0 ENVIRONMENTAL ANALYSIS

follow-ups with the tribes. To date, 13 of the tribes have responded. **Table 3.8-1** lists the Native American tribes that have been contacted and summarizes concerns they have raised. Entrega has indicated that they are working with the various Native American tribes and intend to continue consultation throughout the environmental review and construction phase of the project. In addition, the FERC sent the NOI to these same tribes. No responses have been received to date.

**Table 3.8-1
Native American Consultations for the Entrega Pipeline Project**

Tribe	Date	Status
Apache Tribe of Oklahoma	01/10/05	Tribe requested copy of survey reports and to be notified if cultural resources are found.
Cheyenne & Arapaho Tribes of Oklahoma		Still reviewing consultation letter.
Cheyenne River Lakota Tribe	07/07/2004	Tribe has no comments/concerns at this time.
Comanche Tribe of Oklahoma	None ¹	
Crow Creek Lakota Tribe		Still reviewing consultation letter.
Crow Tribe	None ¹	
Eastern Shoshone Tribe	05/19/2004	Tribe requested copy of survey reports. No other comments at this time.
Jicarilla Apache Tribe	04/26/2004	Tribe has no interest in the project.
Kiowa Tribe of Oklahoma	07/07/2004	Tribe would like to be notified if cultural resources are found.
Northern Arapaho Tribe	07/13/2004	Tribe has no interest in the project.
Northern Cheyenne Tribe	05/18/2004	Tribe requested meeting with BLM or FERC to discuss the project.
Northern Ute Tribe	None ¹	
Oglala Lakota (Sioux) Tribe	07/22/2004	Tribe has no interest in the project.
Pawnee Nation of Oklahoma	04/26/2004	Tribe has no interest in the project.
Rosebud Lakota Tribe (same as Rosebud Sioux Tribe)	07/07/2004	Tribe has no comments/concerns.
Southern Ute Indian Tribe	11/04/2004	Tribe did not object to the project.
Standing Rock Lakota Tribe	05/25/2004	Tribe has no interest in the project.
Ute Mountain Ute Tribe	None ¹	

¹ To date, no response has been received.

3.8.3 Construction and Operational Impacts

Project impact or effects include not only the physical disturbance of an 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 the Colorado and Wyoming SHPOs and the BLM, the FERC would determine whether construction of the proposed project would affect any properties listed on, or eligible for listing on, the NRHP. If a property would be adversely affected, mitigation would be proposed. Mitigation may include, but not be limited to, one or more of the following measures: 1) avoidance through the use of realignment of the 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 the preparation of photographic and/or measured drawings documenting standing structures; and 3) the use of landscaping or other techniques that would minimize or eliminate effects on the historic setting or ambience of standing structures.

Cultural resources surveys still need to be completed for one access road in Colorado. To date, there are 33 sites that are recommended or officially determined not eligible for the NRHP, requiring no further work, while 43 sites are recommended or officially determined eligible for the NRHP. Avoidance is recommended for the 43 eligible sites. Entrega indicates it would currently be able to avoid 19 of these sites, and that it continues to explore reroutes designed to avoid additional eligible sites. Treatment would be proposed for those eligible sites that cannot be avoided. An additional 42 potentially eligible or eligible sites are presumed buried. Testing was conducted at 28 of the 42 buried sites to determine whether they extend into the Entrega pipeline corridor and to evaluate their research potential. Landowner permission could not be obtained to test the remaining 14 sites.

In Wyoming, 85 sites are recommended or officially determined not eligible for the NRHP, requiring no further work, 45 sites are recommended or officially determined eligible for the NRHP, and 17 sites are unevaluated. Entrega indicates it would currently be able to avoid 40 of the 45 sites, and that it continues to explore reroutes designed to avoid additional eligible sites. Treatment would be proposed for those eligible sites that cannot be avoided. A total of 74 previously recorded sites could not be relocated during the surveys. Previous investigations have demonstrated that six of these sites have the potential to contain buried features. Evaluative testing is recommended for five of the sites and open trench inspection is recommended for one of the sites.

The process of fully complying with Section 106 of the NHPA has not yet been completed for the EPP. Evaluative testing has not been completed and reroutes to avoid eligible sites have not been finalized. Once evaluations are complete and it has been determined which sites can or cannot be avoided, the FERC, in consultation with the BLM and SHPOs, would make final determinations of NRHP eligibility and project effects. If historic properties would be adversely affected, a treatment plan to mitigate any adverse effects would be prepared in consultation with the appropriate parties. Once a treatment plan is approved, Entrega would implement the specified treatment measures before notice to proceed with project construction is authorized in any given area. Implementation of treatment would occur only after certification of the proposed project. The FERC would ensure that treatment is carried out.

3.0 ENVIRONMENTAL ANALYSIS

To ensure that the FERC's responsibilities under the NHPA and its implementing regulations are met, **we recommend that:**

- **Entrega defer construction and use of facilities and staging, storage, and temporary work areas and new or to-be-improved access roads until:**
 - a. **Entrega files with the Secretary all remaining cultural resource inventory and evaluation reports, and necessary avoidance or treatment plans;**
 - b. **Entrega files with the Secretary the BLM's and the Colorado and Wyoming State Historic Preservation Offices' comments, as applicable, on all reports and plans; and**
 - c. **the Director of OEP reviews and approves all reports and plans and notifies Entrega in writing that it may proceed.**

- **All material filed with the Commission that contains location, character, and ownership information about cultural resources must have the cover and any relevant pages therein clearly labeled in bold lettering: "CONTAINS PRIVILEGED INFORMATION – DO NOT RELEASE."**

3.9 Socioeconomics

3.9.1 Population

In 2000, the population of Colorado was 4,301,261 and the population of Wyoming was 493,782. In part due to energy development activities, Colorado's population climbed by 5.8 percent to 4,550,688 in 2003, with Wyoming's population increasing by 1.5 percent to 501,242 (U.S. Census Bureau 2004). The five counties that would be crossed by the western and central portions of the proposed pipeline route are largely rural, generally with a single population center in proximity to the route. The three counties crossed by the eastern portion of the route, Laramie, Larimer, and Weld, also are relatively rural but more urbanized, with each having one or more metropolitan centers. Garfield and Routt Counties in northwestern Colorado though not directly affected by the proposed route, border Rio Blanco and Moffat Counties, and thus may experience indirect or secondary effects from the proposed project.

The least populous county crossed by the proposed pipeline route is Rio Blanco County, Colorado, which had a population of 5,986 in 2000. The most populated county that would be crossed by the proposed pipeline route is Larimer County, Colorado, which had a population of 251,494 in 2000. A majority of the population in Larimer County is centered around Fort Collins, Colorado, which is about 30 miles southwest from the proposed terminus at the Cheyenne Hub Metering Station. **Table 3.9-1** describes population and recent population change for the proposed project area.

Table 3.9-1
Population

County	2000	2003	Change, 2000 to 2003	
			Absolute	Percent
Albany, WY	32,014	31,887	(127)	-0.4
Carbon, WY	15,639	15,302	(337)	-2.2
Laramie, WY	81,607	84,083	2,476	3.0
Sweetwater, WY	37,613	37,018	(595)	-1.6
Garfield, CO	43,791	47,611	3,820	8.7
Larimer, CO	251,494	266,610	15,116	6.0
Moffat, CO	13,181	13,527	346	2.6
Rio Blanco, CO	5,986	5,938	(48)	-0.8
Routt, CO	19,690	20,788	1,098	5.6
Weld, CO	180,862	211,272	30,410	16.8

Source: U.S. Census Bureau, Population Division 2004.

Larimer and Weld Counties each experienced substantial population growth over the past 3 years, though much of the growth in Weld County occurred in the southern portion of the county, and is tied to the northward expansion of the Denver metropolitan area. The three rural counties in northwestern Colorado also have seen population gains, particularly Garfield County located just south of Rio Blanco County and the site of substantial energy exploration and development activity in recent years. Population changes in

3.0 ENVIRONMENTAL ANALYSIS

Wyoming have been relatively limited in scale, with three of the four counties losing population between 2000 and 2003.

Potential impacts to the existing socioeconomic environment of the proposed project area arise primarily due to the relatively large-scale, temporary influx of construction workers, and to a much lesser extent the additional operation personnel. Entrega anticipates approximately 1,000 to 1,100 construction personnel would be employed during the second half of 2005 to complete Segment 1 of the pipeline phase of the project. Segment 2 of the pipeline phase is proposed for construction during the summer and fall of 2006, with construction of the three compressor stations (Phase 2) scheduled for late 2006 and early 2007. Construction personnel would consist of Entrega employees, contractor employees, construction inspection staff, and environmental inspection staff. Entrega is planning to build the pipeline in four spreads, with construction activity occurring simultaneously in Spreads 1 and 2 (Meeker Hub to Wamsutter) in 2005 and Spreads 3 and 4 (Wamsutter to Cheyenne Hub) in 2006. The applicant anticipates between 425 and 550 construction and inspection personnel associated with each spread. In addition, seven meter stations would be built, one at the Meeker Hub Compressor Station, two near Wamsutter and four at the Cheyenne Hub Metering Station. Construction of the meter stations would require 50 to 75 workers for a relatively short period, (estimated to be 3 to 5 weeks per station). Entrega anticipates about 100 individuals across the project to be involved in material transportation and unloading. At this time, Entrega has proposed to commence construction of Segment 1 in July 2005. Each spread would require 4 to 6 months to complete, with all work to be completed by the end of the year.

Construction of each compressor station would require approximately 100 to 134 additional workers. Entrega has proposed to commence construction of the three compressor stations beginning in September 2006. A 6-month construction schedule is anticipated for each of the three compressor stations. During that period, personnel would work during daylight hours.

The staggered commencement of construction, brief duration of activity associated with the meter stations and scheduled construction of Segment 2 and the compressors in 2006/2007 yields a temporary peak workforce of about 1,065 workers for a 6-month period in 2005, and a peak of 1,470 workers in November and December 2006. Entrega's proposed construction plan is for Spreads 2 and 3 to commence at Wamsutter and move south and east, respectively. Spread 1 may involve smaller crews working at multiple locations simultaneously, while Spread 4 would commence at the Cheyenne Hub and move westward (**figure 3.9-1**).

Entrega, through its construction contractors and subcontractors, would attempt to hire temporary construction staff from the local population, i.e., currently residing in nearby areas of Colorado and Wyoming such that would not relocate and impose additional demands on housing. It is anticipated that up to 15 percent of the total construction workforce could be hired locally in the western portion of the project (i.e., Spreads 1, 2, and 3 and the three meter stations). The remaining 85 percent, approximately 900 workers at the peak in 2005, would consist of non-local hires. Note that the local/non-local status could change for some workers as the specific location changes. For example, residents of Rock Springs employed on Spread 2 may initially commute, but then relocate to Craig temporarily as the project construction moves southward.

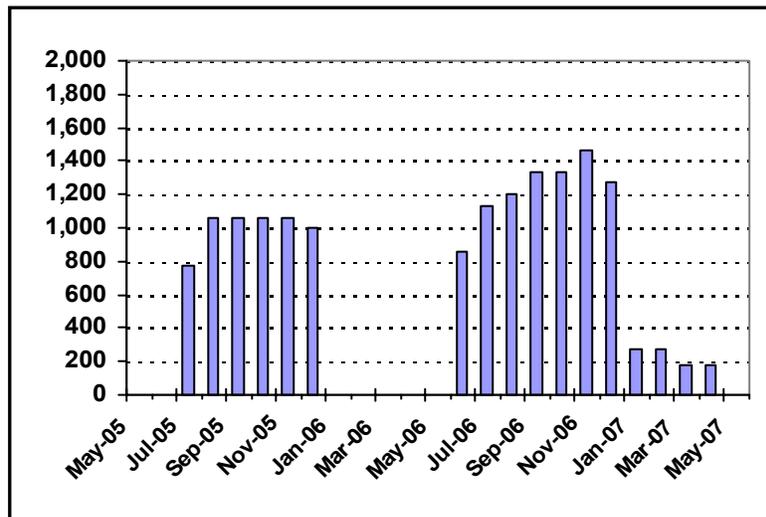


Figure 3.9-1. Projected Construction Workforce

Local hiring for Spread 4 and the four meter stations at the Cheyenne Hub Metering Station would likely be higher (i.e., 20 to 25 percent) due to the larger labor force and diminished competition in the four counties in the eastern portion of the proposed route. Non-local workforce requirements in 2006 could be as high as 1,040 workers for construction of the pipeline. Construction of the compressor stations would begin in September of 2006 and require an additional 300 to 400 workers.

Environmental inspection staff would likely consist entirely of non-local employees based on the specialized skills and experience required for the job.

Population impacts from the influx of temporary construction and inspection personnel would be temporary and dispersed across the proposed route. Due to the temporary and transitory nature of the work, most non-local workers would not be accompanied by spouses, other family members or nonfamily partners. Thus, the overall population impact would be only slightly higher than the number of workers (i.e., 20 to 40 percent). Nevertheless, the population impacts in the smaller communities would be moderate.

It is estimated that six to eight permanent employees would be required to oversee the operation and maintenance of the pipeline, including the compressor stations and other aboveground facilities. These employees would most likely be hired from outside the local labor force, as they would have specialized responsibilities or have current employment with Entrega, but then would establish residency in communities near the proposed project route. No additional personnel would be hired to operate and maintain the compressor stations as these facilities would be constructed to operate automatically. Any specific operation and maintenance task which cannot be completed by Entrega's staff would be completed on a contractual and as-needed basis. Given the small number of permanent workers, secondary employment effects would be limited. Thus, the project would not have a significant long-term impact on the permanent population.

3.0 ENVIRONMENTAL ANALYSIS

3.9.2 Employment and Economics

Based on data from the Colorado Department of Labor, the four counties crossed by the proposed pipeline route account for approximately 11 percent of the statewide civilian labor force, though most of that is in the central and southern portion of Larimer and Weld Counties that are some distance from the proposed project location. Moffat and Rio Blanco Counties both have relatively small scale labor forces, 6,783 and 3,678, respectively. In Wyoming, approximately 36 percent of the civilian labor force resides within the four counties that would be crossed by the proposed pipeline route. Carbon County has the smallest civilian labor force with 8,156 persons, and Laramie County has the largest civilian labor force with a total of 44,291 persons.

Unemployment rates across the project area have declined over the past year, ranging from 1.7 percent in Albany County to 5.8 percent in Weld County in August 2004 (Wyoming Department of Employment 2004; Colorado Department of Labor and Employment 2004). Statewide unemployment rates for the same period were 4.9 percent in Colorado and 3.0 percent in Wyoming. Unemployment rates are generally higher in those counties that experienced the strongest population growth in recent years (**table 3.9-2**). Given the limited size of the local labor force in the more rural counties, the number of available workers is very low, for example, 122 unemployed in Rio Blanco County and 243 unemployed in Carbon County.

Table 3.9-2
Labor Market Conditions, August 2004

County	Labor Force	Employed	Unemployed	Unemployment Rate
Albany, WY	18,497	18,182	315	1.7%
Carbon, WY	8,156	7,913	243	3.0%
Laramie, WY	44,291	42,565	1,726	3.9%
Sweetwater, WY	20,829	20,277	552	2.7%
Garfield, CO	28,379	27,696	683	2.4%
Larimer, CO	160,685	153,375	7,310	4.5%
Moffat, CO	6,783	6,437	346	5.1%
Rio Blanco, CO	3,678	3,556	122	3.3%
Routt, CO	12,462	12,167	295	2.4%
Weld, CO	105,308	99,193	6,115	5.8%

Sources: Colorado Department of Labor and Employment 2004; Wyoming Department of Employment 2004.

In northwestern Colorado, the primary employment sectors of the counties crossed by the proposed pipeline route are agriculture, oil and gas development, trade and construction, while mining (both mineral and oil and gas development) education, health, public administration, trade and tourism/travel are the primary employment sectors in Wyoming. The latter is due in part to the I-80 corridor across southern Wyoming. The two eastern Colorado counties have relatively diversified economies, including higher education, more typical of metropolitan areas.

In 2002, per capita personal income was \$33,723 in Colorado and \$31,021 in Wyoming. In Colorado, the four counties traversed by the proposed pipeline route have per capita incomes ranging from \$24,136 in Moffat County to \$27,439 in Routt and \$31,420 in Larimer County. In Wyoming, the counties traversed have per capita incomes that are all below the statewide average. Among Wyoming counties, Carbon County has the lowest per capita income at \$25,432 and Laramie County has the highest at \$30,949 (U.S. Bureau of Economic Analysis 2004).

Local businesses would benefit from demands for goods and services generated by the temporary construction workforce. In addition to the personal earnings of local temporary employees, estimated spending based on Entrega's workforce estimates and daily spending assumptions totals approximately \$24 million during Phase 1 and \$3 million during Phase 2. Benefits would accrue to many establishments across the entire proposed route, although Carbon County, Wyoming, would benefit the most, because it is expected to host the single largest share of nonlocal workers as well as contractor staging areas and pipe yards. Beneficial impacts on local businesses during Phase 2 would be concentrated in the western portion of the project area due to the locations of the proposed compressor stations, with Moffat County realizing the largest benefits.

In addition, local purchases for materials necessary with the EPP would be made. Entrega estimates that local purchases made by personnel associated with the construction of the EPP would primarily include consumables, fuel, and miscellaneous construction-related materials (e.g., office supplies). The costs estimated for the entire project related to materials are:

- Diesel fuel = \$3 million
- Gasoline = \$1.5 million
- Miscellaneous lumber, consumables, office supplies = \$200,000

The economic stimulus provided by the project would result in temporary secondary impacts on employment as local establishments add staff or increase hours worked by existing staff to accommodate the increases in demand. Long-term construction projects may generate between 0.7 and 1.1 additional jobs for each direct job associated with the project. However, given the temporary nature of the EPP and the changing location of activities, the secondary impacts would be expected to be on the order of about 0.35 jobs, 744 jobs total, across the entire project.

Construction and operation of the project would have beneficial impacts on local sales and lodging tax revenue. Based on the estimated retail purchases by temporary workers and current sales tax rates, additional sales and lodging taxes during Phase 1 would be about \$561,000 in Wyoming and \$364,000 in Colorado. About 66 percent of the Wyoming total would accrue to the state, the remainder to various county and municipal governments. In Colorado, about 41 percent would accrue to the state, the remainder to local governments. During Phase 2, the additional totals are estimated at \$75,000 in Wyoming and \$49,000 in Colorado, with similar distributions of the accruals to state and local governments. Additionally, Entrega would pay sales tax for the lease and/or rental of various office and construction equipment and space for FOs and the storage of construction equipment.

3.0 ENVIRONMENTAL ANALYSIS

Of greater significance to state and local revenues would be the sales or use taxes on pipe and other materials and installed equipment associated with the project. Such purchases are subject to sales tax if the items are manufactured in-state, or use tax when purchased outside the respective states and imported into state. Typically project owners and contractors are entitled to a credit for taxes paid in another jurisdiction (e.g., the point of purchase or manufacture), but generally have an option to specify the point of delivery as the location for purposes of taxation. All four Wyoming counties impose a use tax, as does Rio Blanco County. Moffat County does not impose a use tax. Entrega's estimated sales/use tax obligation, based on current tax rates and assuming it exercises the option for local taxation, is \$11.4 million in Wyoming and \$3.5 million in Colorado for Phase 1. Corresponding tax revenues for Phase 2 are \$1.4 million in Wyoming and \$1.3 million in Colorado. In Wyoming about 80 percent of the total would accrue to the state, the remainder distributed among the counties based on the value of installed materials and equipment. The distribution in Colorado would be about 75 percent to the state and 25 percent to Rio Blanco County.

During construction Entrega anticipates that total payroll for the project would be about \$176 million (approximately two-thirds associated with construction in Wyoming and one-third in Colorado). Estimated payroll for Phase 1 is \$162 million (92 percent of the total), with \$14 million in added payroll in Phase 2. Individual workers who are Colorado residents, or who work in Colorado on a temporary basis would incur an income tax liability on those earnings. This would temporarily increase the tax revenue for the state, although the increase would be relatively small.

Long-term income associated with Entrega's operational workforce and the wages and salaries are not quantified, but would be relatively small in comparison to the construction payroll.

3.9.3 Housing

Housing availability across the project area is a function of the housing stock, recent economic and population growth, the inventory of short-term lodging accommodations, such as recreational vehicle (RV) parks and hotel and motel rooms, and demand for housing from other sources. In 2000, the total housing supply ranged from 2,855 units in Rio Blanco County to 105,392 units in Larimer County. Carbon County registered a total housing supply of 8,307 units (**table 3.9-3**).

A key indicator of housing availability to meet short-term needs is the number of available rental units. Among the rural counties in the western portion of the project area the number of such units recorded in the 2000 Census ranged from 127 units in Rio Blanco to 680 units in Sweetwater County. In the case of the latter, most of those units were in Rock Springs or Green River, a considerable distance from the proposed route. A larger number of rental units were available in the more urban communities in the eastern portion of the proposed route.

Relatively little new residential construction, a combined 561 total units permitted, has occurred in Rio Blanco, Moffat, Carbon, and Sweetwater Counties since the 2000 Census (U.S. Census Bureau 2004; Colorado Division of Local Government 2004; and Wyoming Department of Administration and Information 2004). Significant new construction has occurred in all the other counties, including 824 new units in Albany County, 1,876 units in Garfield County, and 1,821 units in Laramie County. Most of the new housing units were single-family residences.

**Table 3.9-3
Housing Assessment, November 2004**

County	Total Units – 2000	Available Rental Units – 2000	Building Permits 2000 – 2003
Albany, WY	15,215	353	824
Carbon, WY	8,307	360	131
Laramie, WY	34,213	823	1,821
Sweetwater, WY	15,921	680	190
Garfield, CO	17,336	217	1,876
Larimer, CO	105,392	1,342	13,272
Moffat, CO	5,635	189	180
Rio Blanco, CO	2,855	127	60
Routt, CO	11,217	956	1,359
Weld, CO	66,194	826	6,115 ¹

¹Includes only the unincorporated county and City of Brighton, excludes Greeley and other municipalities.

Sources: U.S. Census Bureau 2004; Colorado Division of Local Government 2004; Wyoming Department of Administration and Information 2004.

A second critical component of local housing markets is the inventory of short-term accommodations. Such accommodations include RV spaces, motel and hotel rooms and mobile home spaces. In some instances, recreational cabins and seasonal housing for migratory workers also may be available. With the exception of Rio Blanco County with 404 units, the inventory of such accommodations is relatively large in most of the counties because tourism, travel, and outdoor recreation play major roles in the local economies (**table 3.9-4**).

The short-term accommodations tend to be geographically concentrated in the largest communities in each county, although there are some RV parks and smaller motels in outlying communities, particularly along the I-80 corridor in Carbon County.

Vacancy surveys of rental housing in Wyoming indicate limited availability across the study area, with estimated vacancy rates ranging from under 1.0 percent in Sweetwater County to 8.4 percent in Carbon County. However, even the latter represents only about 50 units. (Wyoming Housing Database Partnership 2004). Similar surveys for Larimer and Weld Counties in eastern Colorado indicate substantially improved availability, with vacancy rates of over 11.0 percent. (Colorado Department of Local Affairs 2004). Vacancy rates for rental housing are not reported for rural Colorado, but anecdotal reports suggest limited availability in many communities, although housing is reportedly more available in the Craig area following the recent completion of a major retrofit project at the nearby powerplant. Anecdotal information also indicates limited

3.0 ENVIRONMENTAL ANALYSIS

**Table 3.9-4
Estimated Temporary Housing Inventories**

	RV Spaces	Motel/Hotel Rooms	Mobile Home Spaces	Total	Temporary Housing Availability
Albany, WY	181	1,074	1,237	2,492	Fair
Carbon, WY	395	1,367	2,583	4,345	Limited
Laramie, WY	490	2,407	2,297	5,194	Fair
Sweetwater, WY	215	1,718	3,696	5,629	Limited
Garfield, CO	196	>1,000	NA	>1,196	Very Limited
Larimer, CO	375	1,877	NA	2,252	Good
Moffat, CO	221	600	858	1,679	Fair to Good
Rio Blanco, CO	108	143	153	404	Very Limited
Routt, CO	105	>1,000	NA	>1,105	Good
Weld, CO	115	678	614	1,407	Good
Totals	2,401	11,864	11,438	25,703	

Note: RV spaces exclude some or all spaces in national forest and state park campgrounds. Only some, unknown number, of the mobile home spaces are available at any one time and may not be available for short-term use.

Sources: Appendix 5A – EPP, Pedersen Planning Consultants 2004; various community/tourism promotion websites; T.L. Enterprises 2004.

availability of short-term lodging across most of the western portion of the study area, particularly in Sweetwater and Rio Blanco Counties, due to ongoing energy resource development and seasonal tourism and hunting demand. Temporary housing availability is relatively better in the eastern counties which generally have larger inventories of rooms and spaces and are not experiencing the comparable levels of competing demand from ongoing energy resource development. Given the above, housing availability can be characterized as limited to very limited in the western counties and fair to good in the eastern counties.

The project construction period would be relatively short and most non-local workers likely would be unaccompanied during their work tenure on the project. Consequently, it is expected that most project workers would use temporary housing, such as hotels/motel, RV parks, and campgrounds. Some workers would likely resort to renting furnished apartments and homes, due to availability constraints of other accommodations, though this is generally less preferable due to landlord and property management company preferences for 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 on the national forests or at state parks despite the fact that those sites have 14-day stay limits. Furthermore, some individuals may desire to relocate during the term of the project as the active activity area in each spread moves along the corridor. The net effect of these factors is that the temporary housing demand would be dynamic. An assessment of the temporary housing demands, based on the local/nonlocal hiring assumptions outlined above, the locations and driving distances involved

and the availability of temporary housing yielded the temporary housing demand profile shown in table 3.9-5.

**Table 3.9-5
Projected Peak Temporary Housing Requirements**

	Projected Non-Resident Workers		Percent Distribution, By Month	
	Phase 1, Segment 1	Phase 1, Segment 2 and Phase 2	Phase 1, Segment 1	Phase 1, Segment 2 and Phase 2
Albany, WY	12	192	1	18
Carbon, WY	201	439	22	42
Laramie, WY	12	104	1	10
Sweetwater, WY	154	67	17	6
Garfield, CO	130	26	14	2
Moffat, CO	213	96	24	9
Rio Blanco, CO	141	43	16	4
Routt, CO	37	14	4	1
Larimer, CO	--	40	0	4
Weld, CO	--	20	0	2
Total	900	1,041	100	100

Source: Sammons/Dutton LLC. 2005.

Peak temporary housing demand for Segment 1, Phase 1 is projected at 900 units between September and November 2005, when construction of Spreads 1 and 2 and three metering stations is occurring. Demand would initially be heaviest in Moffat and Carbon Counties. Availability constraints in Rio Blanco and possibly Moffat Counties are likely to result in commuting from nearby locations in Routt and Garfield Counties. When construction activity on Segment 2, Phase 1 and the three compressors (Phase 2) is occurring, strong housing demand would continue in Carbon County, however, temporary demand would increase to more than 190 units in Albany County. In Carbon County, demands for temporary housing are likely to spillover from Rawlins to smaller, outlying areas like Saratoga, Hanna, and Elk Mountain. The temporary housing demands associated with the project would compete with summer tourism and fall hunting demands across the region. Consequently, though for relatively short-duration, some smaller communities would experience extremely tight market conditions for temporary housing. The larger communities, particularly Laramie, Cheyenne, and Fort Collins have adequate capacity to meet the needs.

Housing requirements for the operation and maintenance of the pipeline would be minimal. Sufficient permanent housing is available within or near the project area for the estimated six to eight full-time Entrega employees.

3.0 ENVIRONMENTAL ANALYSIS

3.9.4 Public Services and Facilities

Table 3.9-6 outlines selected public services and facilities serving the proposed project area. In general, the public services available are functions of the size and population of the county and the numbers of larger communities in the county. Law enforcement is provided by multiple providers including the respective state patrols, county sheriffs and local police departments. In many instances, mutual aid/cooperative agreements among agencies allow members of one agency to provide support or backup to the other agencies in emergency situations.

Table 3.9-6
Existing Public Services and Facilities

State/County	Police/Sheriff Departments ¹	Fire Departments ²	Medical Facilities ³
COLORADO			
Rio Blanco	3	2	2 Hospitals
Moffat	2	2	1 Hospital
Larimer	5	13	3 Hospitals
Weld	15	19	1 Hospital
WYOMING			
Sweetwater	4	9	1 Hospital
Carbon	7	8	1 Hospital
Albany	2	4	1 Hospital
Laramie	4	9	2 Hospitals

¹ Capitolimpact.com. <http://www.captiolimpact.com>, accessed 10/08/03. Does not include special law enforcement units for universities.

² Firehouse Network. <http://www.fire-ems.net>, accessed 10/13/03. Includes volunteer, district, city, and town departments, but does not include departments and services offered by the BLM or the Department of Defense.

³ Colorado Health and Hospital Association. <http://www.cha.com/Hospitals/hospitals.shtml>, accessed 10/13/03. Wyoming Hospital Association. <http://www.wyohospitals.com/find.html>, accessed 10/13/03.

A network of fire departments and districts provide fire protection and suppression services across the region. Many of the fire districts across the region are staffed by volunteers and are housed in stations located in the larger communities. Together, these factors can increase response times to incidents. Federal land management agencies also maintain wild land and forest fire suppression capabilities in the region, though these capabilities are not generally staffed for quick response dispatch.

At least one acute care hospital is operating in each county crossed by the proposed route, providing emergency medical care and in several cases also serving as the base for local emergency medical response and transport services. As in the case of fire suppression, response times to highway or construction-related accidents in parts of the proposed route may be lengthy given communication, dispatch and travel time considerations.

Higher level trauma centers capable of treating serious injuries requiring more specialized or intensive care are located in Rock Springs and each of the four eastern counties in the study area; Albany, Laramie, Larimer, and Weld. The most serious injuries may require transport to regional trauma centers in Grand

Junction, Colorado and Casper, Wyoming or even to Denver or Salt Lake City. The regional trauma centers all provide emergency medical air transport, via either helicopter or fixed wing aircraft, with airports capable of accommodating fixed-wing aircraft located in Rifle, Meeker, Craig, Rawlins, and Rock Springs.

Construction of the pipeline could result in minor, temporary impacts on local facilities and services, including law enforcement, fire and medical services. As highlighted by the Rio Blanco Sheriff during public scoping, lengthy emergency medical response times are of particular concern in the more remote stretches of the proposed pipeline route. To address these concerns, Entrega has drafted an on-site ERP, which includes the formation of emergency response teams for the project (Entrega 2004g). The ERP would be provided to the BLM, Colorado and Wyoming Departments of Transportation and the FERC upon completion.

Other construction-related impacts on local services may include increased demand for permits for vehicle load and width limits and local police assistance during construction at road crossings to facilitate traffic flow. Entrega would work with the local law enforcement, fire departments, and emergency medical services to coordinate for effective emergency response. The degree of impact 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 and therefore not expected to be significant.

The limited number of permanent employees associated with the proposed project would result in negligible long-term impacts on public services.

3.9.5 Public Sector Fiscal Resources

Local municipal governments, school districts and some other government-funded entities rely heavily on property and sales tax revenues to fund their ongoing operations. **Table 3.9-7** lists the 2003 total assessed valuation from all sources and estimated gross retail sales of all establishments. Note that the values for Wyoming and Colorado counties are not directly comparable due to differences in property assessment practices, but comparisons between counties within a state reflect differences in the scale of development and natural resource wealth. For instance, assessments on mineral production account for about 63 percent of the total assessed valuation in Carbon and Sweetwater Counties and 76 percent of Rio Blanco County's total. Other state-assessed property, including utilities and oil and gas transmission systems account for 48 percent of the total valuation in Moffat County and between 10 and 13 percent of the total in Albany, Carbon, Sweetwater, Rio Blanco, Routt and Weld Counties. Statewide total assessed valuation on gas transmission pipelines in 2003 was \$121.7 million in Wyoming and \$255.6 million in Colorado. Residential, commercial and industrial development are the primary constituents of the tax base in the more urban counties including Albany, Laramie, Larimer, Weld, and Routt Counties. The latter is included as a result of the extensive resort development in and around Steamboat Springs.

3.0 ENVIRONMENTAL ANALYSIS

Table 3.9-7
County Property and Sales Tax Base

	Assessed Valuation 2003	Gross Retail Sales (Estimated)
Albany, WY	208,799,630	422,378,000
Carbon, WY	382,269,728	344,978,000
Laramie, WY	538,688,179	1,221,269,000
Sweetwater, WY	1,160,741,992	1,073,949,000
Garfield, CO	923,800,470	1,243,843,000
Larimer, CO	3,108,530,290	5,725,901,000
Moffat, CO	298,876,180	226,378,000
Rio Blanco, CO	304,607,460	169,443,000
Routt, CO	687,473,320	591,417,000
Weld, CO	2,487,423,740	4,061,799,000

Note: Retail sales for Wyoming are Fiscal year 2004, those for Colorado are for calendar year 2003.

Sources: Wyoming Department of Administration and Information 2004; Wyoming Taxpayers Association 2004; Colorado Division of Local Affairs 2004.

Gross annual retail sales reflect a locality's population, income, the level of travel and tourism in the region, the presence of special populations such as a college or university, and the economic stimulus provided by special activities such as construction projects and energy and mineral resource development. Both states, all of the counties but Weld, and many of the communities within the counties levy sales taxes on retail purchases. Based on total annual gross retail sales, Rio Blanco and Moffat Counties have the smallest trade and service sectors of all the counties crossed by the proposed project while Weld and Larimer Counties have the largest. As reflected in **table 3.9-7**, the range extends between \$169.4 million (Rio Blanco County) and \$5.7 billion (Larimer County).

During operation of the pipeline, Entrega would pay property/ad valorem taxes to local governments crossed by the proposed pipeline. In Wyoming, those payments would include taxes associated with a mandatory statewide levy to help support public education. Transmission lines are centrally assessed by the state, with the total valuation then allocated among the local counties based on their respective shares of the installed pipelines and facilities. Initially the cost of construction provides a reasonable proxy for the assessed valuation of gas transmission systems. Over time, the assessment focuses more on the respective facility's contribution to system-wide income and depreciated value, generally resulting in lower assessment. Hence, the aggregate assessed valuation of gas transmission systems (327.5 miles of pipeline and corresponding compressors and other equipment) in Colorado and Wyoming in 2003 was just over \$377 million, with an corresponding pre-assessed value of \$1.9 billion. For this analysis, it is assumed that the long-term assessment would decline to 40 percent of the initial construction cost. **Table 3.9-8** summarizes the projected assessed valuation and corresponding annual property taxes, by county, directly associated with Entrega's proposed pipeline.

Initially, the estimated aggregate assessed valuation would be about \$102.9 million. Of that sum, 46 percent would be in Wyoming and 54 percent in Colorado. Total annual property taxes levied on those assessments

are projected at nearly \$6.0 million. Over time, the total assessed value is anticipated to decline to \$41.1 million and the annual property taxes paid to \$2.4 million. The ongoing revenues, given the relatively low demands on public services and facilities would be a significant benefit associated with the project.

**Table 3.9-8
Projected Assessed Value and Annual Property Taxes, by County**

	Assessed Valuation		Property Tax Mill Levy ³	Annual Property Tax	
	Initial Construction ¹	Long-term ²		Initial Construction	Long-term
Albany, WY	9,790,000	3,916,000	63.750	624,090	249,640
Carbon, WY	18,531,000	7,412,000	60.313	1,117,660	447,060
Laramie, WY	3,597,000	1,439,000	66.000	237,400	94,960
Sweetwater, WY	15,108,000	6,043,000	61.823	934,010	373,600
Larimer, CO	47,000	19,000	73.438	3,430	1,370
Moffat, CO	35,169,000	14,068,000	60.720	2,135,480	854,190
Rio Blanco, CO	15,480,000	6,192,000	37.764	584,590	233,830
Weld, CO	<u>5,224,000</u>	<u>2,090,000</u>	<u>67.291</u>	<u>351,520</u>	<u>140,610</u>
Total	102,946,000	41,179,000	NA	5,988,180	2,395,260

¹ Initial valuations based on 11.5 percent assessment rate in Wyoming and 29 percent in Colorado.

² Assumes assessed valuation at 40 percent of construction cost after the pipeline has been operational for several years and is centrally assessed based on its contribution to annual corporate income.

³ Average mill levies for real property in unincorporated areas of each county.

Source: ENSR, based on data from Entrega Gas Pipeline, Inc.; local county assessors; the Colorado Division of Property Taxation 2004; Wyoming Department of Revenue 2004.

Tax revenues are typically used by local and state governments for infrastructure improvements such as roads, schools, and health facilities, and to meet other needs of the community.

Retail sales, property, income (in Colorado) and other taxes from the permanent employees living in would have comparatively no effect on state, county, or local tax revenues.

3.9.6 Transportation

The major transportation routes that would be crossed by the proposed pipeline project include U.S. I-25 and I-80, U.S. Routes 40 and 85, Colorado State Routes 13 and 14, and Wyoming State Routes 430 and 789. Rio Blanco County, Colorado, has two Colorado State Routes traversing through it, as most of the county is unpopulated, contains largely public lands, has rugged terrain, and is not located between two major cities. In contrast, the counties of Carbon, Albany, and Laramie, Wyoming, have various routes of transportation including U.S. Interstates, U.S. Routes, and Wyoming State Routes.

Another significant transportation feature in the region is the Union Pacific mainline route across southern Wyoming. The railroad corridor and I-80 generally parallel each other across much of the project area, the two major points of divergence occur in Carbon and Albany Counties where the railroad alignment goes around mountainous areas while the interstate highway is routed over and through the mountains.

3.0 ENVIRONMENTAL ANALYSIS

Construction across roads, highways, and railroads would result in short-term impacts on public transportation while construction activities pass through the project area. Entrega has developed a draft Traffic and Transportation Management Plan to assist in mitigating potential impacts of project-related road use and construction activity (Entrega 2004h).

Entrega has stated that major paved roads, highways, and railroads would generally be crossed by boring beneath the road or railroad. These crossings would require the approval and appropriate permits from railroad companies, as well as state and local agencies. Boring typically requires additional temporary workspace areas on both sides of the crossing for excavating bore pits to the depth of the pipeline while the roadway or railroad is allowed to remain open. There would be little or no disruption of traffic at road or railroad crossings that are bored.

Smaller or unpaved roads would typically be open cut where permitted by local authorities or landowners. The open-cut crossing method could require temporary closure of a road and establishment of detours. If no reasonable detour is feasible, at least one lane of a road would be kept open to traffic, except for brief periods when it is essential to close the road to install the pipeline. Entrega would avoid closing roads during peak traffic hours. Open-cut crossings would typically be completed and the road resurfaced in 2 to 10 days.

To maintain safe conditions, Entrega would direct its construction contractors to ensure enforcement of local weight restrictions and limitations by its vehicles and to remove any soil that is left on the road surface by the crossing of construction equipment. When it is necessary for equipment to cross roads, mats or other appropriate measures (e.g., sweeping) would be used to reduce deposition of mud.

Movement of construction equipment, materials, and crew members would result in an additional short-term impact on the transportation network. Much of the proposed project area is readily accessible by U.S. Interstates, state highways, secondary state highways, and county roads. Impacts on local traffic levels would be temporary given the linear and dispersed nature of the project as construction would move sequentially along the proposed pipeline route. Construction workers would commute to and from the project area from temporary housing in local towns and cities, although this would typically begin before sunrise and end after sunset, times of the day when daily local traffic tends to be light. Consequently, short duration congestion is likely to occur in some locations, affecting residents and other travelers as well.

Minimal traffic is anticipated to be associated with operation and maintenance of the new pipeline as only six to eight permanent workers would be required to operate the pipeline. Therefore, no impacts on transportation networks would be expected to occur during operation of the proposed pipeline.

3.9.7 Property Values

Approximately 44 percent of the land affected by construction and operation of the proposed project would be on public lands; lands are managed by the BLM (32 percent), the State of Colorado (5 percent), the State of Wyoming (4 percent), the cities of Laramie and Cheyenne, Wyoming (3 percent), and the City of Fort Collins, Colorado (1 percent). The remainder of the land that would be affected (56 percent) is privately owned. A detailed description of land ownership is presented in chapter 3.0.

On both public and private lands, Entrega would acquire an easement for both the temporary (for construction) and permanent ROWs. The easement would provide Entrega the right to construct, operate, and maintain the pipeline, and establish a permanent ROW. In return, Entrega would compensate the landowner for use of the land and the temporary loss of crops or forage. Where the proposed pipeline route would cross federal land, Entrega would acquire a ROW grant for construction and operation of the proposed facilities. The ROW grant essentially allows Entrega to lease the land from the BLM.

The potential effect that a pipeline easement may have on private property values or property income is an issue that would be negotiated between the parties during the easement acquisition process. The easement acquisition process is designed to compensate a landowner for the right to use the property for pipeline construction and operation. The impact a pipeline may 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. Construction of the proposed pipeline would not change the general use of the land, but would preclude construction of aboveground structures on the permanent ROW and might interfere with other current uses, e.g., irrigation and raising crops, on a short-term or long-term basis, or the loss of non-renewable resources or destruction of other improvements such as fences.

Prior to initiating any construction activities on non-federal lands, an easement would be pursued by the pipeline company to convey ROW from the landowner to the pipeline company. The easement negotiations between the company and the landowner also would include compensation for loss of use during construction, loss of nonrenewable or other resources, damage done to property during construction, and allowable uses of the ROW after construction. Because the easement acquisition process is conducted with the landowner, it is possible that tenants or lessees could be adversely impacted, though it is not known whether any instances of such impacts would occur in conjunction with the Entrega pipeline.

If an easement cannot be negotiated with the landowner and the project has been certificated by the Commission, the company may use the right of eminent domain granted to it under Section 7(h) of the NGA to obtain the ROW and extra work areas identified in the Certificate. Section 7(h) implies that eminent domain is a remedy of last resort, to be used “when any holder of a certificate of public convenience and necessity cannot acquire by contract, or is unable to agree with the owner of property to the compensation to be paid for, the necessary right-of-way...” There are a number of options available, short of eminent domain, to secure the property:

- negotiate to buy the land;
- negotiate to lease the land; or
- negotiate a “restrictive easement” arrangement with the landowner.

The company would still be required to compensate the landowner for the ROW and for any damages incurred during construction. However, the level of compensation would be determined by a court according to state law. Special permits would be obtained as needed for pipeline ROW through town, state, or federal lands.

3.0 ENVIRONMENTAL ANALYSIS

Entrega is currently working to obtain the necessary easements for the proposed facilities. Through the negotiations with landowners, Entrega would be able to make minor route adjustments to accommodate landowner needs and requirements as long as those changes would not affect any environmentally sensitive areas, or affect other landowners without their approval. If easements are acquired through the use of eminent domain, it is more difficult to make adjustments to the route.

3.9.8 Environmental Justice

EO 12898 on Environmental Justice recognized the importance of using the NEPA process to identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations. The provisions of EO 12898 apply equally to Native American programs. The EPA provides guidance on determining whether there is a minority or low income community to be addressed in a NEPA analysis. Minority population issues must be addressed when they comprise over 50 percent of an affected area or when the minority population percentage of the affected area is substantially greater than the minority percentage in the larger area of the general population. Low income populations are those that fall within the annual statistical poverty thresholds from the U.S. Department of Commerce, Bureau of the Census Population Reports, Series P-60 on Income and Poverty.

A description of the population types (i.e., races) residing within the eight counties crossed by the proposed pipeline route based on U.S. Census Bureau data from 2000 is presented in **table 3.9-9**. In Colorado, the proposed pipeline route would cross counties that generally contain a smaller proportion of minorities than are found statewide in Colorado with the exception of Weld County. Demographics for Wyoming counties that would be crossed by the proposed pipeline show a slightly larger proportion of minorities compared to Wyoming's statewide average.

The percent of the population that earn incomes below the poverty level are summarized by county in **table 3.9-9**. In Colorado, Rio Blanco and Weld Counties have poverty rates higher than the statewide average. In Wyoming, Carbon and Albany Counties have a greater percentage of people living in poverty than the statewide average.

Entrega's proposed pipeline route effectively bypasses all concentrations or clusters of residential and commercial development, and for the most part is located on public lands or collocated with other utilities or near highway corridors. Furthermore no residential or commercial displacements are anticipated. Thus, the potential for adverse effects on minorities or low-income populations, much less disproportionately high effects is remote.

**Table 3.9-9
Race and Poverty**

State/ County	Race as a Percentage of Total Population ¹							Persons of Hispanic or Latino Origin, Percent (2000) ¹	Persons Below Poverty, Percent (1999) ²
	White	Black or African American	Asian	American Indian and Alaska Native	Native Hawaiian and Other Pacific Islander	Persons Reporting Other Race/Two or More Races	Total		
COLORADO	82.8	3.8	2.2	1.0	0.1	10.0	99.9	17.1	9.3
Rio Blanco	95.0	0.2	0.3	0.8	0.0	3.7	100.0	4.9	9.6
Moffat	93.6	0.2	0.3	0.9	0.0	5.0	100.0	9.5	8.3
Larimer	91.4	0.7	1.6	0.7	0.1	5.6	100.1	8.3	9.2
Weld	81.7	0.6	0.8	0.9	0.1	16.0	100.1	27.0	12.5
WYOMING	92.1	0.8	0.6	2.3	0.1	4.3	100.1	6.4	11.4
Sweetwater	91.6	0.7	0.6	1.0	0.0	6.0	99.9	9.4	7.8
Carbon	90.1	0.7	0.7	1.3	0.1	7.3	100.2	13.8	12.9
Albany	91.3	1.1	1.7	1.0	0.1	4.8	100.0	7.5	21.0
Laramie	88.9	2.6	1.0	0.8	0.1	6.6	100.0	10.9	9.1

¹ U.S. Department of Commerce, Bureau of the Census, Census 2000a: Summary File 1 (SF 1) 100-Percent data; DP-1- Profile of general demographic characteristics.

² U.S. Department of Commerce, Bureau of the Census, Census 2000b: Summary File 3 (SF 3) – Sample Data; DP-3 - Profile of selected economic characteristics.

Note: 1) This table is based on U.S. Census Bureau figures that, due to rounding, may total slightly more or less than 100 percent.

2) People who identify their origin as Hispanic or Latino may be of any race. Thus, the percent Hispanic or Latino should not be added to the race as percentage of population categories.

3.0 ENVIRONMENTAL ANALYSIS

3.10 Air and Noise Quality

3.10.1 Air Quality

Climate

The regional climate of the proposed project area is predominantly classified as continental with some areas in Wyoming classified as temperate semi-arid. Surface wind direction and precipitation vary in the proposed project area due to significant geographical features. However, the specific characterization of the local weather based on data from Meeker, Colorado indicates an average maximum temperature in July of 86 degrees Fahrenheit (°F) and an average minimum temperature in January of 7°F with an average annual precipitation of 16.4 inches.

The average annual snowfall in Meeker from January 1900 through December 2003 was 69.8 inches. A representative station in Cheyenne, Wyoming, with wind observations from 1930 to 1996 indicates an annual average wind speed of 13 miles per hour and a predominant wind direction of west-northwest.

The climate of the west slope in western Colorado is primarily influenced by Pacific air masses which flow over the Sierra Nevada and Cascade Mountains. As the air masses pass over these mountains they lose much of the moisture that is typical of maritime air. This produces the arid environment of the intermountain region. In fact, the overwhelming characteristic of the intermountain portion of the west slope climate at lower elevations is arid. Typically, lower elevations in this area receive less than 10 inches (25.5 centimeters) of precipitation annually. The higher elevations in the mountains receive much greater amounts of precipitation, often 4 to 5 times as much as the valleys.

Existing Air Quality

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

The EPA has established National Ambient Air Quality Standards (NAAQS) for seven pollutants: sulfur dioxide (SO₂), carbon monoxide (CO), nitrogen dioxide (NO₂), ozone (O₃), particulate matter (PM₁₀ and PM_{2.5}), and lead. The NAAQS were set at levels the EPA believed were necessary to protect human health (primary standards) and human welfare (secondary standards). The Federal NAAQS for criteria pollutants are the same as the state standards established by the CDPHE and WDEQ, except the WDEQ regulates sulfur oxides (SO_x) instead of SO₂. All parts of Colorado and Wyoming through which the proposed project would be located are classified as attainment for all criteria pollutants.

Regulatory Requirements for Air Quality

The proposed pipeline project would generate air emissions through both short-term construction activities and long-term operation of the stationary emission units at the compressor stations. Emissions from all

phases of construction and operation of the emission units would be subject to applicable state and federal air regulations.

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

- New Source Performance Standards (NSPS);
- New Source Review/PSD review;
- Title V operating permits;
- National Emission Standards for Hazardous Air Pollutants (NESHAPs);
- Federal Class I area protection; and
- State regulations.

New Source Performance Standards

NSPS, codified in 40 CFR 60, establish pollutant emission limits and monitoring, reporting, and recordkeeping requirements for various emission sources based on source type and size. The NSPS apply to new, modified, or reconstructed sources. The federal NSPS have been incorporated into AQCC Regulation 6 and WAQS&R chapter 5.0. The potentially applicable NSPS are described below.

Subpart GG of the NSPS applies to new, modified, or reconstructed stationary gas turbines with a heat input at peak load of greater than or equal to 10 million British thermal units per hour (MMBtu/hr). The new turbines that would be installed as a part of the project are greater than 10 MMBtu/hr and are therefore subject to NSPS subpart GG. Subpart GG establishes oxides of nitrogen (NO_x) emission limits and fuel sulfur content limits. The gas turbines would meet the requirements of subpart GG by burning only pipeline quality natural gas.

NSPS subpart KKK applies to volatile organic compound (VOC) emissions from equipment leaks at onshore natural gas processing plants. Natural gas processing plants are defined under subpart KKK as any processing site engaged in the extraction of natural gas liquids from field gas, fractionation of mixed natural gas liquids, or both. The proposed Entrega compressor stations do not meet the definition of onshore natural gas processing plants; therefore, subpart KKK does not apply.

NSPS subpart LLL applies to sweetening units and sulfur recovery units at onshore natural gas processing plants. Sweetening units are defined by subpart LLL as process devices that separate the hydrogen sulfide (H₂S) and carbon dioxide (CO₂) contents from the sour natural gas. Sulfur recovery units are defined as process devices that recover elemental sulfur from the H₂S and CO₂ generated by a sweetening unit. No equipment would be installed at the proposed Entrega compressor stations to remove CO₂ or H₂S from the gas; therefore, subpart LLL does not apply.

3.0 ENVIRONMENTAL ANALYSIS

Prevention of Significant Deterioration

Title I of the CAA establishes guidelines for the preconstruction/modification review of large air emission sources. Construction of sources in attainment areas must be reviewed in accordance with the PSD regulations. To be classified as a new major PSD source, the potential emissions from the source must either be greater than 100 tons per year (tpy) for any pollutant regulated by the EPA under the CAA for sources that are among the 28 source categories listed in section 169 of the CAA, or greater than 250 tpy for any pollutant regulated by the EPA under the CAA for sources that are not among the 28 source categories listed in section 169 of the CAA. Best Available Control Technology (BACT) analyses and detailed dispersion modeling are required if a new source is classified as a major PSD source.

Natural gas compressor stations are not identified in the list of 28 source categories in section 169 of the CAA; therefore, the applicability threshold for PSD review for the proposed compressor stations is 250 tpy.

Title V Operating Permits

Title V of the CAA requires states to establish an air operating permit program. The requirements of Title V are outlined in 40 CFR 70 and the permits required by these regulations are often referred to as Part 70 permits. Colorado and Wyoming have incorporated this program in Regulation 3 of the AQCC and chapter 6.0 of the WAQS&R.

If a facility's potential to emit exceeds the criteria pollutant or hazardous air pollutant (HAP) thresholds, the facility is considered a major source. The major source threshold level for an air emission source is 100 tpy for criteria pollutants.

The potential emissions for NO_x and CO at the proposed compressor stations would not exceed the Title V threshold of 100 tpy, with the exception of the Bighole Compressor Station. The Meeker Hub and Wamsutter Compressor Stations would be minor sources of air emissions and are therefore not required to obtain Title V operating permits. These stations would require state operating permits. The Bighole Compressor Station would be a major source of air emissions and would require a Part 70 permit. Entrega would apply for these permits from the CDPHE and WDEQ.

The major source HAP thresholds for a source are 10 tpy of any single HAP or 25 tpy of all HAPs in aggregate. Potential HAP emissions from each compressor station are less than 3 tpy. Therefore, the stations are not major sources of HAPs.

National Emission Standards for Hazardous Air Pollutants

The NESHAPs, codified in 40 CFR Parts 61 and 63, regulate HAP emissions. The proposed Entrega compressor stations are not one of the source categories regulated by Part 61. Therefore, the requirements of Part 61 are not applicable to the compressor stations. Part 63, also known as the Maximum Achievable Control Technology (MACT) standards, regulates HAP emissions from major sources of HAP emissions and specific source categories that emit HAPs. Part 63 defines a major source of HAPs as any source that has the potential to emit 10 tpy of any single HAP or 25 tpy of HAPs in aggregate. A MACT standard exists for

natural gas transmission and storage facilities (subpart HHH) and standards have been proposed for reciprocating engines (subpart YYYY), combustion turbines (subpart ZZZZ), and boilers (subpart DDDDD). All of these MACT standards apply to major sources of HAPs. The potential HAP emissions (in aggregate) from each of the proposed compressor stations are less than 3 tpy. Therefore, the compressor stations are not major sources of HAPs and would not be subject to NESHAP.

Federal Class I Area Protection

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

State Regulations

Colorado air emissions are regulated by the AQCC per AQCC-1001. Regulation 1 of AQCC-1001 addresses emissions of particulates, smoke, CO, and SO_x. Specific requirements in this regulation can potentially apply to the operation and construction of the proposed Entrega compressor stations. The proposed compressor stations would require construction permits under Regulation 3 of the Colorado AQCC. Therefore, Entrega would be required to submit a fugitive particulate dust control plan as part of the construction permit application. Compliance with the emission limits set by the Colorado regulations for operational emissions would be demonstrated during the construction permitting process.

Wyoming air emissions are regulated by the WAQS&R. Chapter 2.0 of the WAQS&R establishes ambient air quality standards for H₂S, suspended sulfates, fluorides, and odor. There would be no quantifiable sulfates, fluoride, or odor emitted from the proposed compressor stations during normal operation. Emissions of H₂S would be extremely small and would only occur during unpredictable blowdown of pipeline sections for maintenance.

Chapter 3.0 of the WAQS&R mandates specific emissions requirements that can potentially apply to the operation and construction of the compressor stations. Such requirements address opacity emissions, PM₁₀ and PM_{2.5}, NO_x, SO_x, CO, VOCs, and H₂S. The specific requirements and the limitations of these regulations would be addressed when obtaining all construction permits for the compressor stations.

Meeker Hub Compressor Station

Entrega would purchase up to 20 acres of land for the Meeker Hub Compressor Station site (MP 0.0). The Meeker location would require permanent use of private land.

The station would consist of a compressor building, utility building (including control room, utility room, and storage/shop room), and parking area. The compressors would be equipped with dry, low NO_x combusters in order to limit NO_x emissions. The station would be efficiently designed to move natural gas volumes through the pipeline while allowing for system flexibility. Primary facility components would include:

3.0 ENVIRONMENTAL ANALYSIS

- filters and separators designed to accommodate the maximum total station gas volume;
- gas cooling equipment designed for use during normal operating conditions;
- an air compressor, appropriate for the turbine size, for use with required air hoisting equipment and tools;
- standby generator with automatic transfer switch, capable of operating at the maximum allowable station power load; and
- noise control equipment (i.e., mufflers) designed to meet the requirements for sound pressure levels at the nearest noise receptor.

The station would operate on locally purchased power and would be fully automated for remote controlled operation. Remote start/stop, setpoint controls, unit monitoring equipment, and station safety equipment would be installed at the location. The pipeline entering and exiting the compressor facilities would be below grade as practicable, but would be above ground prior to entering and exiting the buildings. The facility would not include any belowground vaults, basements, or crawl spaces. The station location would be fenced and contain external lighting.

Bighole Compressor Station

Entrega would require up to 20 acres of private land for the Bighole Compressor Station site (MP 76.3). The station would consist of a compressor building, utility building (including control room, utility room, and storage/shop room), and parking area. The compressors would be equipped with dry, low NO_x combustors in order to limit NO_x emissions. The station would be efficiently designed to move natural gas volumes through the pipeline while allowing for system flexibility. Primary facility components would include:

- a minimum of two unenclosed turbine-driven centrifugal compressor units outfitted with low-emission technology (although the compressor packages are designated as “unenclosed,” they are wholly contained within a closed building);
- filters and separators designed to accommodate the maximum total station gas volume;
- gas cooling equipment designed for use during normal operating conditions;
- an air compressor, appropriate for the turbine size, for use with required air hoisting equipment and tools;
- a power generator with automatic transfer switch, capable of operating at the maximum allowable station power load (the Bighole Compressor Station would have two—one to provide power and one back-up); and

- noise control equipment (i.e., mufflers) designed to meet the requirements for sound pressure levels at the nearest noise receptor.

The station would operate from an on-site power generator and backup. The pipeline entering and exiting the compressor facilities would be below grade as practicable, but would be aboveground prior to entering and exiting the buildings. The facility would not include any belowground vaults, basements, or crawl spaces. The station location would be fenced and contain external lighting.

Wamsutter Compressor Station

Entrega would require up to 20 acres of federal land for the Wamsutter Compressor Station site (MP 135.5). The station would consist of a compressor building, utility building (including control room, utility room, and storage/shop room), and parking area. The compressors would be equipped with dry, low NO_x combustors in order to limit NO_x emissions. The station would be efficiently designed to move natural gas volumes through the pipeline while allowing for system flexibility. Primary facility components would include:

- a minimum of two unenclosed turbine-driven centrifugal compressor units outfitted with low-emission technology (although the compressor packages are designated as “unenclosed,” they are wholly contained within a closed building);
- filters and separators designed to accommodate the maximum total station gas volume;
- gas cooling equipment designed for use during normal operating conditions;
- an air compressor, appropriate for the turbine size, for use with required air hoisting equipment and tools;
- standby generator with automatic transfer switch, capable of operating at the maximum allowable station power load; and
- noise control equipment (i.e., mufflers) designed to meet the requirements for sound pressure levels at the nearest noise receptor.

The station would operate on locally purchased power and would be fully automated for remote controlled operation. Remote start/stop, setpoint controls, unit monitoring equipment, and station safety equipment would be installed at the location. The pipeline entering and exiting the compressor facilities would be below grade as practicable, but would be above ground prior to entering and exiting the buildings. The facility would not include any belowground vaults, basements, or crawl spaces. The station location would be fenced and contain external lighting.

The compressor station at Wamsutter (MP 135.5) would be located on BLM-administered lands.

3.0 ENVIRONMENTAL ANALYSIS

Construction Impacts

Construction of the proposed pipeline and compressor stations would result in intermittent and short-term fugitive emissions. These emissions would include dust from soil disruption and combustion emissions from the construction equipment. 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. Additionally, Entrega would implement a Traffic and Transportation Management Plan to prevent fugitive dust from becoming a public nuisance or compromising safety via the use of this plan. Entrega also would implement dust control requirements during certain construction activities such as blasting, transporting soil or rock, trenching, and use of access roads. To control fugitive dust, Entrega has committed to implement the following mitigation measures:

- An activity or activities creating a visible plume of dust that extends for more than 300 feet (100 yards) from the source and has a visible opacity of 20 percent or greater would be considered noncompliant.
- Using water obtained from wells or surface water sources to suppress dust is permitted, but written approval from the landowner or regulatory agency is required prior to appropriation.
- Use of salts as a suppressant would be limited to magnesium chloride, if allowed by local, state, and federal agencies for application.
- Soils tracked on to paved roads would be removed. Soil tracked onto paved roads that extends more than 50 feet from the point of origin would be removed within 1 hour of discovery.

Air pollutants from construction equipment internal combustion engines would be limited to the immediate vicinity of the project area and would be short-term, resulting in an insignificant impact on air quality

Operational Impacts

Air quality would be affected by operation of compressor stations. Entrega proposes to construct three new compressor stations, two in Colorado (Meeker and Bighole) and one in Wyoming (Wamsutter).

During operation, the compressor stations would emit varying quantities of regulated air pollutants, including NO_x, CO, PM₁₀ and PM_{2.5}, VOCs, and SO₂. Of these, the pollutants emitted in greatest quantities would be CO and NO_x, the primary component of which is NO₂. Emissions of hydrocarbons, a type of VOC, would be below major source quantity thresholds established by the EPA. Emissions of SO₂ would be proportional to the amount of sulfur in the fuel. Because the fuel would be natural gas containing very little sulfur, the amount of SO₂ emitted would be low. Additionally, HAPs would not be emitted in amounts large enough to trigger a Major Source review. As stated previously, the Bighole Compressor Station is a major source of NO_x and would require a Title V permit although PSD major source thresholds are not exceeded. Detailed modeling under PSD review is therefore not required under the federal construction permitting program.

Table 3.10-1 provides the anticipated proposed emissions of NO_x, CO, VOC, PM₁₀, PM_{2.5}, SO₂, and HAPs from the new and modified compressor stations.

**Table 3.10-1
Estimated Operational Compressor Station Emissions**

Emission Units	NO _x (tpy)	CO (tpy)	SO ₂ (tpy)	PM ₁₀ /PM _{2.5} (tpy)	VOC (tpy)	HAPS (tpy)
Meeker Hub Compressor Station						
Turbine (2)	25.1	25.6	1.5	2.8	0.9	0.22
APU (2)	2.7	4.6	0*	0.02	0.04	0.04
Blowdown	-	-	-	-	0.34	-
Total	27.8	30.2	1.5	2.82	1.28	0.26
Bighole Compressor Station						
Turbine (2)	75.6	92.1	2.6	5.1	1.6	0.79
APU (2)	18.6	48.2	0.04	1.2	12.2	0.1
Blowdown	-	-	-	-	0.34	-
Generator	ND	ND	ND	ND	ND	1.8
Total	94.2	140.3	2.64	6.3	14.14	2.69
Wamsutter Compressor Station						
Turbine (2)	50.4	61.4	1.7	3.4	1.1	0.53
APU (2)	2.7	4.6	0*	0.02	0.04	0.04
Blowdown	-	-	-	-	0.34	-
Total	53.1	66.0	1.7	3.42	1.48	0.57

tpy = tons per year.

*less than 10⁻² tons per year.

ND = No data available.

Emissions from a blowdown of the pipeline or compressor station could occur on a very rare basis, in emergency or maintenance operations. Such a blowdown would generate emissions of VOCs, consisting primarily of propane. Due to the infrequent occurrence, we conclude that there would be no significant air quality impacts from blowdowns.

If Entrega complies with Colorado and Wyoming regulations concerning the mitigation of fugitive dust emissions, we believe that the proposed project would incorporate sufficient measures to ensure adequate levels of air quality during construction at the compressor stations. Operational impacts would be mitigated by the state permitting process, which may include mitigative measures and the compressor stations are not expected to have a significant adverse impacts on local or regional air quality.

The Meeker Hub, Bighole and Wamsutter Compressor Stations would incorporate sufficient measures to ensure that air quality standards would be met during construction and operation. Considering the attainment status of the region and the type of emissions, some degradation of the air quality would occur but no significant impact on regional air quality is expected.

3.0 ENVIRONMENTAL ANALYSIS

3.10.2 Noise

Construction, modification, and operation of the proposed project facilities would impact the local noise environment. The ambient sound level of a region is defined by the total noise generated within the specific environment, and is usually comprised of sounds emanating from natural and artificial sources. At any location, both the magnitude and frequency of environmental noise may vary considerably over the course of a day and throughout the week. This variation is caused in part by changing weather conditions and the effect of seasonal vegetation cover.

Two measurements commonly used by federal agencies to relate the time-varying quality of environmental noise to its known effects on people are the L_{eq} and L_{dn} . The L_{eq} is an A-weighted sound level containing the same sound energy as the instantaneous sound levels measured over a specific time period. Noise levels are perceived differently, depending on length of exposure and time of day. The L_{dn} takes into account the duration and time the noise is encountered. Late night and early morning (10:00 p.m. to 7:00 a.m.) noise exposures are penalized +10 decibels, to account for people's greater sensitivity to sound during the nighttime hours.

In 1974, the EPA published its Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety (EPA 1974). This document provides information for state and local governments to use in developing their own ambient noise standards. The EPA has indicated that an L_{dn} of 55 dBA protects the public from indoor and outdoor activity interference. We have adopted this criterion and have used it to evaluate the potential noise impact from operation of the compressor facilities.

The state of Colorado regulates noise pollution at the state level under Colorado Statute Title 25, Article 12 (CS 25-12). An exemption exists under the state law for any facility that is permitted under a Federal action.

The State of Wyoming and the counties of Rio Blanco, Moffat, Sweetwater, and Carbon do not have any quantitative noise regulations.

Existing Noise Levels

The three proposed Entrega compressor stations would be located in rural areas with few noise sources in the immediate vicinity. All of the compressor stations would include new compression. Existing ambient noise measurements were taken at the nearest noise-sensitive area (NSA) and are summarized in **table 3.10-2**.

Construction Noise Impacts

The construction of the pipeline and compressor stations would cause temporary increases in the ambient sound environment in the immediate vicinity of the construction sites. Construction of the pipeline would last for approximately 6 months and subsequent construction of the compressor stations would last for about 3 months. During construction, Entrega would be required to comply with any local construction noise requirements. In addition, Entrega has agreed to limit construction activities primarily to daylight hours.

Nighttime noise levels would normally be unaffected by construction activities, as most construction is typically restricted to daylight hours. With construction restricted to daytime hours, and given the temporal and linear nature of construction, we do not believe that adjacent landowners would be adversely affected.

**Table 3.10-2
Existing Noise Levels¹**

Location	Distance and Direction ²	Daytime Equivalent Sound Level (L _{eq} (d))	Nighttime Equivalent Sound Level (L _{eq} (n))	24-Hour Equivalent Sound Level (L _{eq})	Day-Night Sound Level (L _{dn}) ³
Meeker Hub Compressor Station (MP 0.0)					
NSA #1	2,100 feet S	56.9	51.9	55.6	59.5
Bighole Compressor Station (MP 76.3)					
NSA #1	8,200 feet NW	45.6	39.9	44.2	47.8
Wamsutter Compressor Station (MP 135.5)					
NSA #1	8,390 feet NW	61.0	61.0	61.0	67.4

¹ All noise levels are in dBA.

² All distances are based on the NSAs location relative to closest boundary.

³ L_{dn} noise levels are calculated assuming that the measured levels are representative of the day and night sound levels in the area.

Operational Noise Impacts

During operation of the pipeline the noise impact associated with the compressor stations would be limited to the vicinity of the facility. Primary operational noise sources at the proposed compressor stations would be the turbine intakes, turbine exhausts, oil coolers, gas aftercooler and turbine-compressor package. The auxiliary power units (APU) at Meeker Hub and Wamsutter are not included in the noise assessment due to the temporary and rare operation of these units. At the Bighole Compressor Station, electrical service is not available and the generator would run continuously.

The compressor stations would be constructed in a manner that would minimize potential impacts from noise. Entrega states that the new compressors would be installed within acoustically designed buildings with acoustically rated doors, acoustical insulation, silenced ventilation systems, muffler systems on exhaust systems of new turbines, and may include covering of exposed metal pipe supports and aboveground piping.

Entrega also proposes to install blowdowns at each of the compressor stations to evacuate natural gas from the facility in the event of an emergency, accident or maintenance. Noise from a typical unsilenced blowdown event can be upwards of 100 dBA at a distance of 50 feet. Entrega has stated that each blowdown stack would be equipped with an appropriately designed silencer to reduce this noise. While we do not have good data on the resultant noise from a blowdown event, due to the rarity and short duration of each blowdown (approximately 2 to 4 times yearly for maintenance) we do not expect the resultant noise to be a significant annoyance or impact to local residents.

3.0 ENVIRONMENTAL ANALYSIS

Entrega performed a noise assessment for the three proposed compressor stations. The acoustical analysis estimated noise reduction over distance using the SPM 9613 noise modeling program. **Table 3.10-3** shows the estimated noise resulting from the operation of the compressor stations at the nearest NSAs.

**Table 3.10-3
Estimated Noise Levels from Compressor Stations**

NSA	Distance/ Direction	Current Ambient Noise, L _{dn} (dBA) ¹	Noise Attributable to New Station, L _{dn} (dBA)	Post-Construction Noise, L _{dn} (dBA)	Noise Increase at NSA (dBA)
Meeker Hub Compressor Station (MP 0.0)					
NSA #1	2,100 ft south	59.5	60.8	63.3	3.8
NSA #2	4,000 ft north-northwest	55.5	51.5	57.2	1.7
Bighole Compressor Station (MP 76.3)					
NSA #1	8,200 ft northwest	47.8	45.7	51.2	3.4
Wamsutter Compressor Station (MP 135.5)					
NSA #1	9,390 ft northwest	67.4	42.7	67.4	0

¹ dBA: decibels of the A-weighted scale.

We received comments about noise from the Bighole Compressor Station affecting sage grouse. A discussion regarding this can be found in section 3.6.2.

We received comments from the U.S. Department of the Interior regarding noise from the Bighole Compressor Station. The agency was concerned that noise impact from the compressor station would be excessive at adjacent BLM recreation land, and at the sage grouse habitat in the area. In response to these concerns, Entrega stated in a May 13, 2005, filing that it would maintain 55 dBA L_{dn} at the Bighole Compressor Station property lines. With this commitment, noise from the Bighole Compressor Station would be significantly reduced. This would decrease the area of noise impact to sage grouse as well as decreased any noise impact at the NSAs.

To confirm compliance after construction, **we recommend that Entrega file a noise survey with the Secretary no later than 60 days after placing the Bighole Compressor Station in service. If the noise attributable to the operation of the compressor station at full load exceeds 55 dBA L_{dn} at any station property line, Entrega shall install additional noise controls to meet that level within 1 year of the in-service date. Entrega shall confirm compliance with the L_{dn} of 55 dBA commitment by filing a second noise survey with the Secretary no later than 60 days after Entrega installs the additional noise controls.**

The Wamsutter Compressor Station is estimated to comply with our 55 dBA L_{dn} noise limit and should not have an adverse noise increase at any NSA. The Meeker Hub Compressor Station, however, is estimated

to exceed our 55 dBA criterion at NSA #1. Entrega has not yet finalized its equipment selection at either station. To ensure that the Meeker Hub Compressor Station design would not result in noise exceeding 55 dBA L_{dn} at the nearest NSAs and to ensure that the Meeker Hub and Wamsutter Compressor Station noise estimates are accurate, we recommend that prior to construction, Entrega file with the Secretary for review and written approval by the Director of OEP, an Acoustic Mitigation Plan for the Wamsutter and Meeker Hub Compressor Stations demonstrating how Entrega would comply with 55 dBA L_{dn} at the nearest NSAs. The plan should quantify the magnitude and frequency spectrum of principal noise sources associated with the operation of the station; identify and quantify mitigation measures (including specific noise control equipment and the resultant propagation of A-weighted noise [L_{eq} and L_{dn}] at the nearest NSAs); and include all data and calculations used to generate the noise estimates.

In addition, to confirm that noise from the compressor station operations do not adversely affect nearby NSAs, **we recommend that Entrega file a noise survey with the Secretary no later than 60 days after placing the authorized unit(s) at the Meeker Hub and Wamsutter Compressor Stations in service. If the noise attributable to the operation of the compressor stations at full load exceeds an L_{dn} of 55 dBA at any nearby NSA, Entrega shall install additional noise controls to meet that level within 1 year of the in-service date. Entrega shall confirm compliance with the L_{dn} of 55 dBA requirement by filing a second noise survey with the Secretary no later than 60 days after Entrega installs the additional noise controls.**

If Entrega verifies that noise impacts have been mitigated, as indicated by the recommendations, we believe that project-operation noise levels at the nearest NSAs would not be significant.

3.0 ENVIRONMENTAL ANALYSIS

3.11 Reliability and Safety

The transportation of natural gas by pipeline involves some risk to the public in the event of an accident and subsequent release of gas. The greatest hazard is a fire or explosion following a major pipeline rupture.

Methane, the primary component of natural gas, is colorless, odorless, and tasteless. It is not toxic, but is classified as a simple asphyxiate, possessing a slight inhalation hazard. If breathed in high concentration, oxygen deficiency can result in serious injury or death.

Methane has an ignition temperature of 1,000°F and is flammable at concentrations between 5.0 percent and 15.0 percent in air. Unconfined mixtures of methane in air are not explosive. However, a flammable concentration within an enclosed space in the presence of an ignition source can explode. It is buoyant at atmospheric temperatures and disperses rapidly in air.

3.11.1 Safety Standards

The DOT is mandated to provide pipeline safety under Title 49, U.S.C. Chapter 601. The Research and Special Programs Administration's (RSPA), Office of Pipeline Safety (OPS), administers the national regulatory program to ensure the safe transportation of natural gas and other hazardous materials by pipeline. It develops safety regulations and other approaches to risk management that ensure safety in the design, construction, testing, operation, maintenance, and emergency response of pipeline facilities. Many of the regulations are written as performance standards which set the level of safety to be attained and allow the pipeline operator to use various technologies to achieve safety. RSPA ensures that people and the environment are protected from the risk of pipeline incidents. This work is shared with state agency partners and others at the federal, state, and local level. Section 5(a) of the NGA provides for a state agency to assume all aspects of the safety program for intrastate facilities by adopting and enforcing the federal standards, while section 5(b) permits a state agency that does not qualify under section 5(a) to perform certain inspection and monitoring functions. A state also may act as DOT's agent to inspect interstate facilities within its boundaries; however, the DOT is responsible for enforcement action. The majority of the states have either 5(a) certifications or 5(b) agreements, while nine states act as interstate agents.

The DOT pipeline standards are published in Parts 190-199 of Title 49 of the CFR. Part 192 of 49 CFR specifically addresses natural gas pipeline safety issues.

Under a Memorandum of Understanding on Natural Gas Transportation Facilities (Memorandum) dated January 15, 1993, between the DOT and the FERC, the DOT has the exclusive authority to promulgate federal safety standards used in the transportation of natural gas. Section 157.14(a)(9)(vi) of the FERC's regulations require that an applicant certify that it would design, install, inspect, test, construct, operate, replace, and maintain the facility for which a certificate is requested in accordance with federal safety standards and plans for maintenance and inspection, or shall certify that it has been granted a waiver of the requirements of the safety standards by the DOT in accordance with section 3(e) of the NGA. The FERC accepts this certification and does not impose additional safety standards other than the DOT standards. If the Commission becomes aware of an existing or potential safety problem, there is a provision in the Memorandum to promptly alert DOT. The Memorandum also provides for referring complaints and inquiries

made by state and local governments and the general public involving safety matters related to pipeline under the Commission's jurisdiction.

The FERC also participates as a member of the DOT's Technical Pipeline Safety Standards Committee which determines if proposed safety regulations are reasonable, feasible, and practicable.

The pipeline and aboveground facilities associated with the EPP must be designed, constructed, operated, and maintained in accordance with the DOT Minimum Federal Safety Standards in 49 CFR Part 192. The regulations are intended to ensure adequate protection for the public and to prevent natural gas facility accidents and failures. Part 192 specifies material selection and qualification, minimum design requirements, and protection from internal, external, and atmospheric corrosion.

Part 192 also defines area classifications, based on population density in the vicinity of the pipeline, and specifies more rigorous safety requirements for populated areas. The class location unit is an area that extends 220 yards on either side of the centerline of any continuous 1 mile length of pipeline. The four area classifications are defined as follows:

Class 1 Location with 10 or fewer buildings intended for human occupancy.

Class 2 Location with more than 10 but less than 46 buildings intended for human occupancy.

Class 3 Location with 46 or more buildings intended for human occupancy or where the pipeline lies within 100 yards of any building, or small well-defined outside area occupied by 20 or more people on at least 5 days a week for 10 weeks in any 12-month period.

Class 4 Location where buildings with four or more stories aboveground are prevalent.

Class locations representing more populated areas require higher safety factors in pipeline design, testing, and operation. Pipelines constructed on land in Class 1 locations must be installed with a minimum depth of cover of 30 inches in normal soil and 18 inches in consolidated rock.

Class 2, 3, and 4 locations, as well as drainage ditches of public roads and railroad crossings, require a minimum cover of 36 inches in normal soil and 24 inches in consolidated rock. Class locations also specify the maximum distance to a sectionalizing block valve (e.g., 10.0 miles in Class 1, 7.5 miles in Class 2, 4.0 miles in Class 3, and 2.5 miles in Class 4). Pipe wall thickness and pipeline design pressures, hydrostatic test pressures, maximum allowable operating pressure, inspection and testing of welds, and frequency of pipeline patrols and leak surveys must also conform to higher standards in more populated areas.

With the exception of a small segment between MPs 305.5 to 306.6 which is a Class II location, Entrega's entire pipeline route would cross sparsely populated, open land that is designated as a Class 1 area.

3.0 ENVIRONMENTAL ANALYSIS

If a subsequent increase in population density adjacent to the ROW indicates a change in class location for the pipeline, Entrega would reduce the MAOP or replace the segment with pipe of sufficient grade and wall thickness, if required to comply with the DOT code of regulations for the new class location.

In 2002, congress passed an act to strengthen the Nation's pipeline safety laws. The Pipeline Safety Improvement Act of 2002 (HR 3609) was passed by Congress on November 15, 2002, and signed into law by the President in December 2002. No later than December 17, 2004, gas transmission operators must develop and follow a written integrity management program that contains all the elements described in §192.911 and addresses the risks on each covered transmission pipeline segment. Specifically, the law establishes an integrity management program which applies to all high consequence areas (HCAs). The DOT (68 FR 69778, 69 FR 18228, and 69 FR 29903) defines HCAs as they relate to the different class zones, potential impact circles, or areas containing an identified site as defined in §192.903 of the DOT regulations.

OPS published a series of rules from August 6, 2002, to May 26, 2004 (69 FR 29903), that defines HCAs where a gas pipeline accident could do considerable harm to people and their property and requires an integrity management program to minimize the potential for an accident. This definition satisfies, in part, the Congressional mandate in 49 U.S.C. 60109 for OPS to prescribe standards that establish criteria for identifying each gas pipeline facility in a high density population area.

The HCAs may be defined in one of two ways. In the first method an HCA includes:

- current Class 3 and 4 locations;
- any area in Class 1 or 2 where the potential impact radius⁵ is greater than 660 feet and there are 20 or more buildings intended for human occupancy within the potential impact circle⁶; or
- any area in Class 1 or 2 where the potential impact circle includes an identified site.⁷

In the second method an HCA includes any area within a potential impact circle which contains:

- 20 or more buildings intended for human occupancy; or
- an identified site.

Once a pipeline operator has determined the HCAs on its pipeline, it must apply the elements of its integrity management program to those segments of the pipeline within HCAs. The DOT regulations specify the requirements for the integrity management plan at § 192.911.

⁵ The potential impact radius is calculated as the product of 0.69 and the square root of the MAOP of the pipeline in psi multiplied by the pipeline diameter in inches.

⁶ The potential impact circle is a circle of radius equal to the potential impact radius.

⁷ An identified site is an outside area or open structure that is occupied by 20 or more persons on at least 50 days in any 12-month period; a building that is occupied by 20 or more persons on at least 5 days a week for any 10 weeks in any 12-month period; or a facility that is occupied by persons who are confined, are of impaired mobility, or would be difficult to evacuate.

Two potential HCAs would occur along the EPP route. The first is located at MP 15.3, near a recreational area associated with the Rio Blanco Lake SWA. The second location is the Wyoming State Penitentiary at MP 179.0. Upon obtaining the necessary permits for its project, finalizing the route, and prior to construction, Entrega would determine if its proposed pipeline could affect these locations. If appropriate, these locations would be incorporated into an Integrity Management Plan developed specific to the EPP as required by the DOT to ensure pipeline safety.

The pipeline integrity management rule for HCAs requires inspection of the entire pipeline in HCAs every 7 years.

Part 192 prescribes the minimum standards for operating and maintaining pipeline facilities, including the requirement to establish a written plan governing these activities. Under section 192.615, each pipeline operator must also establish an emergency plan that includes procedures to minimize the hazards in a natural gas pipeline emergency. Key elements of the plan 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.

Part 192 requires that each operator must establish and maintain liaison with appropriate fire, police, and public officials to learn the resources and responsibilities of each organization that may respond to a natural gas pipeline emergency, and to coordinate mutual assistance. The operator must also establish a continuing education program to enable customers, the public, government officials, and those engaged in excavation activities to recognize a gas pipeline emergency and report it to appropriate public officials. Entrega would provide the appropriate training to local emergency service personnel before the pipeline is placed in service. No additional specialized local fire protection equipment would be required to handle pipeline emergencies.

Entrega intends to control and monitor the pipeline using a Supervisory Control and Data Acquisition (SCADA) system. The SCADA system's control center would be located at Entrega's main office in Denver, Colorado. The SCADA system would allow Entrega to monitor volumes, pressures, and temperatures as well as the operating status of its pipeline facilities using microwave, telephone, or communication satellites. The SCADA system also would provide Entrega with information on the volume of natural gas flowing into its pipeline system and the volume of gas delivered to its customers, and would allow Entrega to quickly identify and react to equipment malfunctions. The SCADA system also would provide Entrega with the

3.0 ENVIRONMENTAL ANALYSIS

capability to remotely start or stop certain compressors, thereby changing flow volumes to meet changes in customer demand for natural gas.

3.11.2 Pipeline Accident Data

Since February 9, 1970, 49 CFR Part 191 has required all operators of transmission and gathering systems to notify the DOT of any reportable incident and to submit a report on form F7100.2 within 20 days. Reportable incidents are defined as any leaks that:

- caused a death or personal injury requiring hospitalization;
- required taking any segment of transmission line out of service;
- resulted in gas ignition;
- caused estimated damage to the property of the operator, or others, or both, of a total of \$5,000 or more;
- required immediate repair on a transmission line;
- occurred while testing with gas or another medium; or
- in the judgment of the operator was significant, even though it did not meet the above criteria.

The DOT changed reporting requirements after June 1984 to reduce the amount of data collected. Since that date, operators must only report incidents that involve property damage of more than \$50,000, injury, death, release of gas, or that are otherwise considered significant by the operator. **Table 3.11-1** presents a summary of incident data for the 1970 to 1984 period, as well as more recent incident data for 1986 through 2003, recognizing the difference in reporting requirements (DOT 2003). The 14.5-year period from 1970 through June 1984, which provides a larger universe of data and more basic report information than subsequent years, has been subject to detailed analysis, as discussed in the following sections (Jones et al. 1986).

During the 14.5-year period, 5,862 service incidents were reported over the more than 300,000 total miles of natural gas transmission and gathering systems nationwide. Service incidents, defined as failures that occur during pipeline operation, have remained fairly constant over this period with no clear upward or downward trend in annual totals. In addition, 2,013 test failures were reported. Correction of test failures removed defects from the pipeline before operation.

Additional insight into the nature of service incidents may be found by examining the primary factors that caused the failures. **Table 3.11-1** provides a percentage distribution of the causal factors as well as the annual frequency of each factor per 1,000 miles of pipeline in service.

**Table 3.11-1
Natural Gas Service Incidents by Cause**

Cause	Incidents per 1,000 miles of Pipeline (percentage)	
	1970-1984	1986-2003
Outside force	0.70 (53.8)	0.10 (38.4)
Corrosion	0.22 (16.9)	0.06 (23.1)
Construction or material defect	0.27 (20.8)	0.04 (15.4)
Other	0.11 (8.5)	0.06 (23.1)
Total	1.30 (100.0)	0.26 (100.0)

The dominant incident cause is outside forces, constituting 53.8 percent of all service incidents. Outside forces incidents result from the encroachment of mechanical equipment such as bulldozers and backhoes; earth movements due to soil settlement, washouts, or geologic hazards; weather effects such as winds, storms, and thermal strains; and willful damage. **Table 3.11-2** shows that human error in equipment usage was responsible for approximately 75 percent of outside forces incidents. Since April 1982, operators have been required to participate in "One Call" public utility programs in populated areas to minimize unauthorized excavation activities in the vicinity of pipelines. The "One Call" program is a service used by public utilities and some private sector companies (e.g., oil pipelines and cable television) to provide preconstruction information to contractors or other maintenance workers on the underground location of pipes, cables, and culverts. The 1986 through 2003 data show that the portion of incidents caused by outside forces has decreased to 38.4 percent.

**Table 3.11-2
Outside Forces Incidents by Cause (1970-1984)**

Cause	Percent
Equipment operated by outside party	67.1
Equipment operated by or for operator	7.3
Earth movement	13.3
Weather	10.8
Other	1.5

The pipelines included in the data set in **table 3.11-1** vary widely in terms of age, pipe diameter, and level of corrosion control. Each variable influences the incident frequency that may be expected for a specific segment of pipeline.

The frequency of service incidents is strongly dependent on the year of pipeline construction. While pipelines installed since 1950 exhibit a fairly constant level of service incident frequency, pipelines installed before that time have a significantly higher rate, partially due to corrosion. Older pipelines have a higher frequency of corrosion incidents, since corrosion is a time-dependent process. Further, new pipe generally uses more advanced coatings and cathodic protection to reduce corrosion potential.

3.0 ENVIRONMENTAL ANALYSIS

Older pipelines have a higher frequency of outside forces incidents partly because their location may be less well known and less well marked than newer lines. In addition, the older pipelines contain a disproportionate number of smaller diameter pipelines, which have a greater rate of outside forces incidents. Small diameter pipelines are more easily crushed or broken by mechanical equipment or earth movements.

Table 3.11-3 clearly demonstrates the effectiveness of corrosion control in reducing the incidence of failures caused by external corrosion. The use of both an external protective coating and a cathodic protection system, required on all pipelines installed after July 1971, significantly reduces the rate of failure compared to unprotected or partially protected pipe. The data shows that bare, cathodically protected pipe actually has a higher corrosion rate than unprotected pipe. This anomaly reflects the retrofitting of cathodic protection to actively corroding spots on pipes.

**Table 3.11-3
External Corrosion by Level of Control (1970-1984)**

Corrosion Control	Incidents per 1,000 miles per Year
None-bare pipe	0.42
Cathodic protection only	0.97
Coated only	0.40
Coated and cathodic protection	0.11

3.11.3 Impact on Public Safety

The service incident data summarized in **table 3.11-1** include pipeline failures of all magnitudes with widely varying consequences. Approximately two-thirds of the incidents were classified as leaks, and the remaining third classified as ruptures, implying a more serious failure.

Table 3.11-4 presents the average annual fatalities that occurred on natural gas transmission and gathering lines from 1970 to 2003. Fatalities between 1970 and June 1984 have been separated into employees and nonemployees, to better identify a fatality rate experienced by the general public. Of the total 5.0 nationwide average, fatalities among the public averaged 2.6 per year over this period. The simplified reporting requirements in effect after June 1984 do not differentiate between employees and nonemployees. However, the data show that the total annual average for the period 1984 through 2003 decreased to 3.8 fatalities per year. Subtracting two major offshore incidents in 1989, which do not reflect the risk to the onshore public, yields a total annual rate of 2.9 fatalities per year for this period.

The nationwide totals of accidental fatalities from various manmade and natural hazards are listed in **table 3.11-5** in order to provide a relative measure of the industry-wide safety of natural gas pipelines. Direct comparisons between accident categories should be made cautiously, however, because individual exposures to hazards are not uniform among all categories. Nevertheless, the average 2.6 public fatalities per year is relatively small considering the more than 300,000 miles of transmission and gathering lines in service nationwide. Furthermore, the fatality rate is approximately two orders of magnitude (100 times) lower than the fatalities from natural hazards such as lightning, tornados, floods, earthquakes, etc.

Table 3.11-4
Annual Average Fatalities - Natural Gas Transmission and Gathering Systems^{1,2}

Year	Employees	Nonemployees	Total
1970-June 1984	2.4	2.6	5.0
1984-2003 ³	-	-	3.8
1984-2003 ³	-	-	2.9 ⁴

¹ 1970 through June 1984 - American Gas Association 1986.

² DOT Hazardous Materials Information System.

³ Employee/nonemployee breakdown not available after June 1984.

⁴ Without 18 offshore fatalities occurring in 1989 -- 11 fatalities resulted from a fishing vessel striking an offshore pipeline and 7 fatalities resulted from explosion on an offshore production platform.

Table 3.11-5
Nationwide Accidental Deaths¹

Type of Accident	Fatalities
All accidents	90,523
Motor vehicles	43,649
Falls	14,985
Drowning	3,488
Poisoning	9,510
Fires and burns	3,791
Suffocation by ingested object	3,206
Tornado, flood, earthquake, etc. (1984 to 1993 average)	181
All liquid and gas pipelines (1978 to 1987 average) ²	27
Gas transmission and gathering lines	2.6
Nonemployees only (1970 to 1984 average) ³	

¹ All data, unless otherwise noted, reflects 1996 statistics from the U.S. Department of Commerce, Bureau of the Census, "Statistical Abstract of the United States 118th Edition."

² DOT, "Annual Report on Pipeline Safety - Calendar Year 1987."

³ American Gas Association 1986.

The available data show that natural gas pipelines continue to be a safe, reliable means of energy transportation. Based on approximately 302,000 miles in service, the rate of public fatalities for the nationwide mix of transmission and gathering lines in service is 0.01 per year per 1,000 miles of pipeline. Using this rate, the EPP might result in a public fatality every 305 plus years. This would represent a slight increase in risk to the nearby public.

3.11.4 Terrorism

In the aftermath of the terrorist attacks that occurred on September 11, 2001, terrorism has become a very real issue for the facilities under the FERC's jurisdiction. The FERC, like other federal agencies, is faced with a dilemma in how much information can be offered to the public while still providing a significant level of

3.0 ENVIRONMENTAL ANALYSIS

protection to energy facilities. The FERC has been involved with other federal agencies in developing a coordinated approach to protecting the energy facilities of the U.S., and continues to coordinate with these agencies to address this issue. A Security Task Force has been created and is addressing ways to improve pipeline security practices, strengthen communication within the industry and the interface with government, and extend public outreach efforts. Consequently, the FERC has removed energy facility design plans and location information from its internet website to ensure that sensitive information is not readily available (RM02-4-000 and PL02-1-000 issued February 20, 2003). Entrega has stated that they are committed to cooperating with the FERC, along with other federal, state, and local agencies, in order to protect its energy facilities.

3.12 Cumulative Impacts

NEPA requires federal agencies to consider the cumulative impacts of proposals under their review. Cumulative impacts are defined in the Council on Environmental Quality regulations 40 CFR 1508.7 as "...the impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable actions regardless of what agency... or person undertakes such other actions." These actions include current and projected area development (e.g., oil and gas); management activities and authorizations on public lands (e.g., range conversion and forestry programs); land use trends; and applicable industrial/infrastructure components (e.g., utility corridors). Although the individual impacts of each separate project might not be significant, the additive effects of multiple projects could be.

Existing projects were determined from review of Entrega photo-alignment sheets, Wyoming oil and gas facility maps (DeBruin 2002), field reconnaissance, and Entrega's FERC application. The proposed and reasonably foreseeable projects were based on ROW and well field development applications submitted to the BLM and FERC application information (WIC Piceance Basin Expansion Project [PBEP], EnCana Meeker Pipeline and Gas Plant Project). Construction timeframes for individual projects were compiled to estimate peak workforce numbers at various locations; however, the actual construction schedules for these projects will depend on factors such as economic conditions, the availability of financing, and the issuance of permits.

Projects and activities included in this analysis are generally those located within the same counties directly affected by construction of the EPP. Most effects of more distant projects are not assessed because their impact would generally be localized and not contribute significantly to cumulative impact in the proposed project area. However, the air quality study area consists of the regional air sheds.

The BLM (BLM 2005) addressed the cumulative effects of gas field development and gathering pipelines upstream of the proposed Meeker gas plant in its evaluation of the cumulative impacts for the proposed Encana Meeker Pipeline and Gas Plant Project. This discussion included existing and proposed pipelines (including the Entrega and Piceance Basin Expansion Pipeline projects), existing and foreseeable well development, and other industrial developments within the BLM White River Resource Area over a timeframe of about 5 years. The BLM estimated that the cumulative surface disturbance from existing, proposed and foreseeable project would be approximately 24,000 acres within this Resource Area. The analysis first examined the effects of the EnCana proposal, and then made a determination whether the proposed action would contribute to cumulative effects. The following is a synopsis of the findings of the Encana Meeker Pipeline and Gas Plant Project EA cumulative analysis:

3.0 ENVIRONMENTAL ANALYSIS

Resource Topics Analyzed	Would Cumulative Impacts Occur?	Rationale
Air Quality	No	Construction impacts would be short-term, widely dispersed over a large geographic area. Modeling of operational combustion sources within 25 kilometers of gas plant determined that criteria pollutant standards would not be exceeded.
Areas of Critical Environmental Concern	No	Future construction would be confined to existing disturbance footprint within individual ACECS.
Cultural Resources and Native American Concerns	Yes	Increased road access would increase the likelihood for trespass and vandalism, and increased surface disturbance from proposed and foreseeable projects would incrementally increase impacts to cultural resources.
Soils and Farmlands, Prime and Unique	Yes	Incremental increases in soil losses from wind and water erosion would occur, but these losses would be minimized by implementing measures for proper handling of topsoil and spoil, erosion control, and reclamation procedures.
Floodplains	Yes	Incremental increases in floodplain disturbance, but surface disturbance would not permanently alter or modify floodplains based on application of streambank stabilization and restoration measures.
Vegetation and Invasive, Non-native Species	Yes	Cumulative reductions in native plant communities and expansions of non-native plant species would occur, particularly where projects are constructed in the same location and during the same time period.
Migratory Birds	Yes	Cumulative habitat losses would occur, but habitat fragmentation would be unlikely by use of existing utility corridors.
Threatened, Endangered and Sensitive Animal Species	Yes	Cumulative habitat losses predicted for northern goshawk and greater sage grouse. Co-location of facilities in utility corridors, and off-site mitigation would compensate for habitat losses.
Threatened and Endangered Plant Species	No	Pre-construction surveys and avoidance measures for individual projects would avoid cumulative impacts.
Wastes, Solid	Yes	Project waste material would increase landfill disposal requirements.
Wastes, Hazardous	No	Storage and cleanup requirements would avoid cumulative impacts.

3.12 Cumulative Impacts

Resource Topics Analyzed	Would Cumulative Impacts Occur?	Rationale
Surface Water Resources	Yes	Incremental surface disturbances within the same watershed would increase short-term sediment loads from erosion and channel construction;
Ground Water Resources	No	Ground water recharge area would not be affected after recontouring and revegetation.
Wetlands and Riparian Zones	Yes	Surface disturbance would reduce wetland and riparian community extent in the short-term, particularly where projects are constructed in the same location and during the same time period
Wildlife, Aquatic and Terrestrial	Yes	Surface disturbance would reduce wildlife habitat area, but habitat fragmentation was assessed to be unlikely, cumulative projects would have "no measureable influence on the abundance or distribution of wildlife at the scale proposed."

The Glenwood Springs Field Office (BLM 2004) prepared a Resource Management Plan Amendment Draft EIS that addresses future management options for portions of the Roan Plateau and adjacent lands in the Grand Valley. That draft EIS addresses several levels of oil and gas development under the various plan alternatives. The Plan Amendment Final EIS is in preparation, and the decisions made may positively or negatively influence the volume of gas that could be shipped through the Entrega and other pipelines. The oil and gas well and pipeline infrastructure that could result from future RMP decisions cannot be estimated at this time.

Figure 3.12-1 provides a simplified representation of the existing and proposed gas processing facilities and interconnecting pipelines near the proposed Entrega Meeker Hub Compressor Station that were included in the EPP cumulative analysis. **Table 3.12-1** provides additional details about the facilities illustrated in **figure 3.12-1**. **Figure 3.12-2** is a schematic drawing illustrating the number of gas and liquids pipelines included in the existing utility corridor where the EPP would be located, as well as sensitive resources encountered along the entire route. The majority of the pipelines in this utility corridor were constructed in the last 30 years, and the revegetation of the ROW has varied with climate and soil type. From Rawlins eastward, grasslands have largely recovered to former cover; the shrub-scrublands consisting of saltbush and Wyoming sagebrush from Rawlins west to Wamsutter and south to the Piceance Basin have only partially recovered former shrub cover and height. We assumed that an average of 50 feet of ROW remains partially revegetated for each pipeline in the corridor.

Compressor stations are often located at major interconnection points within the interstate gas pipeline system. The following are major pipeline interconnection nodes along the Entrega Pipeline: Wamsutter, Sinclair, west of Laramie, and the Rockport Hub south of Cheyenne. There are existing compressor stations at each of these four major interconnection points. We assumed each compressor station site (which may include more than one pipeline operator) is a fenced area of 60 acres.

Non-Internet Public

FINAL ENVIRONMENTAL IMPACT STATEMENT FOR THE PROPOSED ENTREGA PIPELINE PROJECT

Docket Nos. CP04-413-000, et al.

Page 3-158

Figure 3.12-1

Public access for the above information is available only through the Public Reference Room, or by e-mail at public.referenceroom@ferc.gov.

**Table 3.12-1
Natural Gas Facilities Included in the EPP Cumulative Analysis Located
Near the Proposed Meeker Hub**

Facilities	Existing	Proposed
ABOVEGROUND FACILITIES		
Greasewood Hub	Compressor Stations (CIG, Kinder Morgan, Questar) Pipeline interconnections, meters, pig launchers and receivers	TransColorado North Expansion Project (Additional Compression for WIC Piceance Expansion Project)
Meeker Hub	EnCana Compressor Station Pipeline interconnections, meters	Entrega Compressor Station Pipeline interconnections, meters
EnCana Meeker Gas Plant		Natural gas liquids separation from natural gas; natural gas dehydration; carbon dioxide reduction; gas compression (electrical).
PIPELINES		
Pipeline Segment A (Meeker Hub to Greasewood)	Questar 14-inch natural gas CIG 20-inch natural gas (UBL) TransColorado 22-inch natural gas	
Pipeline Segment B (Meeker Hub to American Soda Corridor)	Kinder Morgan 4-inch natural gas Exxon Mobil 6-inch natural gas	Entrega 36-inch natural gas EnCana 36-inch natural gas; 30-inch natural gas
Pipeline Segment C (American Soda Corridor to Proposed EnCana Meeker Gas Plant)	EnCana (Former American Soda) two 12.75-inch pipelines (to be converted to natural gas or natural gas liquids service)	EnCana 36-inch natural gas; 30-inch natural gas
Pipeline Segment D (Greasewood Hub to Segment B)	EnCana (Former American Soda) two 12.75-inch pipelines (to be converted to natural gas or natural gas liquids service)	
Pipeline Segment E (American Soda Corridor to Segment F intersection)	Kinder Morgan 4-inch natural gas Exxon Mobil 6-inch natural gas	Entrega 36-inch natural gas
Pipeline Segment F (Greasewood Hub to Segment E Intersection)	CIG 20-inch natural gas (UBL) Northwest 10-inch natural gas	
Pipeline Segment G (Greasewood Hub to Dry Fork Piceance Creek)	PSCo 12-inch natural gas	WIC 24-inch natural gas (Piceance Basin Expansion Project)

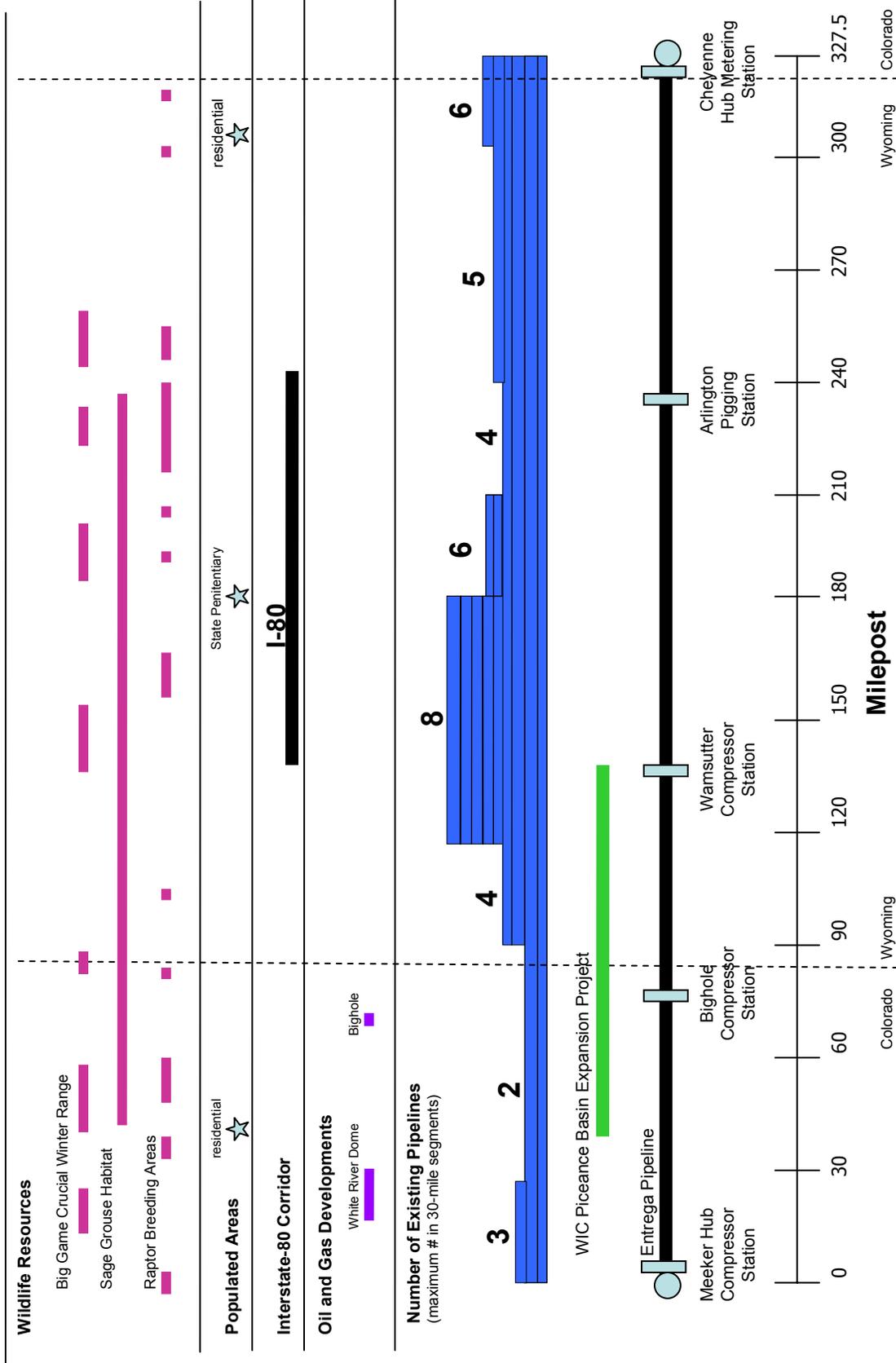


Figure 3.12-2. Location of the Entrega Pipeline in Relation to Existing and Proposed Parallel Pipelines and Sensitive Resources

Other linear facilities located within or adjacent to this large pipeline corridor include I-80, the Union Pacific Transcontinental Railroad, several fiber optic cables, and low voltage electrical transmission lines. Nearby communities served by I-80 include Wamsutter, Rawlins, Laramie, and Cheyenne.

3.12.1 Cumulative Impacts to Resources

Geology

Geologic Hazards. Regional seismic hazards, including earthquake ground shaking and subsidence and fault movement sufficient to cause damage, are very unlikely (see section 3.1.3). Several existing pipelines within the Entrega Pipeline corridor cross faults but none of these faults are active. Consequently, cumulative impacts related to fault movement and seismic activity are not anticipated.

Mineral Resources. Nearly all of the proposed EPP pipeline route, and those pipelines that parallel the proposed route, cross oil and gas producing reservoirs and/or oil shale-bearing formations. The EnCana Meeker Gas Plant site and associated pipelines overlie soda mineral and oil shale deposits. Exploitation of the soda mineral deposits has ceased, and the existing mine site would be converted to natural gas processing uses. Other mineral sources crossed by the pipelines include gravel, uranium in the Medicine Bow Mountains, and copper, gypsum, carbonates, and granite along the flanks of the Laramie Range (DOI 2002a). Although the presence of facilities within the corridor that would be occupied by the existing and proposed pipelines would preclude extraction of gravel and other minerals, oil and gas production could be accomplished through well pad offsets and directional drilling. Routing the EPP adjacent to the existing facilities in the established corridor would cause a very small increase in the amount of near-surface coal deposits precluded from future development. In fact, a recent study of the coal basins underlying the Rawlins Field Office jurisdictional area (BLM 2002) indicates that coal mining in this area is at a distinct economic disadvantage as compared to the Powder River Basin, and that no new mines are expected to open to exploit these coal deposits in the foreseeable future.

Paleontological Resources. The EPP would cross approximately 123 miles of BLM Condition 1 geologic units. Condition 1 is represented by “areas that are known to contain vertebrate fossils or noteworthy occurrences of invertebrate or plant fossils.” Assuming an average disturbance width of 500 feet caused by prior projects, we note that construction of pipelines, fiber optic lines, roads and highways (including I-80) has previously removed surficial paleontological resources within an area of approximately 12 square miles. Construction of the Entrega and WIC pipelines would contribute approximately 2.9 and 2.4 square miles, respectively, of surface and trench disturbance in Condition 1 units. Construction of the EnCana Meeker Gas Plant and associated pipelines would disturb less than 0.1 square mile of Condition 1 fossil formations. Pre-construction paleontological surveys have been, or will be completed for the three projects. Trench monitoring would be conducted in areas with high potential for important fossils. Fossil material would be recovered and recorded from sites that warrant these investigations. The EPP would contribute to the cumulative exposure and potential loss of scientifically valuable fossils, but construction monitoring would ensure that new scientific information would be collected and added to the existing body of knowledge.

3.0 ENVIRONMENTAL ANALYSIS

Soils

Cumulative soil disturbance within the study area from existing utility projects is approximately 26.5 square miles; the proposed projects would disturb approximately 11.4 square miles. The existing pipeline projects have been installed for 10 years or more, and the construction ROWs have been partially or completely restored to pre-existing conditions. Irrigated haylands and pasturelands have been returned to their prior uses. Thus, we do not expect these existing projects to contribute to the cumulative impact on soils. Potential cumulative erosion could occur where the EPP and PBEP construction disturbance areas overlap, or are located near each other between Entrega MPs 40 and 135. Best management practices for soil management and protection would be applied across all ownerships for both pipeline projects, as well as the EnCana Meeker Gas Plant. Revegetation mixtures would be applied that are appropriate to soil conditions and expected future uses (grazing, wildlife habitat). As a consequence, the potential for cumulative erosion increases caused by one or more of these projects is low.

The potential for cumulative impacts occurs in dissected drainages and on steep slopes where existing pipelines have already been located in the most favorable locations. Example areas where one or more new pipelines would be constructed are listed in **table 3.12-2**. The primary cumulative impact issue is that surface drainage controls (e.g., water bars) installed for the new pipelines could adversely affect the existing drainage controls on adjacent pipelines. The EPP would integrate its surface drainage system with that of any adjacent pipeline during final grading, thereby avoiding excessive stormwater runoff from cumulative pipeline sources in the same utility corridor.

**Table 3.12-2
Steep Slope/Incised Channel Areas Crossed by Existing and
Proposed Pipelines (Entrega and WIC)**

Location	Existing Pipelines (Number)	Entrega	WIC Piceance Basin Expansion
Colorow Mountain (MPs 20 to 21)	3	X	
North Side Little Snake River (MPs 85 to 87)	2	X	X
Sand Creek and Willow Creek Drainages (MPs 95 to 99)	4	X	X

Sensitive Soils. The primary cumulative sensitive soils issue is the maintenance of agricultural soil productivity where these soils have been disturbed by multiple pipelines. Based on STATSGO soils data, Entrega estimates that the proposed pipeline would cross about 2 miles of hydric soils in Colorado and 4 miles in Wyoming. These areas generally equate to irrigated pasturelands where shallow water tables have been augmented by seasonal irrigation. The majority of these areas are located in Albany and Laramie counties, Wyoming. Construction of EnCana gathering and delivery pipelines across irrigated lands in the Piceance Creek floodplain (Pipeline Segment C, **figure 3.12-1**) would disturb about 5 acres. The Entrega pipeline is not collocated with the EnCana project at this crossing. The primary cumulative impact issue is to ensure that surface drainage is restored across the Entrega construction ROW as well as adjacent pipeline ROWs, and to ensure that soil compaction is relieved in haylands and pasture. The EPP and PBEP pipeline

construction ROWs would be adjacent to each other across irrigated pastures at the Yampa River crossing and across dry pasture at the Little Snake River crossing. Both projects propose to directionally drill the Yampa crossing; however, both projects would cause surface disturbance in the same irrigated pasture at this crossing. Both EPP and PBEP projects have prepared, or would be required to prepare plans to restore and monitor irrigated soils. Application of these plans would ensure that agricultural productivity would be maintained over the long term. EnCana's plans to restore irrigated lands within the Piceance Creek floodplain are unknown.

Soil mixing and compaction effects on other sensitive soils (shallow, rocky, saline) during construction would be addressed on a site specific basis by the EPP, PBEP, and EnCana projects, and would not represent cumulative impacts (see Erosion above).

Water Resources

Groundwater. Existing pipeline and other utility projects do not consume groundwater. The EPP and PBEP projects do not propose to consume groundwater for construction or operation. Both projects would implement spill containment and control plans as required by the BLM and state agencies. No cumulative impacts on groundwater volume or quality from the EPP and PBEP projects are expected. Potable and process water requirements and sources for EnCana Meeker Gas Plant are not currently known. Produced water associated with natural gas would be separated at the processing plant; a portion of this produced water may be treated to make it suitable for other project purposes.

Surface Water. Both the EPP and PBEP projects propose to directionally drill the White and Yampa Rivers, and consequently there would be no cumulative sediment increases at these crossings. Based on currently available schedules, the two projects would not simultaneously construct across the Little Snake River, resulting in no cumulative suspended sediment increase. The two projects would not cause cumulative water withdrawal volume reductions on the Yampa, White, and Little Snake Rivers because the two projects would withdraw hydrostatic test water at different times. If the schedules for both projects were to converge, water withdrawals could overlap, resulting in the cumulative withdrawal of 28, 39, and 39 acre-feet from the Yampa, White, and Little Snake Rivers, respectively. To reduce potential cumulative dewatering effects on the Little Snake River during low flows, **we recommend that Entrega coordinate their hydrostatic testing and dust control water withdrawals with WIC such that no EPP and PBEP water withdrawals occur simultaneously from the Little Snake River.**

EnCana has provided a preliminary estimate of 22 acre feet (a maximum of 12 acre feet in any one year) of water for hydrostatic testing of its entire Meeker pipeline project. The sources of this water are not presently known. As stated previously, potable and process water requirements for the Meeker Processing Plant are not currently known. Disposal of produced water could include evaporation ponds or injection into an approved deep geologic formation.

Both the EPP and PBEP projects would follow the FERC procedures for crossing smaller perennial streams and intermittently flowing waterbodies, and site specific erosion control and bank stabilization measures would be used to prevent cumulative sedimentation increases where both projects cross the same stream channel at the same location.

3.0 ENVIRONMENTAL ANALYSIS

The proposed Entrega alignment parallels numerous pipelines and other linear features that cross alluvial floodplains and fans that are subject to periodic flooding and scour. Although Entrega has taken steps to avoid or limit the effects of scour, should an event occur it could affect one or more other pipelines, in addition to the Entrega Pipeline. Potential cumulative damage interactions among pipelines as the result of a major channel scouring event are not expected.

Vegetation

Invasive and Noxious Weeds. Invasive and noxious weed populations already exist, or potentially exist on the land adjacent to proposed construction ROWs for the EPP, PBEP, and EnCana projects, based on input from local NRCS offices and the BLM. The three projects would apply invasive and noxious weed controls prior to, and during construction, including pre-construction weed control and equipment cleaning. The three projects would be responsible for monitoring and controlling weed invasions on federal lands; comparable programs have been recommended on private lands, subject to landowner agreements. Based on proposed weed control measures, and equipment cleaning, the three projects would not cumulatively contribute to new weed infestations.

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

Wetlands. The locations where cumulative impacts to wetlands would occur are where the EPP and PBEP would be collocated between EPP MPs 40 and 135 at Wamsutter. The majority of this disturbance would be in palustrine emergent wetlands and hayfields, dominated by grasses and sedges. The EPP would disturb 14.6 acres (14.3 acres of hayfields and 0.3 acre of PEM), and PBEP 8.7 acres (8.5 acres of wet meadow and marsh and 0.2 acre of scrub shrub wetlands), for a cumulative total of 23.3 acres. The majority of this cumulative disturbance would be located at the Yampa River crossing. The EnCana pipelines would disturb about 5 acres of wetlands (irrigated pasturelands) along Pipeline Segment C (**figure 3.12-1**). The EPP and PBEP projects would apply FERC wetland crossing procedures, and would be subject to conditions contained in COE 404 permits and state water quality permits. None of the wetlands crossed would be permanently filled or drained. Therefore, cumulative effects to wetlands would be minor and short-term because of rapid recovery by grasses, sedges, and other herbaceous species.

Fish and Wildlife

Fisheries. The locations where cumulative impacts to fisheries could occur from stream channel disturbance, and hydrostatic water withdrawals are crossings of the White, Yampa, and the Little Snake Rivers, where the EPP and the PBEP would cross these waterbodies in the same year (late 2005). Both the

EPP and PBEP would directionally drill the White and Yampa Rivers, which would avoid increased sedimentation and channel disturbance in these two rivers. Cumulative impacts from simultaneous construction by both projects across the Little Snake River are not expected because of differing construction schedules. Four EnCana pipelines would cross Piceance Creek at the same location (Pipeline Segment C, **figure 3.12-1**) resulting in increased sedimentation downstream of the open-cut crossings. The Entrega pipelines would not be collocated with the EnCana pipelines at this crossing location, and therefore would not incrementally add to the channel and aquatic habitat disturbance at this location.

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

Big Game. The EPP would cross elk, mule deer, and pronghorn critical or crucial winter habitats in both Colorado and Wyoming, respectively. Winter big game habitats that would be affected by the EPP, the proposed EnCana and PBEP Projects, and existing pipelines and other utilities are summarized in **table 3.12-3**. The incremental surface disturbance contributed by the EPP to the cumulative projects would represent a small fraction (less than 1 percent) of the individual big game ranges crossed. Both the EPP and PBEP projects have coordinated with the CDOW, BLM, and WGFD to develop revegetation seeding mixtures that include shrub, forb, and grass species that are used by big game, as well as other target species. The application of these mixtures, followed by ROW monitoring after construction (see appendix G) would ensure that there is a long-term effort to restore big game forage in designated critical (Colorado) and crucial (Wyoming) winter habitats. Big game habitat rehabilitation measures are being determined for the EnCana project by the BLM in consultation with the CDOW.

**Table 3.12-3
Overall Big Game Habitat Disturbance (Square Miles) for Existing
and Reasonably Foreseeable Projects within the Entrega Pipeline Cumulative Study Area**

State/Habitat Type	Existing Pipe and Compressor Station Plus I-80	Proposed EPP	Proposed EnCana Meeker Pipeline and Gas Plant	Proposed PBEP
Colorado				
Elk, Mule Deer, and Pronghorn Critical Winter Habitat	1.2	0.7	0.2	0.3
Wyoming				
Mule Deer Crucial/Yearlong Habitat	3.3	0.8		0.1
Pronghorn Crucial/Yearlong Habitat	4.8	1.1		0.1
Elk Crucial Winter Habitat	0.7	0.1		0.0
Total	10.0	2.7	0.2	0.5

3.0 ENVIRONMENTAL ANALYSIS

Both the EPP and PBEP project would cross big game winter ranges in relatively remote areas of Colorado and southern Wyoming. These projects would be subject to winter construction closures depending on severity of the early winter, so that wintering big game conflicts would be largely avoided during this season. Big game winter range closures are being determined for the EnCana project by the BLM in consultation with the CDOW.

Special Status Species

With the exception of occasional foraging by bald eagles (but no winter roost sites), none of the species discussed below would be affected by the portion of the EnCana Meeker Gas Plant and Pipeline Project within the EPP cumulative study area.

Bald Eagle. Bald eagles use winter roosts and occasionally nest along the White, Yampa, and Little Snake Rivers in Colorado. Both the EPP and PBEP would be subject to construction timing restrictions during critical bald eagle use seasons, and would be requested to implement measures to avoid the loss of roost or nest trees. No other known projects are scheduled for work locations at these crossings that might coincide with either of these pipeline projects. Therefore, the EPP and the PBEP would not contribute to cumulative impacts to bald eagle winter or nesting habitat, nor would construction activities coincide with bald eagle critical use periods along these rivers.

Black-footed ferret and other prairie dog colony inhabitants (burrowing owl, mountain plover). Both the EPP and PBEP alignments would cross prairie dog colonies between the Yampa River and Wamsutter. The construction of both projects would cumulatively cause surface disturbance in prairie dog colonies and potential loss of prairie dog individuals, which are black-footed ferret prey. Both projects would be subject to pre-construction surveys. If ferrets were sighted, construction would not be authorized until the FERC had completed any required consultation with the FWS. If mountain plovers or burrowing owls were sighted during pre-construction surveys, construction constraint periods would be established to insure that fledglings leave the areas before construction begins. Based on these measures, no cumulative impacts to these species are expected, with the exception of the short-term surface disturbance within prairie dog colonies during construction.

Sage grouse. The 2005 surveys conducted by Entrega indicated that 21 sage grouse lek (breeding) sites were active within 2 miles of the EPP pipeline route in Colorado and Wyoming. Entrega has committed to seasonal construction restrictions in the vicinity of these leks. The EPP and PBEP projects would be located parallel to each other where both routes cross important sage grouse habitat from the north side of the Yampa River to the vicinity of Wamsutter, a distance of about 85 miles. Both projects would be subject to seasonal construction restrictions to avoid critical sage grouse breeding and brooding periods. Both projects would contribute to incremental increases in the width of the existing pipeline corridor, which is currently about 150 feet wide in this area. The combined EPP and PBEP construction ROWs through this segment could be as much as 185 feet, which would more than double the pipeline corridor width in sagebrush habitats. While there has been natural sagebrush reestablishment on the existing UBL and Rocky Mountain Natural Gas Pipeline ROWs between the White River and Wamsutter, the sagebrush density and height in the existing corridor is not yet comparable to adjacent undisturbed areas. Between Wamsutter and Arlington (a distance of about 110 miles), the Entrega Pipeline would expand a large existing pipeline corridor through

Wyoming sagebrush habitats. Reduction in sagebrush cover exposes grouse to higher predation rates and may limit bird movement across these discontinuities. Reduction in sage grouse populations and reductions in use of traditional lek sites have been documented in oil and gas well fields in Alberta, Wyoming, and Colorado (Connelly et al. 2000). Other factors, such as wildfires, periodic drought, invasion by cheatgrass, and intensive livestock grazing also adversely affect sage grouse habitat suitability (Connelly et al. 2004). In summary, the EPP and PBEP would contribute to the cumulative long-term reduction in, and fragmentation of sage grouse habitat in Colorado and Wyoming by expanding an existing utility ROW. Both projects would adhere to seasonal restrictions during sage grouse breeding and brooding periods, and therefore cumulative indirect effects from increased human activity and noise during construction would not occur.

Colorado River Fish (Colorado Pikeminnow). Both the Entrega and WIC pipelines would be directionally drilled under the White and Yampa Rivers, which contain listed fish species. Both projects would be subject to hydrostatic test water volume and timing constraints for withdrawals from these rivers. Based on these construction requirements, no cumulative water quality or channel habitat impacts on populations to this listed fish are expected.

Dudley Bluffs twinpod and Dudley Bluffs bladderpod. These two plants occupy a very small area within the Piceance Basin near the Meeker Hub Compressor Station. Populations of both species are currently protected within the Dudley Bluffs ACEC, where no new surface occupancy by oil and gas facilities has been allowed by the BLM. Any future development activities on federal lands in the vicinity of the known populations would be subject to pre-construction surveys, avoidance requirements if plants are found, and FWS consultation. The EPP and PBEP would not contribute cumulative surface disturbance impacts to populations of these plants, based on the projects' location.

Land Use

Land Use Conversion and Construction Effects. The EPP, PBEP (via the TransColorado North Expansion), and EnCana projects would incrementally add to the acreage of aboveground oil and gas facilities in Colorado and Wyoming. Assuming that approximately 300 acres are already dedicated to compressor stations, mainline valves, meter stations, and pig launchers/receivers, Entrega proposes to add 52 acres in Colorado and 24 acres in Wyoming for aboveground facilities. WIC (via the TransColorado North Expansion Project) would require approximately 9 acres for new aboveground facilities (compressor station at Greasewood, mainline valves and interconnections), and EnCana would require approximately 50 acres for its Meeker Gas Plant.

While installation of new pipelines in an existing corridor would incrementally reduce the area available for future development, use of established utility corridors concentrates cumulative land use impacts. With the exception of a rural residential area between Cheyenne and Laramie (EPP only), the EPP, PBEP, and EnCana projects would not cumulatively affect residential land uses. The majority of rural residential lots between Cheyenne and Laramie are about 40 acres. The existing corridor contains 5 to 6 utilities (pipelines and fiber optic cables) in this area. Assuming that one more pipeline were added (EPP), the 50-foot permanent ROW for 7 utilities across the full width of a 40-acre parcel would be 10.6 acres, or approximately 25 percent of the parcel area. However, the existing pipeline corridor pre-dates the

3.0 ENVIRONMENTAL ANALYSIS

subdivision of existing rangeland in this area, and owners and new buyers were informed of the pipeline easements in their deeds.

Special Management Areas. The EPP pipeline route would cross 5.2 miles of CDOWs Piceance Creek Wildlife Area in the irrigated meadows along Piceance Creek. The PBEP route would cross 3.3 miles of the same Wildlife Area in pinyon-juniper and sagebrush habitats between Greasewood and the White River. The two projects would cause cumulative habitat reductions on these state-owned lands. We anticipate that the irrigated meadow lands can be restored in the short term, and restoration in upland sagebrush and pinyon juniper dominated areas would be long term. Both projects would parallel each other across 2.9 miles of CDOWs Bitter Brush SWA south of the Yampa River. Both projects would coordinate with the CDOW to maintain access for recreational users (primarily hunters) during the construction period. Both pipeline routes would cross the Overland Trail at MP 118. This crossing is in a remote location, and has not been developed for public access and education about the trail.

Visual Resources

The route segments where the Entrega and El Paso pipelines would be collocated are classified as BLM VRM Class III (partial retention of existing characteristics of the landscape) by the Little Snake and Rawlins Field Offices. The areas where the cumulative contrast of the two pipeline construction ROWs would be most apparent to public observers would be along Moffat County Road 57 at MP 34.5, where the Entrega pipeline would ascend a steep ridge and the WIC pipeline would parallel the existing drainage channel, and again along County Road 57 between MPs 40 and 45 where the two ROWs would be approximately 0.25 mile west of the road on low sagebrush and grass slopes. The two ROWs would be briefly visible to travelers along U.S. Highway 40 where the pipelines would make a perpendicular crossing of the Yampa River. The remainder of the collocated pipeline segment between the Yampa River and Wamsutter is very remote, and accessible only by improved and unimproved secondary roads. Both pipelines would cross I-80 in Wyoming in an area that has already been highly modified by existing pipeline ROWs and commercial and industrial developments in the vicinity of Wamsutter.

New surface disturbance associated with the construction of the EnCana gathering pipelines and the Entrega pipeline would be most evident to public viewers driving along Rio Blanco County Road 5 between the Meeker Hub Compressor Station and the intersection with an existing pipeline ROW (Segment B, **figure 3.12-1**). Construction of additional pipelines in the Segment C existing pipeline corridor also would be viewed by travelers along County Road 5. These areas are classified as BLM VRM Class III. This classification would likely be maintained with post-construction slope recontouring and revegetation. The proposed EnCana Meeker Gas Plant probably could not be seen from County Road 5 because of setbacks from the bluff above the Piceance Creek drainage. No plant facility height information is available.

Cultural Resources

Surveys in Colorado located 73 cultural resource sites within the EPP construction corridor or area of potential effect (APE) (Redman et al. 2005). Forty of the sites are recommended or have been officially determined eligible for listing on the NRHP. The remaining 33 sites are recommended or have been officially determined not eligible for the NRHP. In the segment between the Wyoming state line and Wamsutter,

49 sites were located within the APE (Greiser et al. 2005). Thirteen of the sites are recommended or have been officially determined eligible for the NRHP, 6 sites are unevaluated, and 30 are recommended or have been officially determined not eligible for the NRHP.

To date, surveys in Colorado for the PBEP have located 114 sites in the PBEP construction corridor or APE (Metcalf and Slaughter 2005). Thirty-five of the sites are recommended or have been officially determined eligible for the NRHP, 45 are recommended or have been officially determined not eligible for the NRHP, 34 of the sites are presumed buried and will need additional evaluation. In the segment between the Wyoming state line and Wamsutter, 56 sites have been located within the APE. Sixteen of the sites are recommended or have been officially determined eligible for the NRHP, 39 are recommended or have been officially determined not eligible for the NRHP, and one site is listed in the SHPO database as not eligible, but has been recommended as eligible in past inventories.

It is anticipated that the PBEP would intercept many of the same sites crossed by the EPP. Both projects have completed cultural resource inventories that would be followed by treatment of sites that cannot be avoided. A currently unquantifiable number of both eligible and ineligible sites between Entrega MPs 40 and 135 may experience cumulative surface disturbance from these projects. A more specific number of affected sites will be determined upon analysis of both project proposals for site avoidance. Both routes intercept the Overland and Cherokee trails. A plan to mitigate impacts to any intact portions of the trails would be required for both projects.

The EnCana gathering pipelines (Segment B, **figure 3.12-1**) would be collocated with the Entrega Pipeline over a distance of about 2 miles along Piceance Creek. Insufficient information is currently available to evaluate potential cumulative project effects on eligible sites.

Socioeconomics

The socioeconomic discussion is focused on the potential interactions between the EPP and PBEP, since no other major construction project is expected to occur in the same timeframe and location as the EPP in the route segment between Wamsutter and the Cheyenne Hub. As discussed previously, the EnCana Meeker Processing Plant and pipeline project construction could overlap with the EPP and PBEP pipeline construction periods during the second half of 2005. Detailed EnCana construction timeframes have not been established. Consequently, this analysis acknowledges a risk of construction period overlaps during that period, but does not attempt to quantify the effects on labor force requirements, temporary housing availability, or fiscal costs and benefits. Given the dynamic nature of gas processing, pipeline, and ancillary development in the region, the potential exists for cumulative effects in late 2006/early 2007. However, scheduling and workforce data are not available for any specific projects in that timeframe.

Employment. Cumulative workforce impacts between the EPP and the PBEP could occur in Carbon and Sweetwater Counties, Wyoming and Moffat and Rio Blanco Counties, Colorado. Entrega proposes to construct its Meeker Hub Compressor Station – Wamsutter segment from north to south. El Paso proposes to construct the Greasewood – Wamsutter segment from south to north. A preliminary assessment of the EnCana project by the BLM suggests possible site preparation work for a compressor and pipeline construction moving west and south from the Meeker Hub during late 2005 (BLM 2005). As a consequence,

3.0 ENVIRONMENTAL ANALYSIS

the potential for multiple worksites to coincide in time in the vicinity of Craig and Meeker. Smaller scale overlaps could occur in conjunction with the construction of additional compression other ancillary facilities, or in the event of changes in scheduling by one or the other of these projects. We examined the proposed schedules for EPP and PBEP projects to estimate the time and location of greatest workforce overlap between the two projects. **Figure 3.12-3** illustrates the construction activities, and the expected distribution of the workforce along both pipeline routes. We assumed that the workforce would consist of 15 percent local hires.

Housing. **Figure 3.12-4** illustrates the potential housing demands within various nearby communities for the combined EPP and PBEP workforces in late 2005. The majority of the available temporary housing to serve these spreads is located in Craig, Colorado, and Rawlins, Wyoming. The infrastructure to accommodate short-term worker increases in both Baggs and Wamsutter is limited. This region is currently experiencing oil and gas exploration and development, which increases the competition for temporary housing on an ongoing basis. Over the years, a large inventory of temporary housing has developed in Sweetwater and Carbon Counties to meet demands from the oil and gas and mineral extraction industries. Thus, it is anticipated that the short-term influx of pipeline workers from both projects can be absorbed by the motels (3,085 rooms) and mobile home/RV spaces (6,889) in those counties. The availability of temporary housing is more limited in Moffat and Rio Blanco Counties. Because both projects would be active during the fall months, there could be short-term, potentially significant shortfalls in temporary housing and camp space availability in Meeker, Craig, and Rawlins during the hunting season months of October and November.

Public Services and Facilities. Oil and gas industry workforces typically consist of a large fraction of non-residents who leave the region as drilling and construction projects are completed, if other job opportunities in the oil and gas industry are not available. As a consequence, there may be short-term demands for public services from this population, but major investments in public infrastructure (e.g., new schools, hospitals) would not be required. The oil and gas workforce is dispersed over a wide area at long distances from emergency services (e.g., hospitals, fire fighting). During public scoping, Rio Blanco County law enforcement and public safety officials expressed concern about the long distances for emergency response (the nearest major hospital is in Grand Junction), and insufficient local staff to respond to simultaneous emergencies, should that eventuality arise. This input suggests that investment is needed at the county level to expand service capabilities, at least temporarily, or the oil and gas industry needs to provide short-term additional support for these services in the form of staff, equipment, service fees, and planning and communications with service providers to address the cumulative impacts of multiple projects occurring in the same timeframe.

Public Sector Fiscal Resources. Both the EPP and PBEP would cumulatively contribute revenues to Rio Blanco and Moffat Counties in Colorado, and Sweetwater and Carbon Counties in Wyoming during the construction period from local purchases by the companies and construction personnel, sales taxes on materials and equipment, and housing rentals. Long-term revenues would accrue to these counties from additional property taxes on improvements located within their respective boundaries, and shares of oil and gas severance taxes on local production. **Table 3.12-4** presents an estimate of the cumulative effects of the EPP and PBEP on ad valorem taxes in the counties where both projects would be constructed. The counties that would be most benefited are Rio Blanco and Moffat Counties (about a 6 percent and 9 percent increase in the assessed valuation, respectively). The effects in Carbon and Sweetwater Counties,

3.12 Cumulative Impacts

Wyoming would be relatively lower because of a relatively higher existing assessed property valuation on other improvements and natural resource production.

Entrega Schedule by Activity	2005								2006
	M	J	J	A	S	O	N	D	J
Spread 1- Rio Blanco and Moffat									
Spread 2 - Moffat and Sweetwater									
Metering - Rio Blanco									
Metering - Sweetwater									
Pipe and Material Transport									

PBEP Schedule by Activity	2005								2006
	M	J	J	A	S	O	N	D	J
Spread 1- Sweetwater and Carbon									
Spread 2 - Moffat and Rio Blanco									
Metering - Rio Blanco									
Metering - Sweetwater									
Greasewood Compressor - Rio Blanco									

Entrega Workforce by Activity	2005								2006
	M	J	J	A	S	O	N	D	J
Spread 1			350	475	475	475	475	475	
Spread 2			325	425	425	425	425	425	
Metering 1				65					
Metering 2 thru 3					65	65			
Pipe and Material Transport			100	100	100	100	100	100	
Total			775	1,065	1,065	1,065	1,000	1,000	

PBEP Workforce by Activity	2005								2006
	M	J	J	A	S	O	N	D	J
Spread 1- Sweetwater and Carbon						137	268	240	70
Spread 2 - Moffat and Rio Blanco						136	267	240	70
Metering - Rio Blanco							65		
Metering - Sweetwater						65			
Greasewood Compressor - Rio Blanco								50	50
Total						338	600	530	190

Combined Totals			775	1,065	1,065	1,403	1,600	1,530	190
------------------------	--	--	------------	--------------	--------------	--------------	--------------	--------------	------------

Figure 3.12-3. Overlap between Currently Proposed Entrega and PBEP Construction Schedules and Workforce Estimates, 2005 through 2006

3.0 ENVIRONMENTAL ANALYSIS

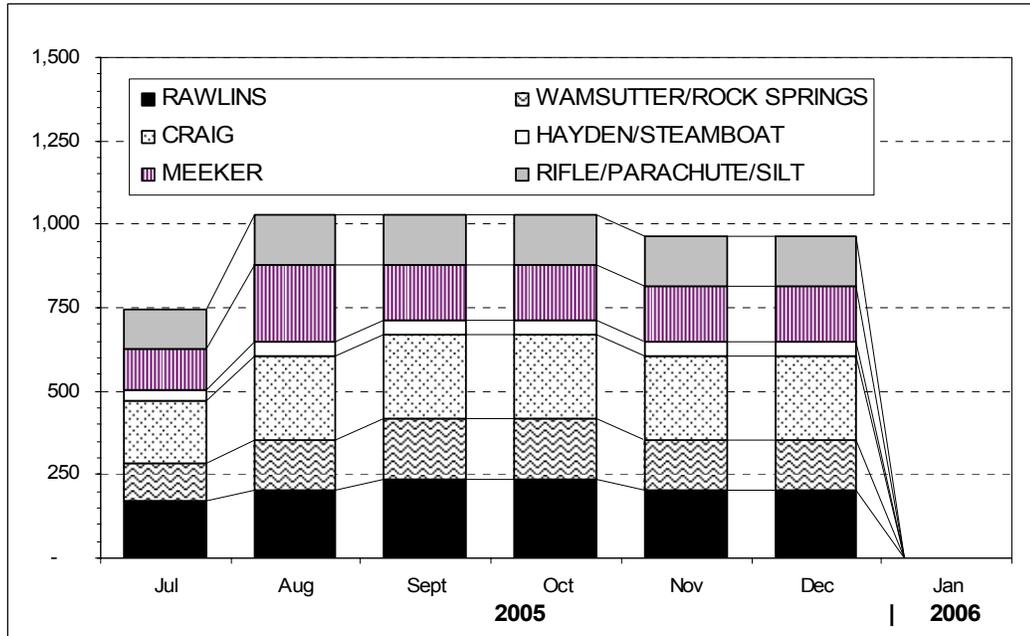


Figure 3.12-4. Combined Entrega and PBEP Workforce Estimates, Projected Place of Residence

**Table 3.12-4
Cumulative County Ad Valorem Tax Increases - Entrega and El Paso Projects**

County	2003 Assessed Valuation	Entrega Pipeline	
		Assessed Valuation	Percent Increase
Carbon County	\$382,269,728	\$7,412,000	1.94%
Sweetwater County	\$11,607,419,952	\$6,043,000	0.05%
Moffat County	\$298,876,180	\$14,068,000	4.71%
Rio Blanco County	\$304,607,460	\$6,192,000	2.03%
WIC Pipeline			
County	2003 Assessed Valuation	Assessed Valuation	Percent Increase
Carbon County	\$382,269,728	NA	NA
Sweetwater County	\$11,607,419,952	\$4,642,186	0.04%
Moffat County	\$298,876,180	\$12,445,476	4.16%
Rio Blanco County	\$304,607,460	\$10,672,096	3.50%
Combined			
County	2003 Assessed Valuation	Assessed Valuation	Percent Increase
Carbon County	\$382,269,728	\$7,412,000	1.94%
Sweetwater County	\$11,607,419,952	\$10,685,186	0.09%
Moffat County	\$298,876,180	\$26,513,476	8.87%
Rio Blanco County	\$304,607,460	\$16,864,096	5.54%

Transportation. Entrega and WIC propose to construct portions of their projects in the same construction season (mid to late 2005) from Deception Creek in Moffat County to Wamsutter. If Entrega and WIC simultaneously construct in areas where the pipelines are closely parallel to each other, there would likely be substantial increases in construction traffic on Rio Blanco County Road 7 and Moffat County Road 57 between Meeker and Maybell; Colorado Highway 13 between I-70 and the state line south of Baggs; Wyoming Highway 789 between Baggs and Wamsutter; and U.S. Highway 40 between Craig and Maybell. Improved and unimproved BLM roads administered by the Little Snake and Rawlins Field Offices would provide access from Colorado Highway 13 and Wyoming Highway 789 to the pipeline ROWs between the Yampa River and Wamsutter. These secondary roads would experience short-term high increases in traffic while pipe is delivered and the pipelines are installed. These roads are currently experiencing daily traffic from well field drilling and operational activities west of Baggs. The accurate construction schedules of both pipeline projects are not currently known.

The EPP and PBEP would follow transportation plans to manage construction vehicles, and would follow standard measures for fence repair, provision of temporary gates, and provision of temporary crossings for livestock. Equipment turning onto and off state highways and access roads may require flagmen and other controls to limit the risk of accidents on public roads. Both projects would be required to obtain local crossing permits for county roads, which would define weight limits and maintenance standards. The BLM has defined minimum standards for maintenance of existing BLM roads, and construction and operation of any new permanent roads on BLM-administered land.

EnCana has stated that it expects to employ 250 workers to construct the initial phase of the Meeker Processing Plant over a period of 6 months. A proposed construction start date is not known. If construction were to begin in the third or fourth quarter of 2005, there is potential for overlap between the Entrega pipeline and EnCana workforces and material deliveries on Rio Blanco County Road 5 that parallels Piceance Creek. This county road also could be used by EnCana's gathering pipeline construction workforces during the same period.

In summary, the EPP and PBEP overlapping pipeline construction periods could result in short-term (1 to 2 months) cumulative increases in traffic on secondary BLM and county roads between U.S. Highway 40 in Colorado and I-80 in Wyoming. Roads used by construction equipment would be maintained, and any damage repaired after construction is completed. Consequently, long term cumulative impacts to roads and traffic flow are not expected. Potential overlaps between the Entrega pipeline and EnCana processing plant and gathering pipeline construction workforces in the second half of 2005 are possible along Rio Blanco County Road 5, but cannot be confirmed based on available information.

Air Quality and Noise

Cumulative fugitive dust (particulate) increases may occur where the EPP and PBEP are using the same access road system to construct their projects (see Transportation above). Both projects would follow state and local requirements for dust control on roads and excavated surfaces.

On a local scale, cumulative increases in air pollutant emissions could occur where new compressor stations are sited at or near existing stations. Entrega would collocate its new compressor near existing

3.0 ENVIRONMENTAL ANALYSIS

compressor stations operated by other companies at the proposed Meeker Hub and Wamsutter. The remaining station (Bighole) is located individually in a rural area. A new natural gas-fired compressor (1,650 site-rated horsepower) would be installed within the existing Greasewood compressor station to provide compression for the WIC Piceance Basin Expansion pipeline. TransColorado's new Greasewood station would include three natural gas-fired compressors totaling 4,670 horsepower. EnCana would install several natural gas combustion heaters at its Meeker Processing Plant to remove carbon dioxide and water from the natural gas received from the gathering pipeline system. EnCana proposes to power its natural gas compressors with electricity provided from an existing transmission line. Each compressor station and gas processing plant is required to obtain a construction and operation permit from either Colorado and Wyoming, and potential interactions with nearby emission sources must be considered in these permit applications.

On a regional scale, the gas-fired combustion turbines at the three EPP compressor stations would emit criteria pollutants, and small quantities of hazardous air pollutants. Recent regional air cumulative studies have been completed that address multiple pollutant emission sources within the same regional air sheds where the EPP compressor stations would be located (BLM 2004a,b). The EPP compressor stations are included as a type of foreseeable source in these analyses. The following paragraphs summarize the major conclusions of these regional studies.

Ambient Air Quality and Air Quality Related Values. The CALPUFF model was applied to estimate the far-field (50 km to over 200 km) ambient air quality and Air Quality Related Values (AQRV) impacts from the Desolation Flats project (BLM 2004a). The far-field analysis estimates the total impacts due to the existing background and foreseeable project sources. Impacts on air quality were estimated at nearby Class I and Class II areas. The sensitive areas include:

- Bridger Wilderness (Class I);
- Fitzpatrick Wilderness (Class I);
- Popo Agie Wilderness (Class II);
- Wind River Roadless Area (Class II);
- Dinosaur National Monument (Class II);
- Savage Run Wilderness (Class I);
- Mount Zirkel Wilderness (Class I); and
- Rawah Wilderness (Class I).

The protocol for the Desolation Flats assessment was to perform a single impact analysis for Alternative A. Under Alternative A, 592 gas wells would be developed at 555 locations, with a forecasted success rate of 65 percent resulting in 385 producing wells. The producing wells would be supported with six compressor stations and two gas processing plants. Compression and processing requirements for Alternative A are estimated at 32,000 horsepower. The analysis of Alternative A represents the worst-case scenario. Potential air quality impacts resulting from the proposed action and the no action alternatives would be less than the impacts resulting from the implementation of Alternative A.

3.12 Cumulative Impacts

The CALPUFF model was used to estimate ambient NO₂, SO₂, PM₁₀, and PM_{2.5} concentrations for comparison with federal and state ambient air quality standards and PSD Class I increments and to address potential AQRV impacts. The estimated concentrations for all pollutants are far below the applicable federal and state ambient air quality standards and are less than one percent of the Class I PSD increments (BLM 2004a).

The Roan Plateau CALPUFF studies (BLM 2004b) found similar results at Class I areas with respect to the Reasonably Foreseeable Development (RFD) in the region. The number of new wells in the maximum development scenario for the Roan Plateau was 3055. It was calculated that this level of development would require up to 67 new 1,000 hp compressors and 1 new glycol dehydrator per gas well.

National Ambient Air Quality Standards (NAAQS) were not exceeded for any pollutant or averaging period, and all concentrations include background. The PSD Increments were not exceeded for any pollutant or averaging period. Although these results are compared to the PSD increment consumption thresholds, they do not, nor are they intended to, represent a true PSD increment consumption analysis.

Visibility Impacts. There are two thresholds of visibility change that are used for determining the significance of potential impacts: the number of days in which the visibility is 1 deciview or greater; and the number of days in which the change is 0.5 deciview or greater. A deciview is a 10 percent reduction in visibility as compared to background concentrations of atmospheric haze components, as measured by a specialized instrument called a nephelometer. The FS uses the 0.5 deciview change as a threshold to protect visibility in sensitive areas. The 1.0 deciview change threshold is used in the Regional Haze Regulations as a small but just noticeable change in haziness and has been used by other agencies as a management threshold. The 0.5 and 1.0 deciview change thresholds are neither standards nor regulatory limits. Rather, they are used to alert the affected land managers that potential adverse visibility impacts may exist and the land manager may wish to look at the magnitude, duration, frequency, and source of the impacts in more detail in order to make a significance determination.

The Desolation Flats EIS analyzed far field impacts on visibility degradation at the sensitive receptor areas using the IWAQM/FLAG-recommended method (BLM 2004a) and found that visibility impacts do not exceed the thresholds of 0.5 or 1.0 deciview change levels. Therefore it is not expected that visibility impacts from the proposed pipeline compressors would cumulatively contribute to atmospheric conditions that would exceed these thresholds. The Roan Plateau study found that visibility at three Class I areas in Colorado may be reduced on a few days due to existing sources. However, construction and operation of the proposed pipeline would not materially contribute to cumulative visibility impacts because the RFD studied for the Roan Plateau EIS included future emissions estimates that encompass the proposed compression at the Meeker Hub and Wamsutter compressor stations required for this project.

Noise. The Wamsutter Compressor Station would be in an existing high-noise area in the vicinity of existing compressor stations and I-80. Entrega has demonstrated in its noise analysis that the proposed facilities would not increase the existing noise levels at the nearest occupied residence, even though the existing noise levels exceed the FERC standard of 55 dBA L_{dn}. The Entrega measurements account for existing noise sources (e.g., highway noise). El Paso does not currently propose to construct new compressor

3.0 ENVIRONMENTAL ANALYSIS

stations for its project, but the proposed TransColorado compressor station at Greasewood would serve this purpose. No residences are located within 4 miles of the Greasewood site.

System Safety and Reliability

As discussed previously, we conclude that no cumulative operational safety impacts are expected among pipelines and other facilities located in the same general utility corridor because of the spacing between pipelines, the depth of soil cover, and requirements to meet DOT Minimum Federal Safety Standards in Title 49 CFR Part 192.