

**ALTERNATIVES**

**CHAPTER 4**

## **4.0 ALTERNATIVES**

Several project alternatives have been identified and evaluated to determine if they would be reasonable and provide environmental or benefits when compared to the proposed action. The range of alternatives includes the No Action or Postponed Action Alternative, System Alternatives, Route Alternatives, and Route Variations.

The evaluation criteria used for developing and reviewing alternatives were:

- technical feasibility and practicality;
- significant environmental advantage over the proposed action; and
- ability to meet the project's stated objectives.

The development and analysis of alternatives were shaped by the public and agency interactions with Entrega that occurred during the FERC's NEPA Pre-Filing and scoping processes. Entrega established a preliminary pipeline centerline prior to initiating the pre-filing process. This was followed by stakeholder meetings and agency field reviews to obtain feedback on the proposed routing. Entrega developed new route segments to respond to specific issues, and then followed up with landowners and agencies to confirm proposed changes. The route alignment that Entrega filed on September 18, 2004, represents the EIS proposed action.

The alternatives that are carried forward in this analysis are those that:

- offer potential environmental impact reduction benefits relative to the proposed action;
- address routing comments from landowners that have not been resolved by Entrega; and
- represent deviations from an existing pipeline corridor where we believe the potential environmental costs/benefits favor locating the proposed pipeline segment outside the corridor. Several short route variations have already been incorporated into the Entrega proposed action. The reasons for these changes are contained in Entrega's Resource Report 10 that is posted on the FERC website, and are not further discussed here.

### **4.1 No Action or Postponed Action**

The actions triggering this environmental review were Entrega's applications to the FERC for a Certificate and to the BLM for new or amended ROW grants across public (federal) lands. The FERC and the BLM have three courses of action in processing these applications. They may:

1. grant the approvals with or without conditions;
2. deny the approvals; or
3. postpone action pending further study by denying the application without prejudice.

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If the FERC and the BLM deny or postpone EPP's applications, the environmental impacts identified in this EIS would not occur. In addition, should the no action alternative be selected, the stated objectives of EPP's proposal would not be met. Specifically, customers in the Midwest and Central U.S. would not have access to the 1.5 Bcfd of natural gas that the EPP proposes to transport. Additionally, producers in the Piceance and neighboring production basins (as well as the Central Rocky Mountains supply region) would be denied up to 1.5 Bcfd of new regional transportation capacity which could potentially hinder further gas development in this region. If this denial or postponement happens, new and existing natural gas users would need to obtain natural gas from other sources, use alternative energy sources, or use alternative fuels.

In this instance, the first option would likely require the construction of additional and/or new pipeline facilities in other locations to transport natural gas supplies currently being developed in the Piceance Basin or planned for development/production in the near future. If other natural gas facilities are approved and constructed, each project would result in its own set of specific impacts that could be less or greater than those associated with the current proposal. The second option, use of alternative energy sources, is infeasible because the use of solar, hydroelectric, or other energy sources (e.g., geothermal, fuel cells) has not been developed to the point where they would be viable energy alternatives to the proposed project.

Denying or postponing authorization of the proposed project also could result in more expensive and less reliable natural gas supplies for the end-users and/or greater reliance on alternative fossil fuels, such as coal or fuel oil. Increased use of alternative fossil fuels would likely result in greater emissions of SO<sub>2</sub>, NO<sub>x</sub>, and PM<sub>10</sub> compared to other fossil fuels (**table 4.1-1**). If coal were used in lieu of (1.5 Bcfd x 365d) of natural gas, annual emissions of SO<sub>2</sub>, NO<sub>x</sub>, and PM<sub>10</sub> would be 48,800, 18,900, 1,200 tons higher, respectively.

**Table 4.1-1  
Comparison of Controlled Emission of Criteria Pollutants for Three Boiler Types  
(Tons Per Year)**

<b>Boiler Type</b>	<b>SO<sub>x</sub><sup>1</sup></b>	<b>NO<sub>x</sub><sup>2</sup></b>	<b>PM<sub>10</sub></b>
Coal-fired	49,000	39,700	1,700
Oil-fired <sup>3</sup>	31,300	31,900	8,000
Natural Gas-fired	200	20,800	500

Assumptions:

<sup>1</sup> Assumes 1.2 percent sulfur coal, 1 percent sulfur oil, pipeline quality gas.

<sup>2</sup> Assumes LoNO<sub>x</sub> burners on all units.

<sup>3</sup> Fuel oil-fired boiler assumes Number 5 oil, tangentially fired.

Source: Calculated from EPA Compilation of Air Pollutant Emission Factors AP42 Fifth Edition based on typical standard configurations and assumptions. Individual boiler performance may be significantly different from this example.

## 4.2 System Alternatives

System alternatives are those that use other pipeline systems to achieve the objectives of the proposed project. A system alternative would make it unnecessary to construct all or part of the EPP, although some modifications or additions to another existing pipeline system may be required to increase its capacity, or another entirely new system may need to be constructed. Such modifications or additions would result in some measure of environmental impact; however, the impact could be less than, similar to, or greater than that associated with construction of the proposed project.

### 4.2.1 Other Existing Pipeline Systems

The major interstate pipelines that pass through the proposed Meeker Hub, or are interconnected at the Greasewood Hub, are the Williams Northwest Pipeline Corporation (Northwest Pipeline) 26-inch-diameter line (including a lateral pipeline between the Piceance Basin and Rangely), the CIG UBL 20-inch-diameter line, Questar's 14-inch-diameter line, and the Kinder Morgan TransColorado 22-inch-diameter line. Entrega provided an estimate of the subscribed capacity of these pipelines in relation to actual volumes transported. **Table 4.2-1** summarizes this investigation.

**Table 4.2-1  
Capacity and Subscription Status of Existing Interstate Pipelines Serving the Piceance Basin**

Pipeline	Capacity (MMcfd)	Recent Gas Flow (MMcfd)	Firm Subscriptions (MMcfd)
CIG Uinta Basin Lateral	222	198	222
CIG to Northwest Pipeline	290	190	290 <sup>1</sup>
Northwest Pipeline Lateral	40	26	4.7
Questar 14-inch (Dragon Trail)	120	40	120
TransColorado	385	338	385
<b>Total</b>	<b>1,057</b>	<b>792</b>	<b>1,021.7</b>

<sup>1</sup> Entrega's estimate based on best available information.

This information was compiled and extrapolated from interstate pipeline public websites, contacts with pipeline personnel, and recent industry presentations on the subject matter. The table includes a "CIG to Northwest Pipeline" category because CIG delivers significant quantities of gas to Northwest Pipeline at this point. However, since the Northwest Pipeline system transports gas from Utah's Uinta Basin, not all of the capacity shown or the flows are necessarily from the Piceance basin. This observation also generally applies to the CIG UBL, which transports gas from both the Uinta and Piceance Basins.

Assuming for the immediate future that these pipelines continue to carry the gas volumes recently transported (rather than their firm subscription volumes), the existing systems combined would be unable to accommodate more than about 35 percent of Entrega's proposed Phase 1 volumes and less than 18 percent of Entrega's total proposal of 1.5 Bcfd. Given the diameters of these existing pipelines (the largest being the Northwest Pipeline at 26 inches), transport of Entrega's volumes would require either:

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- a) substantial looping and additional compression on multiple systems, or
- b) looping one system in its entirety.

While option (a) might disperse the associated environmental impacts, it is unlikely to substantially reduce impacts when compared to the EPP. Further, the use of multiple pipeline systems would not meet Entrega's objective of gas deliveries to Wamsutter and the Cheyenne Hub.

The fact that both Entrega and WIC have signed agreements with new shippers sufficient to finance and construct entirely new, large-diameter pipelines (36 and 24 inches in diameter, respectively) indicates that the amount of capacity needed exceeds that which could be obtained economically by adding looping and/or compression to the existing pipeline systems. In other words, at least one existing system would have to be completely looped to accommodate the proposed Entrega volumes. This, in effect, is what Entrega proposes (i.e., to loop CIG's 20-inch-diameter UBL between the Piceance Basin and Wamsutter and the CIG/WIC systems between Wamsutter and the Cheyenne Hub). Given that the impacts associated with looping an entire pipeline system between the Piceance Basin and the Cheyenne Hub would be essentially equivalent to those associated with Entrega's proposal, the use of existing systems would not provide a significant environmental advantage over the proposed action and was eliminated from further consideration.

### 4.2.2 Proposed Pipeline Systems

WIC's PBEP represents a new pipeline alternative that could potentially convey Entrega's gas to Wamsutter by interconnecting with Entrega's supplier at the Greasewood Hub, increasing the diameter of its pipeline, and adding compression. The WIC project is not presently planned to extend between Wamsutter and the Cheyenne Hub. However, by modifying its current project, the PBEP represents an alternative pipeline system that could functionally meet Entrega's purpose and need.

Several commentors requested that we examine the alternative of transporting the PBEP's gas and the Entrega Project's gas in a single pipeline between the Piceance Basin and Wamsutter. **Table 4.2-2** presents the facilities proposed by WIC and Entrega individually, as well as the facilities required by a "one-pipe" alternative sized to carry the combined gas volumes (i.e., 1,850 MMcfd) to Wamsutter by either Entrega or WIC.

Each company approached the one-pipe alternative differently. Entrega would increase compression at its proposed Meeker Hub and Bighole Compressor Stations, but would leave the pipeline diameter at 36 inches. As a consequence, Entrega's total horsepower (97,000 ISO) for transporting gas for both projects would be 44,490 horsepower more than if the two projects were constructed independently. WIC would increase the diameter of the shared pipeline to 42 inches, and the estimated total horsepower (48,190 ISO) would be 4,320 horsepower less than if the two projects were constructed independently. Based on these design differences, WIC's one-pipe alternative approach would reduce environmental impacts since the surface disturbance requirements between construction of a 36-inch and a 42-inch-diameter would be nearly the same, but the compressor operational emissions for the WIC alternative would be about half as much as Entrega's, based on the relatively smaller horsepower requirements.

**Table 4.2-2  
Comparison of Facilities Required by Entrega and WIC  
Proposed Actions and “One-Pipe” Alternative<sup>1</sup>**

<b>Facilities and Location</b>	<b>WIC Piceance Project Proposed Action</b>	<b>Entrega Project Proposed Action</b>	<b>WIC “One-Pipe” Alternative</b>	<b>Entrega “One-Pipe” Alternative</b>
<u>Pipeline (miles @ diameter)</u>				
Pipeline to Wamsutter	141.7 @ 24”	136 @ 36”	141.7 @ 42” <sup>2</sup>	136 @ 36” <sup>2</sup>
<u>Compression (horsepower)</u>				
Meeker Hub	---	15,400 (ISO) <sup>3</sup>	15,400 (ISO) <sup>4</sup>	31,150 (ISO) <sup>5</sup> (15,400 + 15,750)
CIG Greasewood Hub	2,820 (ISO)	---	28,120 (ISO) (2,820 + 25,300)	---
TransColorado North Expansion	4,670 (ISO)	---	4,670 (ISO)	---
Bighole	---	30,000 (ISO) <sup>3</sup>	---	65,850 (ISO) (30,000 + 35,850)
<b>Total Compression</b>	<b>7,490 (ISO)</b>	<b>45,020 (ISO)</b>	<b>48,190 (ISO)</b>	<b>97,000 (ISO)</b>
<u>Metering and Pressure Regulation Requirements</u>				
Meeker Hub	---	one receipt meter	---	one receipt meter
CIG Greasewood Hub	one receipt meter	---	one receipt meter	one receipt meter
Wamsutter	two delivery meters	two receipt/delivery meters	two receipt/delivery meters	two receipt/delivery meters
Pressure Regulation	---	---	one/two regulators	one/two regulators

<sup>1</sup> Facilities needed to deliver Piceance Project and Entrega Project proposed gas volumes from the Piceance Basin to Wamsutter, Wyoming. Additional compression required by Entrega to transport gas to the Cheyenne Hub is not included.

<sup>2</sup> This mileage does not account for a “linking” pipeline between the Greasewood and Meeker Hubs. Delivery of WIC’s 341 MMcf to Entrega’s proposed Meeker Hub Compressor Station would require about 7 miles of 24-inch-diameter pipeline. Delivery of Entrega’s 1,500 MMcf to WIC at the Greasewood Hub would require about 7 miles of 36-inch-diameter pipeline.

<sup>3</sup> Entrega’s estimate of ISO horsepower. Entrega will finalize compression requirements after price negotiations are completed in mid-2005.

<sup>4</sup> This figure represents total compression available at the Meeker Hub, which is designed to transport gas over a distance of approximately 76 miles. Less compression would be required to transport gas over a distance of 7 miles from the Meeker Hub to the Greasewood Hub.

<sup>5</sup> Includes 12,600 (ISO) horsepower required to bring gas received from WIC up to Entrega’s system inlet pressure requirements (1,280 psig).

While attractive in concept, this alternative would present a number of challenges. From an engineering standpoint, both companies plan on receiving natural gas from different producers at different delivery pressures. Also, WIC and Entrega have commitments with their shippers to deliver volumes at different pressures at their respective interconnections. While not impossible, melding the various factors and

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requirements together into a common system would be difficult. As evidence of this fact, we note that Entrega and WIC attempted to resolve these differences and negotiate a common pipeline for several months before deciding to go forward as individual pipelines. Further, we note that the Commission cannot compel either company to build facilities sufficient to carry the other company's gas. For these reasons, we eliminated the one-pipe system alternative from further consideration.

We also note that construction of two pipelines may actually minimize environmental impacts over the long-term. Given the drilling activity that has occurred over the last several years and the projections of increased gas production in the Uinta-Piceance Basin, construction of two pipelines would provide shippers with more flexibility in terms of options for future expansion when compared to one pipeline.

As presented in **table 4.2-2**, it would be physically possible for the volumes of gas associated with both projects to be transported by Entrega's 36-inch-diameter pipeline (with additional compression, as shown). At this state, the Entrega pipeline would be approaching its maximum allowable operating pressure (MAOP). Additional gas could only be transported by adding even more horsepower at intermediate compressor stations (midway between the Meeker Hub and Bighole, and between Bighole and Wamsutter). As the system approaches its MAOP, this scenario becomes uneconomic and a pipeline loop would be proposed. However, if both the Entrega and the Piceance Basin Expansion Pipelines are constructed, both could be economically expanded when and if future production becomes available.

### 4.3 Regional Route Alternatives

During its initial routing studies, Entrega identified and evaluated several "regional" route alternatives between the Piceance Basin and the Cheyenne Hub. Before selecting an alignment similar to what has now become its proposed route, Entrega considered several other regional alternatives.

1. the I-70 corridor from DeBeque to Denver, then north to Cheyenne;
2. a direct northeasterly route from the proposed Meeker Hub to the Cheyenne Hub following high voltage transmission lines over the Park Range in Colorado and the Medicine Bow Range in Wyoming; and
3. a shorter variation of the proposed alignment that would extend northeasterly from Baggs, Wyoming, to Arlington, Wyoming, and then follow the proposed route to the Cheyenne Hub.

Because of engineering and environmental constraints, Entrega discarded these three regional route alternatives for an alignment that parallels existing interstate pipeline facilities almost exclusively (the proposed route). When compared to the proposed alignment, Entrega's evaluation found that the three other alternatives would:

- require the acquisition of substantial amounts of new ROWs that would not be parallel to existing ROWs;
- cross difficult, high-elevation mountainous terrain that would result in higher construction costs, more waterbody and wetland crossings, and shorter construction seasons; and

- not meet Entrega's objective of including interconnections with existing interstate pipeline systems at Wamsutter.

We generally agree with Entrega's evaluation of these "regional" route alternatives and have therefore eliminated them from further consideration.

#### **4.4 Route Alternatives**

The route alternative is defined as a route deviation that extends over several miles and is designated to address a single major environmental constraint, or multiple environmental issues, associated with the proposed action. The following route alternatives were carried forward for further evaluation based on public scoping input and unresolved issues.

##### **4.4.1 PBEP Route Alternative**

The PBEP Route Alternative (**figure 4.4-1**) was considered to be a potential route alternative to the first 33 miles of the EPP because it would:

- avoid or minimize impacts to irrigated pastures and wetlands along Entrega's initial 14 miles of construction through the Piceance Creek drainage;
- address/avoid engineering issues along Entrega's proposed route north of the White River crossing (an area of pipeline congestion combined with steep slopes, rock outcrops, and a ravine associated with the Colorow Mountain crossing. MPs 19.5 to 20.6); and
- avoid known geologic hazards associated with the existing UBL immediately adjacent to Entrega's proposed route (two areas of soil subsidence hazards near channel crossings between Entrega's MPs 25.5 and 28, and an existing landslide area that caused local damage to the UBL near Entrega's MP 31 along Deep Channel Creek).

The results of our analysis are presented in **table 4.4-1**. This alternative was analyzed on the assumption that only the Entrega Pipeline would follow the PBEP route. A subsequent analysis was conducted that assumes that both the EPP and PBEP would either be collocated along Entrega's alignment or along WIC's alignment south of Entrega MP 33.2; (see section 4.4.2, Collocation Alternative, below).

The following are the most important environmental impact differences between the two routes:

- Entrega's proposed route is 10.5 miles shorter than the alternative, and would parallel 17.3 more miles of existing utilities. This greater degree of utility collocation generally indicates overall better access, and a reduced requirement for temporary roadways for proposed action construction.

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**Table 4.4-1  
Comparison of Resources Crossed by Entrega's Proposed Action  
(MPs -0.5 to 33.2) and the PBEP Route Alternative**

Analysis Parameter		Entrega Proposed Action	WIC PBEP Route
<b>Miles Crossed</b>			
TOTAL MILES PER ROUTE ALTERNATIVE		33.7	44.2
Utilities	Parallel to Existing Utilities (e.g., roads, pipelines, transmission lines).	27	9.7
Geology/ Soil	Slopes >15 percent	1.4	3.2
	Shallow Bedrock	16.7	21.0
Wetlands <sup>1</sup>	Potential Subsidence/landslide hazards	Yes	Unknown
	Delineated Wetlands Crossed	0.5	0.5
Vegetation	Tall Shrublands (sagebrush, greasewood, oak)	17.6	22.7
	Pinyon-Juniper Woodland	6.7	14.5
Wildlife	Critical Big Game Winter Habitat	12.9	18.8
	Sage Grouse Winter Range	0.0	2.4
Agriculture	Pasture and Hayland	10.0	6.8
Special Management Areas	CDOW State Wildlife Areas	5.6	3.3
Sensitive Species	Bald Eagle Nesting Site (within 1 mile)	0	3.6
	Bald Eagle Roost Site (within 0.5 mile)	2.3	5.7
<b>Number of Crossings</b>			
Surface water	Piceance Creek Crossings <sup>2</sup>	11	0
	Dry Fork Piceance Creek	0	1
	White River	1	1
	Listed Fish Critical Habitat (White River) <sup>3</sup>	1	0

<sup>1</sup> Wetlands do not include irrigated hayfields.

<sup>2</sup> Our recommended route realignments would avoid five of Entrega's eleven proposed crossings of Piceance Creek.

<sup>3</sup> The White River would be crossed using the HDD method; therefore, no impact on the river or the associated critical habitat is expected.

- The proposed route would cross 1.8 fewer miles of steeper slopes (greater than 15 percent), and 4.3 fewer miles of shallow bedrock construction than the alternative route. The reasons for these differences are that the alternative route would cross: 1) steep side slopes between the Meeker and Greasewood Hubs; 2) steep slopes on both sides of the Dry Fork of Piceance Creek; and 3) steep ascent/descent slopes just south of the White River.
- The proposed route would cross 5.1 fewer miles of tall shrublands (sagebrush, greasewood, oak), and 7.8 fewer miles of pinyon-juniper woodlands than the alternative. As a consequence, the long-term wildlife support functions of these shrubland and woodland communities would be reduced to a lesser extent than the alternative. The proposed action would cross 5.9 fewer miles of big game critical winter range (as defined by the CDOW), and would not cross sage grouse winter range as compared to 2.4 miles crossed by the alternative.

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- The proposed route would cross Piceance Creek 11 times compared with no crossings for the alternative; would cross about 3.3 more miles of wetlands (consisting primarily of hay meadows and emergent wetlands); and would cross 2.3 more miles of CDOW Wildlife Area land.

In summary, the PBEP alternative route does not offer persuasive impact reduction advantages over the proposed route with respect to overall effects on wildlife habitat, particularly in upland areas where revegetation periods are very long (10 to 50+ years). Pipelines have previously been constructed within the Piceance Creek floodplain, and the construction areas for these pipelines are currently indistinguishable from adjacent undisturbed land where the pipelines cross pasturelands and emergent wetlands. Application of best management practices for soil management, stream crossings, and grading disturbed areas to maintain existing irrigation flow patterns would ensure that sediment increases in Piceance Creek would be very short term, and that vegetation productivity in irrigated pasturelands could be restored in 1 to 2 years. However, we also recognize the regional importance of the Piceance Creek floodplain for livestock grazing, winter use by big game, and the relatively greater wetland disturbance.

Because the two routes represent a trade-off between long-term wildlife habitat reduction along a predominately upland route and short-term water quality, aquatic life, and hayland/pasturelands impacts resulting from construction along (and multiple crossings of) the Piceance drainage, we specifically sought public comment on this issue in the draft EIS. We also requested any suggestions for additional mitigation that the public believes would be necessary for construction along both routes before we recommended a preferred route for the EPP. No commenter provided information that specifically focused on the trade-offs which the two routes represent (although the COE comment letter indicated a preference for an alternative that would follow the proposed PBEP route – see discussion in section 4.4.2).

After carefully considering the impacts associated with each route and all relevant mitigation (both proposed by Entrega and recommended in this EIS), we conclude that Entrega's proposed route is preferred. To further limit impact on the Piceance Creek drainage, we have recommended two route realignments in section 3.3.2 that would reduce the number of proposed creek crossings from 11 to 6.

### 4.4.2 Collocation Alternative

WIC proposes to construct and operate its PBEP along an alignment that would closely parallel the EPP over the majority of the distance between the PBEP origin at the Greasewood Hub to its terminus at Wamsutter, Wyoming. The purpose of this alternative is to examine the potential surface disturbance reduction advantages that could be obtained by collocating the Entrega and Piceance Basin Expansion pipelines within overlapping construction ROWs (to the extent practical, due to technical and topographical constraints), rather than constructing both pipelines as separate and discrete facilities within a broader utility corridor. For purposes of this analysis, "collocation" is defined as constructing the two pipeline projects in the same construction ROW, with an offset of 25 to 50 feet from each other, and from other parallel pipelines. For the purpose of this analysis, we assumed that both projects could be constructed within the same 150-foot-wide construction ROW.

The collocation analysis was conducted within two study areas. The first study area (Danforth Hills South) encompasses the Entrega Pipeline (and the equivalent segment of the proposed WIC pipeline) from the

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origin of each pipeline to Entrega MP 33.2, where the two pipelines converge. The second study area (Danforth Hills North) extends from Entrega MP 33.2 north to Wamsutter, where the WIC pipeline terminates at an existing compressor station.

#### **Danforth Hills South (MPs -0.5 to 33.2)**

We compared selected resource effects for three construction alternatives:

1. EPP and PBEP proposed actions. Each project would be constructed along its proposed alignment between its origin and Entrega MP 33.2 (**figure 4.4-2**). The surface disturbance and resource effects for each proposed action were then added together and compared with the collocation of the two projects in the same 150-foot-wide construction ROW.
2. EPP and PBEP Collocation along the EPP route. WIC would construct a 7-mile-long linking pipeline between the Greasewood Hub and an intersection with the Entrega Pipeline along Piceance Creek. Both projects would be collocated from this point northward to MP 33.2 except where terrain or other obstacles make collocation infeasible (**figure 4.4-3**). Where the two projects would not be collocated, we assumed that the EPP and WIC construction ROWs would average 125 and 100 feet wide, respectively. We marginally increased each project's ROW width over its proposed construction ROW width to account for extra workspace needs.
3. EPP and PBEP Collocation along the PBEP route. Entrega would construct a 7-mile-long linking pipeline between Piceance Creek and the Greasewood Hub. Both projects would be collocated to MP 33.2 except where terrain and other obstacles make collocation infeasible (**figure 4.4-4**). The same assumption for extra workspace was applied.

**Table 4.4-2** provides a comparison of the surface disturbance associated with the three pipeline construction options described above.

The important impact differences among the three construction alternatives are the similar to those already described for the EPP proposed action vs. the PBEP alternative route.

- Overall surface disturbance resulting from constructing the Entrega and Piceance Basin Expansion pipelines along their individually proposed routes would be greater than either of the two collocation alternatives. Collocation along the Entrega alignment would result in 199 fewer acres of disturbance; collocation along the WIC alignment would result in 112 fewer acres of disturbance.
- Both collocation alternatives are estimated to require more construction across steep slopes than the combined proposed actions because the collocation alternatives cross steep slopes along the linking pipeline between Piceance Creek and Greasewood Hub that are not crossed by the proposed actions independently. We note that the steep terrain that would be crossed by the linking pipeline may necessitate additional ROW width and/or extra workspace not accounted for in our desktop analysis.

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**Table 4.4-2**  
**Surface Disturbance and Stream Crossing Comparisons between the EPP and PBEP Proposed**  
**Actions and Two Collocation Alternatives within the Danforth Hills South Study Area**  
**(MPs -0.5 to 33.2)**

Resource	Analysis Parameter	EPP and PBEP Proposed Actions (Combined Surface Disturbance)	EPP and PBEP Collocated Along EPP's Proposed Route <sup>1,2,3</sup>	EPP and PBEP Collocated Along PBEP's Proposed Route <sup>1,2,3</sup>
<b>Surface Disturbance (Acres)</b>				
TOTAL SURFACE DISTURBANCE PER ALTERNATIVE		954	755	842
Geology/Soils	Slope > 15%	32	44	68
Wetlands	Wetlands	5.4 <sup>4</sup>	1.9 <sup>4</sup>	6.5
Vegetation	Tall Shrubland (sagebrush, greasewood, oak)	528	347	443
	Pinyon-Juniper Woodland	215	202	279
Wildlife	Critical Big Game Winter Habitat	385	273	368
	Sage Grouse Winter Range	21	9.1	42
Land Use	Agriculture (Pasture/Hayland)	221	210	111
	Special Management Areas (COW Wildlife Areas)	125	148	85
<b>Number of Crossings</b>				
Perennial Streams	Piceance Creek	11	20	0
	Dry Fork Piceance Creek	1	0	2
	White River	2	2	2
Listed Fish Critical Habitat	White River	1	2	0

<sup>1</sup> Assumes 150-foot-wide construction ROW where collocation is possible; otherwise 125-foot-wide Entrega and 100-foot-wide WIC construction ROW where projects would be constructed independently.

<sup>2</sup> Includes approximately 7 miles of connecting pipeline between Greasewood Hub and Piceance Creek. Construction ROW is assumed to be 100 feet for WIC and 125 feet for Entrega for this connecting pipeline segment, depending on which applicant constructs the segment.

<sup>3</sup> Includes approximately 1.2 miles of Entrega proposed route (Meeker Hub to connecting pipeline between Entrega and WIC routes). Construction ROW is assumed to be 125 feet for Entrega only.

<sup>4</sup> Based on miles of delineated wetlands from field surveys. Some hayfields along the EPP proposed route were not included in wetland field delineations and are included under agriculture.

- Collocation along the PBEP route would result in a decrease of upland shrubland and an increase of woodland wildlife habitat disturbance (85 and 64 acres, respectively) compared to constructing the two projects independently; collocation along the EPP route would result in about 194 fewer acres of shrubland and woodland habitat disturbance. Similarly, collocation along the PBEP route would result in nearly same level of disturbance to critical big game winter habitat as constructing the two projects independently; collocation along the EPP alignment would result in disturbance of about 112 acres less acres of crucial big game winter habitat than the proposed actions independently.

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- Collocation along the PBEP alignment would require no crossings of Piceance Creek; construction of the projects independently would require 11 Piceance Creek open-cut crossings; collocation along the EPP alignment would require as many as 20 Piceance Creek open-cut crossings. Collocation along the EPP would result in approximately 11 acres less disturbance of agricultural (hayland/pastureland) compared to that of constructing the two projects independently; collocation along the PBEP alignment would result in about 110 acres less hayland/pastureland disturbance than constructing the projects independently.

As before, we specifically requested the public to comment on the various alternatives described. The only commenter to respond was the COE, which indicated a preference for the Collocation Alternative where the EPP and PBEP pipelines would be collocated along the PBEP's proposed route. This route would avoid all of the multiple Piceance Creek crossings, significantly reduce the amount of wetlands disturbed, and lessen the potential for cumulative impacts in the Piceance drainage.

As previously discussed in section 4.4.2, these alternatives involve the long-term wildlife habitat reduction tradeoffs between following the predominantly upland route (PBEP) and the short-term water quality and aquatic life impacts of constructing across Piceance Creek multiple times, and restoring the associated irrigated hayland/pasturelands. Construction of a new 7-mile-long linking pipeline between the Greasewood Hub and the Piceance Creek Valley to accomplish either of the collocation alternatives would represent a new pipeline ROW in relatively steep terrain requiring long recovery times (pinyon juniper woodlands and sagebrush are the dominant cover types in this segment). Finally, an EPP collocation alternative along the PBEP alignment would require Entrega to expend additional materials and labor to construct an additional 11 miles of pipe as compared to its currently proposed alignment.

The two separate routes that Entrega and WIC have proposed between MPs -0.5 and 33.2 are a direct result of each project having a different starting point. Each applicant proposed a route that largely circumvents Colorow Mountain. We acknowledge that there may be advantages to each of the collocation alternatives when compared to construction of the EPP and PBEP proposed actions. However, there are disadvantages as well. And neither of the alternatives resolves the trade-offs discussed above.

There is the additional factor of project timing. Entrega has proposed to construct this portion of its route in the fall/early winter of 2005. WIC has proposed a similar construction schedule. Based on terrain, safety, and ROW constraints, the simultaneous construction of these projects within a 150-foot-wide ROW is not possible. Increasing the ROW width (not an option in all areas due to topography) would increase the impact on the resources used in our comparison, and reduce any advantages of the Danforth Hills South Collocation Alternative. In addition, requiring one applicant to delay construction while the other completed its work along the collocation corridor would compromise its projected in-service date, which is based on contractual obligations. Therefore, we are not recommending this alternative.

### **Danforth Hills North (MPs 33.2 to 135)**

After crossing the Danforth Hills, where the Entrega and WIC pipelines would be located in separate ROWs because of terrain constraints, both pipelines would be constructed adjacent to the existing UBL and Kinder Morgan pipelines from Entrega MPs 40.9 to 135. **Figure 4.4-5** illustrates the relative locations of the

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Figure 4.4-5

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proposed EPP and PBEP projects in this existing utility corridor. The two projects are currently proposed for collocation across CDOW lands north and south of the Yampa River. **Figure 4.4-5** illustrates areas where collocation is considered infeasible because of terrain limitations (narrow ridgelines and incised drainages). Because both the EPP and PBEP would be constructed adjacent to existing pipelines, most of the goal of pipeline project consolidation into the same utility corridor would be accomplished by the proposed actions. However, we received several comments during public scoping concerning sage grouse population effects from loss of sagebrush habitat, and sage grouse habitat fragmentation because of utility corridor expansion. The EPP and PBEP cross about 30.7 miles of important sage grouse breeding and brooding areas (as defined by the CDOW and WF&G) north of the Yampa River (see **table 4.4-3**).

**Table 4.4-3**  
**Milepost Intervals Considered for EPP and PBEP**  
**Collocation to Reduce Sage Grouse Breeding and Brooding Habitat Impacts**

Milepost Interval	Miles
MPs 59 to 65	6
MPs 69 to 83	14
MPs 104 to 112.5	8.5
MPs 120 to 122	2.2 <sup>1</sup>
<b>Total</b>	<b>30.7</b>

<sup>1</sup> Due to changes in alignment actual distance is approximately 2.2 miles.

By constructing the two projects together in the same 150-foot-wide construction ROW, we expect that removal of sage grouse habitat could be reduced, ideally, by 279 acres, or about 33 percent as compared to constructing the two projects along their currently proposed alignments. Sagebrush shrubs on which the sage grouse depends recover very slowly (15 to 50 years), and fragmentation of sage grouse habitat from multiple pipelines in the same utility corridor may adversely affect reproductive success and survival of this species over the long term.

We evaluated the feasibility of collocating the two pipelines in these areas. Information from Entrega indicates that there are a number of technical construction constraints through much of this reach (**table 4.4-3**). These include factors such as cultural resource sites, local terrain, and the presence of existing pipelines in the corridor. Finally, there are a number of more practical actions that would be implemented to reduce the construction footprints of these two projects in sage grouse habitat. For example, we have recommended that where the ROW is within 0.25-mile of a known lek, the ROW would be reduced to 75 feet wide, when practical. As a result, we have determined that the proposed action is preferable to the collocation alternative.

### 4.5 Route Variations

Route variations differ from system alternatives or major route alternatives in that they are identified to avoid or reduce impact on site-specific resources or to resolve localized issues. Site-specific resources include

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cultural resource sites, wetland areas, and severe terrain conditions. Localized issues might include landowner requests. While route variations may be a number of miles long, most are short and are located in relative proximity to the proposed route. The route variations discussed below document the rationale for changes in Entrega's proposed route (e.g., Pine Tree Gulch Variation), or provide comparative information where there are still unresolved landowner issues. Where these variations have been incorporated into Entrega's proposed route, they are part of our environmental analysis in chapter 3.0. The route variations are discussed from west to east.

#### **4.5.1 Pine Tree Gulch Variation (Current Proposed Action) (MPs 32.1 to 39.9)**

**Figure 4.5-1** illustrates the relationship between Entrega's original alignment and the Pine Tree Gulch Variation (current proposed route) which largely parallels Moffat County Road 57. Entrega modified its original alignment in response to a landowner request to avoid construction within grazing lands and to avoid engineering and construction constraints associated with a deeply incised gulch and water developments on the floor of the gulch. While avoiding grazing land and water development impacts, this variation makes a steep ascent of a ridge that would be viewed over the long term from County Road 23, and the descent slope between MPs 38 and 39 also would be highly visible to south bound motorists on Moffat County Road 57; both the ascent and the descent would be slow to revegetate. The Pine Tree Gulch Variation also crosses within 150 feet in front of a residence at approximately MP 35.3. This refinement of Entrega's original alignment was the result of extensive interactions among Entrega, the affected landowners, the BLM, and the Moffat County Commissioners.

#### **4.5.2 Park Meadows Variation (MPs 294.1 to 295.8)**

Entrega developed the Park Meadows Variation in response to landowner concerns that the original alignment would impact their property (**figure 4.5-2**). Although the original alignment would parallel six existing utility lines (four gas pipelines and two fiber optic lines are currently within the corridor), residents were concerned that an additional pipeline through the area would further encumber their property. Concerns raised by landowners (comments were received from Dan and Carol Schwartz and Lurleen Flores) included unrepaired damages and unsatisfactory restorations from previous pipeline construction, unauthorized access to their properties, potential damages to native plants and wildlife, and the utility corridor's further encroachment on multiple properties.<sup>1</sup> A letter received at FERC on June 14, 2004, from Dan Schwartz of the Park Meadows Landowners Association also indicated expanding the pipeline ROW through the subdivision would reduce the ability of the landowners to subdivide their properties.

The Park Meadows Variation is located along property boundaries, thus the severance of multiple properties would be avoided. Subsequently, the Shimmerhorn Ranch filed objections to the variation, stating concerns about the stream crossings with associated beaver ponds, rock outcrops, and the loss of mature pine trees on ranch property, as well as unrepaired damages and unsatisfactory restorations from previous pipelines. A letter from the Shimmerhorn Ranch received at FERC September 13, 2004, also noted that the variation would compromise potential construction sites on the most valuable portion of the property, thus limiting the

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<sup>1</sup> The Schwartz's home is on the north side and facing the utility corridor. Construction is proposed on the south side of the corridor, with the edge of the construction ROW more than 325 feet away from the house at its closest point.

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ability to subdivide the property in the future. Entrega currently proposes to follow the original alignment parallel to existing utilities, which would expand the width of the corridor on the Schwartz property by 50 feet for a distance of about 660 feet. The width of the ROW for other landowners in the Park Meadows subdivision also would expand by 50 feet.

We examined the input from both landowners with different view points, reviewed the available environmental information contained in resource reports and photo-based alignment sheets, and the results of the aerial reconnaissance. We concluded that the proposed action route located adjacent to the existing pipeline corridor is the preferred pipeline location for the following reasons:

1. the long-term environmental effects of constructing along the alternative route are greater than those along the proposed route because of greater length, the removal of more riparian vegetation, and more difficult construction and revegetation conditions (steep south facing slopes on shallow soils); and
2. the potential future land use preclusion effects are greater for the alternative than for the proposed route.

The proposed action represents an incremental 50-foot expansion of an area that has already been committed to utility uses. While this expansion represents an added utility commitment burden to the affected owners, these current utility uses do not directly affect the location or use of the nearest residential structure, which is approximately 375 feet north of the proposed pipeline center line. Approximately one-half of the variation would be located along a property line where there would less conflicts with future development planning. However, the remaining one-half of the segment (about 0.8 mile) would cross presently undeveloped areas where a new utility easement could affect parcel sizes and the locations of future development.

### 4.5.3 Cheyenne Hub Variations (MPs 325 to 327)

Entrega proposed the Cheyenne Hub Variations in response to landowner (Lazy D Grazing Association) concerns about the final 1.6 miles of the proposed pipeline route, the site of the Cheyenne Hub Metering Station at the terminus of the pipeline, and the routing of interconnecting laterals needed to deliver gas to shippers with nearby pipeline facilities.

As originally proposed, Entrega's route would cross to the north side and diverge from the existing pipeline corridor at about MP 325.4, bending eastward along the north side of the section line for about 1.6 miles to terminate on the west side of U.S. 85. This would place the proposed Cheyenne Hub Metering Station north of the existing CIG Cheyenne Compressor Station on Colorado State land administered by the State Land Board (**figure 4.5-3**). From that location, Entrega would construct four delivery laterals of various diameters to interconnect with existing pipelines that pass through or originate at the Cheyenne Hub.

The Lazy D Grazing Association (Association) listed its environmental concerns in correspondence with the office of Senator Wayne Allard dated November 18, 2004, and in subsequent discussions with Entrega, representatives of the Colorado Land Board, and Senator Allard's staff on December 10, 2004. The

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Figure 4.5-3

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Association prefers that Entrega's pipeline not diverge from the utility corridor at MP 325.4. Instead, it prefers that Entrega's pipeline continue to parallel the existing corridor that passes immediately south of the Cheyenne Compressor Station for the following reasons:

1. if the new disturbance is consolidated and overlaps with prior disturbances, it would reduce overall impact and avoid new utility encumbrances;
2. locating a new pipeline (Entrega) north of the Cheyenne Compressor Station would effectively create a new utility corridor and future projects would be less constrained to follow the existing corridor. This would encourage more development north of the existing CIG facilities and a continuing trend of rangeland conversion to industrial uses;
3. two of the proposed laterals would be located on the east side of U.S. 85 which represents an expansion of industrial uses outside the existing industrial area on the west side of U.S. 85; and
4. livestock grazing values would be decreased on Association land as well as leased Colorado State Land because of slow revegetation rates on disturbed soils.

The Association also contends that locating Entrega's facilities as proposed would increase the risk of natural gas fires and explosions that could affect the Association's headquarters building (located less than 1 mile north of Entrega's proposed Cheyenne Hub Metering Station).

At a December 10, 2004, meeting with the Association, representatives of the Colorado State Land Board, and Senator Allard's staff, Entrega committed to studying two alternatives that would affect both the location of the final portion of its proposed route and the Cheyenne Hub Metering Station. Under Variation A, Entrega's pipeline would continue to parallel the existing pipeline corridor to a terminus west of U.S. 85. This alignment would place the proposed Cheyenne Hub Metering Station on private property immediately south of the Cheyenne Compressor Station; the four delivery laterals would extend to the same four interconnection points as for the proposed action. **Figure 4.5-4** compares this variation with the proposed action that we analyzed in the draft EIS.

Under Variation B, Entrega's pipeline would diverge from the existing pipeline corridor (similar to the proposed route), but would bend eastward to follow the south side of the section line, again terminating on the west side of U.S. 85. This alignment would place the Cheyenne Hub Metering Station on private property immediately south of the proposed location (on the north side of the section line). The four delivery laterals would follow routes very similar to those for the proposed action (see **figure 4.5-5**).

After publication of the draft EIS, Entrega and the Association continued meeting in an attempt to resolve the Association's concerns. Following one such meeting, Entrega changed its proposed route to follow Route Variation A, which would result in the Entrega pipeline terminus being located on the south side of the existing Cheyenne Hub. We consider the routing proposed to be environmentally acceptable.

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#### **4.5.4 Piceance Creek Variations**

In response to comments by the COE, we conducted a closer examination of the first 14 miles of the proposed route which follows the Piceance drainage immediately south of the White River crossing. The purpose of our examination was to determine if the number of Piceance Creek crossings could be reduced by minor realignments of the proposed route. As a result of our examination, we identified two locations where realignments could be implemented which would result in eliminating five of Entrega's proposed eleven crossings of the Piceance Creek (see **figures 3.3-3** and **3.3-4**). We have recommended that Entrega revise its proposed route to adopt these route realignments. See discussion in section 3.3.2.

#### **4.6 Aboveground Facilities**

##### **Bighole Compressor Station (MP 76.3)**

During public scoping, the CDOW requested that an alternative location for the Bighole Compressor Station be evaluated a) because of the proximity of the proposed site to sage grouse leks and associated brooding areas, and b) station operational noise. After further consultation with the CDOW and a review of areas along the proposed route both north and south of the site, we are satisfied that the proposed location represents the best compromise for minimizing impacts associated with siting a new compressor station. Our review found that high-quality sage grouse habitat lies both north and south of the proposed site. The selected site has the attribute of an existing road, therefore, no new access roads would be required, and year-round access would be available on the existing county road system. This would avoid the necessity for creating a new access road through high-quality habitat at another location. For these reasons, we are not recommending an alternative site for the Bighole Compressor.

##### **Arlington Pigging and Cheyenne Hub Metering Stations (MPs 237 and 328)**

Two of Entrega's proposed aboveground facility sites have undergone significant change in usage and size during the course of our review. Entrega's original application identified Arlington as the site of a 19.9-acre Arlington Compressor Station including compressors and appurtenant facilities, a mainline valve, and pig launching/receiving facilities. The application also proposed a 20.3-acre-site for four metering facilities, a mainline valve, and a pig receiver at the Cheyenne Hub Metering Station.

In a January 6, 2005 filing, Entrega revised its proposal such that compression is no longer proposed at the Arlington site. Currently, Entrega proposes to locate a mainline valve and pig launching/receiving facilities on the 3.2-acre Arlington Pigging Station site. The filing also downsized the Cheyenne Hub Metering Station to about 4.7 acres. However, a recent filing (May 20, 2005) indicated that the Cheyenne Hub site would be sized at 19.2 acres but contain only one of the original four meters, along with a mainline valve and pig receiver.

We believe that it is prudent for applicants to acquire large sites for compressor facilities, because larger sites help to mitigate operational noise impacts on nearby noise-sensitive areas (NSA) and provide a buffer between a large aboveground facility and nearby neighbors. However, because a FERC Certificate confers the right to acquire land by eminent domain, we do not believe that applicants should be in a position to

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exercise this right to acquire parcels larger than that required for the facilities proposed. While an applicant may purchase as much land as it chooses to buy (and a landowner chooses to sell), we believe it would be inappropriate to enable Entrega to acquire more land than its facilities would require by exercising, or threatening to exercise, eminent domain. Therefore, **we recommend that at the Arlington and Cheyenne Hub sites, Entrega limit the land acquired by eminent domain under the NGA to an area no larger than that needed to construct and operate the proposed facilities. In this case, the Arlington Pigging Station and the Cheyenne Hub Metering Station would require no more than 1 and 2 acres, respectively. This does not place a limit on Entrega's ability to purchase land on the open market at these sites for future use. Prior to the start of construction, Entrega should file with the Secretary for review and written approval by the Director of OEP scaled plot plans for these sites.**