PRELIMINARY ENVIRONMENTAL ASSESSMENT

MEEKER PIPELINE AND GAS PLANT PROJECT

CO-110-2004-188-EA

U.S. Department of the Interior
Bureau of Land Management
White River Field Office
73544 Hwy 64
Meeker, CO 81641

March 2005

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
White River Field Office
73544 Highway 64
Meeker, Colorado 81641

TAKE PRIDE® IN AMERICA

Dear Public Land User: March 21, 2005

This Preliminary Environmental Assessment (EA) has been prepared by the Bureau of Land Management White River Field Office (BLM WRFO) to analyze potential impacts of granting rights-of-way for pipelines and a gas plant constructed by EnCana Oil and Gas (USA) Inc. EnCana's proposal, referred to as the Meeker Pipeline and Gas Plant Project, would involve the construction and operation of a natural gas plant and buried pipelines ranging in size from 12- to 36-inch diameter, located in an existing 93-mile long utility corridor.

The proposed pipeline corridor begins at EnCana's existing Logan Wash Facility in T7S R97W Sec. 31 in Garfield County, Colorado, and runs through existing utility corridors, to end at Dragon Station in T12S R25E Sec. 2 in Uintah County, Utah.

Two public open-house meetings will allow attendees an opportunity to view display materials and ask questions. The meetings will be held on the following dates and locations:

- 7 p.m. to 9 p.m., Wed., Mar. 30, 2005 at the Kilowatt Korner, 6th St. and Hwy. 13, Meeker. BLM, EnCana, and environmental contractor representatives will be on hand to answer questions.
- 7 p.m. to 9 p.m., Thur., Mar. 31, 2005 at the Debeque Town Hall, 381 Minter Ave., Debeque. BLM, EnCana and environmental contractor representatives will be on hand to answer questions.

Beginning March 25, 2005, the EA will be available for public review at the BLM WRFO, BLM Grand Junction FO, and the BLM Vernal FO, for a period of 30 days. The EA will also be available for viewing and downloading at www.co.blm.gov/wrra. Further details on this project can be found at this site as well.

The public is invited to provide written comments on the EA. These comments should be specific in nature, including suggested changes, sources, or methodologies. Comments that contain only opinions or preferences will not receive a formal response; however, they will be considered and included as part of the BLM decision-making process. Comments must be postmarked by **May 2, 2005** and directed to Carol Hollowed, BLM White River FO, 73544 Hwy. 64, Meeker, CO 81641.

Sincerely,

Kent T. Walter

Kent Walter
White River Field Manager

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ACRONYMS AND ABBREVIATIONS

ACEC	Area of Critical Environmental Concern
APCD	CDPHE Air Pollution Control Division
AUM	Animal Unit Month
BACT	Best Available Control Technology
bgs	below ground surface
BLM	USDI Bureau of Land Management
BS	BLM sensitive
bscfd	billion standard cubic feet per day
º C	degrees Celsius
$CaCO_3$	calcium carbonate
CAA	Clean Air Act
Cb	Occidental Oil Shale Tract Cb
CDOT	Colorado Department of Transportation
CDOW	Colorado Division of Wildlife
CDPHE	Colorado Department of Public Health and Environment
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
cfs	cubic feet per second
CIG	Colorado Interstate Gas
CLCS	County Line Compressor Station
CO	carbon monoxide
COE	US Army Corps of Engineers
COGCC	Colorado Oil and Gas Conservation Commission
CPR	cardiopulmonary resuscitation
DEM	digital elevation models
DR	Decision Record
DOT	US Department of Transportation
DWQ	UDEQ Division of Water Quality
EA	Environmental Assessment
E. coli	escherichia coliform
e.g.	in other words
EnCana	EnCana Oil and Gas (USA) Inc.
EPA	US Environmental Protection Agency
ERMA	Extensive Recreation Management Area
ESA	Environmental Species Act
º F	degrees Fahrenheit
FC	Federal Candidate
FE	Federal Endangered
FEMA	Federal Emergency Management Agency
FMZ	Fire Management Zone
FONSI	Finding of No Significant Impact
FT	Federal Threatened
FWS	USDI Fish and Wildlife Service
GC	Garfield County
GJFO	Grand Junction Field Office
Greystone	Greystone Environmental Consultants
HAP	hazardous air pollutant
HCCS	Hunter Creek Compressor Station

Acronyms and Abbreviations

HMA	Herd Management Area
i.e.	for example
Inc.	incorporated
IR	Integrated Reporting
ISC	industrial source complex
kV	kilovolt
lbs/hr	pounds per hour
lbs PLS/a	pounds of pure live seed per acre
MAPCO	Mid-American Pipeline Company
MBTA	Migratory Bird Treaty Act
$\mu g/m^3$	micrograms of pollutant per cubic meter of air
µS/cm 25º C	microsiemens per centimeter at 25 degrees Celsius
mg/l	milligrams per liter
ml	milliliter
mmBtu/hr	million British thermal units per hour
mscfd	million standard cubic feet per day
mph	miles per hour
NAAQS	National Ambient Air Quality Standards
NDIS	National Diversity Information System
NGL	natural gas liquids
NHD	National Historic District
NO_2	nitrogen dioxide
NO_x	nitrogen oxides
NRCS	USDA Natural Resource Conservation Service
NRHP	National Register of Historic Places
NSO	No Surface Occupancy
O_3	ozone
OHV	off-highway vehicle
OSHA	Occupational Health and Safety Agency
Pb	lead
pH	presence of hydrogen
PLS	pure live seed
PM_{10}	particulate matter less than 10 microns in diameter
$PM_{2.5}$	particulate matter less than 10 microns in diameter
POD	Plan of Development
PSD	Prevention of Significant Deterioration
psig	pounds per square inch gauge
R	rural
RBC	Rio Blanco County
RCRA	Resource Conservation and Recovery Act
RMNG	Rocky Mountain Natural Gas
RMP	Resource Management Plan
RN	roaded natural
ROD	Record of Decision
ROS	Recreation Opportunity Spectrum
RV	recreational vehicle
RVA	remnant vegetation association
SARA	Superfund Amendments and Reauthorization Act
SCRAM	Support Center for Regulatory Models

Acronyms and Abbreviations

SCS	USDA Soil Conservation Service
SHPO	State Historical Preservation Office
SO_2	sulfur dioxide
SPM	semi-primitive motorized
TMDL	total daily maximum load
UAC	Uncompahgre Archaeological Consultants
UDEQ	Utah Department of Environmental Quality
UNRD	Utah Natural Resource Division
US	United States
USC	United States Code
USDA	United States Department of Agriculture
USDI	United States Department of the Interior
USGS	United States Geological Society
VFO	Vernal Field Office
VRM	Visual Resource Management
WQCD	CDPHE Water Quality Control Division
WREA	White River Electrical Association
WRFO	White River Field Office
WSA	Wilderness Study Area

INTRODUCTION

LEGAL DESCRIPTION

BLM

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T4S R97W Sections 27, 22, 15, 10, 11, 2
T3S R97W Sections 35, 26, 23, 14, 15, 10, 3
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T3S R104W Sections 12, 11, 10

State of Utah

T12S R25E Section 2

Garfield and Rio Blanco Counties, Colorado and Uintah County, Utah
6th Principal Meridian

APPLICANT EnCana Oil and Gas (USA) Inc. (EnCana)

BACKGROUND AND INTRODUCTION

EnCana filed an application on July 22, 2004 with the Bureau of Land Management (BLM) for a right-of-way grant under Section 28 of the Mineral Leasing Act of 1920, as amended, to authorize the construction, operation, and maintenance of the Meeker Pipeline and Gas Plant Project (project). The project involves construction and operation of natural gas, natural gas liquids (NGL) and water pipelines, a natural gas processing plant, and related facilities in Garfield and Rio Blanco Counties, Colorado and Uintah County, Utah. The proposed pipeline and plant facilities are sited or co-located adjacent to, and make maximum feasible use of, existing utility corridors or sites. The proposed facilities would enable EnCana to process and transport up to 1.6 billion standard cubic feet per day (Bscfd) of natural gas from production areas in northwestern Colorado to inter- and intrastate pipeline facilities. Off-specification gas that does not flow through the gas plant would be blended with processed gas immediately upstream of the inter- and intrastate sales outlets. The natural gas liquids pipelines would

transport natural gas liquids to sales outlets in Utah, and the water pipeline would allow for raw water delivery to, and transport of produced water from, EnCana's production areas.

Six alternatives were considered and three were carried through analysis in this Environmental Assessment (EA). The Proposed Action alternative maximizes the use of existing utility corridors and sites the gas plant adjacent to an existing industrial facility. The Alternative Action alternative involves slightly different pipeline configurations than the Proposed Action and sites the gas plant in a rural agricultural field. The No Action alternative would result in no construction and existing natural gas production, processing, and transport conditions would continue at the present levels. Three alternatives were considered, but rejected and were not carried through the analysis. Alternatives (except for the No Action Alternative) are depicted on Exhibit A, Alternatives Overview, included in Attachment 1.

ALTERNATIVES

PROPOSED ACTION

The Proposed Action alternative consists of approximately 205 miles of natural gas, natural gas liquids and water pipelines and related facilities installed in 93 miles of corridor. The proposed pipeline corridor begins at EnCana's existing Logan Wash Facility in T7S R97W Section 31 in Garfield County, Colorado and parallels the existing Kinder Morgan TransColorado Pipeline utility corridor in a generally south-north direction for approximately 37 miles. The corridor leaves the TransColorado corridor, traverses the Piceance Creek bottom for 6 miles, and then parallels the existing American Soda pipeline corridor for approximately 2 miles to EnCana's proposed Meeker Gas Plant in T1S R97W Sections 18 and 19 in Rio Blanco County, Colorado. From the proposed Meeker Gas Plant, the pipeline corridor parallels Rio Blanco County Road 83 in a southwesterly direction for 6 miles to the existing Questar Main Line 68 Pipeline and CIG Uintah Basin Lateral Pipeline utility corridor. The corridor continues along the Questar Main Line 68 Pipeline and Colorado Interstate Gas (CIG) Uintah Basin Lateral Pipeline utility corridor in a generally east-west direction for approximately 25 miles to EnCana's existing Dragon Trail Facility (T2S R102W Section 35). From the Dragon Trail Facility, the pipeline corridor parallels the existing EnCana NGL Pipeline corridor in a generally east-west direction for approximately 17 miles to the existing Mid-American Pipeline Company (MAPCO) Enterprise Pipeline at Dragon Station in T12S R25E Section 2 in Uintah County, Utah. Proposed Action route maps are included as Exhibit B in Attachment 1.

Construction of the Meeker Pipeline and Gas Plant Project would disturb approximately 1,463 acres of land, including the pipeline construction right-of-way, temporary workspace areas, gas plant site, and related aboveground appurtenances. Total disturbance on BLM lands is 885 acres. For the purpose of analysis in this Environmental Assessment, it is assumed that the corridor would be all new disturbance. In actuality, up to 25 feet of the construction right-of-way overlaps existing utility corridors in most locations. New disturbance on BLM lands is estimated at 735 acres, including temporary use areas and the gas plant site. The construction right-of-way that overlaps existing pipeline corridors has been analyzed in five previous environmental assessments or environmental impact statements (BLM 1991, BLM 1992, BLM 1999, BLM 1994a, and BLM 1994b).

The Proposed Action would involve three components:

- Construction, operation, and maintenance of new pipelines;
- Construction, operation, and maintenance of a gas plant; and
- Conversion of the existing American Soda pipelines to natural gas, natural gas liquids, and/or water pipelines.

Pipeline

Description

The proposed natural gas, natural gas liquids and water pipelines consist of approximately 4 miles of up to 36-inch diameter natural gas pipeline, 44.5 miles of up to 30-inch diameter natural

gas pipeline, 43 miles of up to 16-inch diameter natural gas pipeline, 48 miles of up to 12-inch diameter NGL pipeline, 21 miles of up to 12-inch diameter natural gas or water pipeline, and 44.5 miles of up to 10-inch diameter NGL pipeline and related aboveground appurtenances located in western Colorado and eastern Utah.

Pipelines which are subject to federal regulations would be designed and constructed in conformance with the requirements of Title 49 CFR, Part 192, "Regulations for the Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards", and Part 195, "Transportation of Hazardous Materials by Pipeline".

Land Requirements

As indicated in Table 2-1, construction of the pipelines would disturb 1,413 acres of land, including the pipeline construction right-of-way and temporary use areas. Approximately 530 acres used for construction would be required for operations (permanent pipeline easement) and 882 acres would be disturbed for construction. Approximately 59 percent of the land affected by construction and operation of the pipeline projects would be on public lands managed by the BLM. Less than 0.001 percent of the project would be on lands managed by the State of Utah Institutional Trust and 41 percent of the project would occur on fee-lands.

Table 2-1 Proposed Action Pipeline Land Requirements

Land Ownership	Permanent Easement (acres)	Construction Width (acres)	Temporary Use Areas (acres)	Total (acres)
BLM	324	492	19	835
Fee	207	313	57	577
State of Utah	0.3	0.5	0.4	1.2
Total	531.3	805.5	76.4	1413.2

Corridor

The proposed pipeline corridor is divided into two sections with a total of seven segments. The proposed Meeker Gas Plant would be the dividing point between the north-south section (Meeker-South) and the east-west section (Meeker-West). The north-south section would consist of five segments (A, B, C, D, and E) and the east-west section would consist of two segments (F and G). Table 2-2 identifies pipelines in each segment.

Table 2-2 Proposed Action Pipeline Corridor

Mileposts	Segment	Description	Pipelines in Segment
Meeker-South			
0.0 to 24.3	A	Logan Wash Facility to County Line Compressor Station (CLCS)	30-inch natural gas 10-inch NGL
24.3 to 35.4	B	CLCS to Hunter Creek Compressor Station (HCCS)	30-inch natural gas 10-inch NGL 16-inch natural gas 12-inch water or natural gas
35.4 to 40.3	C	HCCS to Meeker Hub	30-inch natural gas 10-inch NGL 12-inch water or natural gas
40.3 to 42.6	D	Meeker Hub to American Soda	36-inch natural gas 30-inch natural gas 10-inch NGL 12-inch water or natural gas
42.6 to 44.5	E	American Soda to Meeker Gas Plant	36-inch natural gas 30-inch natural gas 10-inch NGL 12-inch water or natural gas
Meeker-West			
0.0 to 31.0	F	Meeker Gas Plant to Dragon Trail Facility	16-inch natural gas 12-inch NGL
31.0 to 47.8	G	Dragon Trail Facility to Dragon Plant	12-inch NGL

To connect existing production to the proposed facilities, Segments B and C would require a 0.9-mile corridor (Hunter Creek Lateral) into the Hunter Creek Compressor Station for the 16-inch and 12-inch diameter pipelines, and Segment F would require a 0.2-mile lateral (Dragon Trail Lateral) from the main corridor into the Dragon Trail Plant for the 16-inch diameter natural gas pipeline.

Exhibit C, included in Attachment 1, illustrates each corridor segment and pipelines contained within each segment.

Right-of-Way

The nominal construction right-of-way width would vary between 90 and 140 feet. Following construction of the pipelines, the width of the right-of-way would be reduced to a permanent right-of-way that would vary between 30 and 75 feet. Permanent easements, temporary construction widths, and total disturbance widths and acreages are provided Table 2-3. Right-of-way configurations, pipelines, and corridor segments and mileposts are depicted on Exhibit D included in Attachment 1.

Table 2-3 Proposed Action Right-of-Way Configurations

Segment	Length (miles)	Permanent Easement Width (feet)	Temporary Construction Width (feet)	Total Disturbance Width (feet)	Total Disturbance (acreage)
A	24.3	45	75	120	353.5
B	11.1	75	65	140	188.4
C	4.9	60	70	130	77.2
D	2.3	75	65	140	39.0
E	1.9	40	85	125	28.8
F	31.0	45	75	120	450.9
G	16.8	30	60	90	183.3
Hunter Creek Lateral	0.9	45	75	120	13.1
Dragon Trail Lateral	0.2	30	60	90	2.2
Total					1336.4

EnCana would not utilize the entire workspace requested unless all pipelines are installed at once. EnCana would utilize only the workspace necessary to install the actual number of pipelines under construction, minimize existing disturbance (i.e., overlap the right-of-ways), and would not exceed the total amount of construction width discussed above. For example, in Segment F, EnCana would utilize up to 90 feet of workspace for construction of the 16-inch natural gas pipeline in 2005, overlap the disturbed workspace for construction of the 12-inch natural gas liquids pipeline in 2006, and not exceed a total disturbance of 120 feet.

The proposed pipelines would generally be installed at the edge of existing Kinder Morgan, CIG, Questar, or EnCana permanent rights-of-ways using a standard 25-foot offset from the existing pipelines. EnCana would install the first pipeline at the standard offset (25-foot) and would install each subsequent pipeline at a 15-foot offset. At certain locations, the proposed route deviates from this standard offset configuration due to terrain and/or environmental features. Table 2-4 summarizes the location and length of each atypical offset and route deviation, and provides the rationale for adopting them as part of the route.

Table 2-4 Proposed Action Corridor Deviations and Rationale

Milepost (Start)	Milepost (End)	Land Ownership	Relationship to Existing Corridor	Maximum Offset (feet)	Reason for Atypical Offset or Route Deviation
Meeker-South					
31.4	32.1	fee, BLM	south	1103	avoid steep slopes; no workspace parallel to existing pipeline
33.0	33.5	BLM	west	337	avoid rock outcrops and steep slopes
33.7	34.0	BLM	west	85	allow for better foreign pipeline crossing

Table 2-4 Proposed Action Corridor Deviations and Rationale

Milepost (Start)	Milepost (End)	Land Ownership	Relationship to Existing Corridor	Maximum Offset (feet)	Reason for Atypical Offset or Route Deviation
34.2	35.9	BLM	east	1990	avoid steep slopes and dry wash; minimize Hunter Creek crossing; no workspace parallel to existing pipeline
36.8	37.3	BLM	east	377	avoid steep slopes; no workspace parallel to existing pipeline
37.3	37.5	fee	west	287	avoid steep slopes; no workspace parallel to existing pipeline
37.5	40.3	fee	west	920	minimize Piceance Creek crossings
Meeker-West					
0.0	0.6	BLM	north	1034	avoid evaporation ponds
3.2	3.4	BLM	north	447	avoid induction bends
3.5	4.2	BLM, fee	north	223	avoid microwave tower
6.7	7.0	BLM	south	161	avoid dry wash, steep slopes, and rock outcrops
11.2	11.3	BLM	south	90	avoid rock outcrops and side slopes
12.3	12.4	BLM	south	52	avoid pipeline crossover
17.9	18.1	fee	south	81	cease Questar co-locate and begin CIG co-locate
22.8	23.1	BLM	south	423	avoid steep slopes; no workspace parallel to existing pipeline
25.0	25.1	BLM	south	400	corridor is full; avoid dry wash and steep slopes
25.7	26.8	BLM	south	1105	avoid steep slopes and rock; no workspace parallel to existing pipeline
26.8	27.6	BLM	south	251	avoid steep slopes and rock; no workspace parallel to existing pipeline
31.9	33.2	BLM	south	460	avoid steep slopes; no workspace parallel to existing pipeline
33.4	33.4	BLM	south	51	avoid valve and dog leg tie-in
33.7	33.7	BLM	south	95	avoid existing well
34.0	34.1	BLM	south	110	avoid steep slopes and existing well
34.3	34.3	BLM	south	105	avoid steep slopes; no workspace parallel to existing pipeline
34.6	34.8	BLM	north	306	avoid steep slopes; no workspace parallel to existing pipeline
35.0	35.0	BLM	north	62	allow for better pipeline crossing alignment
36.2	37.2	BLM	south	540	avoid dry wash; no workspace parallel to existing pipeline
39.1	39.5	BLM	north	75	avoid ponds
39.5	39.8	BLM	north	210	avoid dry wash

Table 2-4 Proposed Action Corridor Deviations and Rationale

Milepost (Start)	Milepost (End)	Land Ownership	Relationship to Existing Corridor	Maximum Offset (feet)	Reason for Atypical Offset or Route Deviation
40.5	40.8	BLM	north	165	avoid dry wash; allow for better dry wash crossing alignment
42.2	42.3	BLM	north	46	allow for better Texas Creek crossing alignment
44.2	44.8	BLM	north	225	allow for better dry wash crossing alignment, more constructable route
45.2	45.3	fee	north	46	allow for better dry wash crossing alignment
46.2	46.5	fee	north	75	avoid side slope and road
47.0	47.2	BLM	south	275	allow for better dry wash crossing alignment

Approximately 79 miles (86 percent) of the 93-mile proposed pipeline corridor would be constructed adjacent to existing Kinder Morgan, CIG, Questar, EnCana, Wild Horse, American Soda or Rio Blanco County road and utility corridors using the standard 25-foot offset. Another 4.1 miles (4 percent) would be constructed with an atypical offset of 25 to 225 feet. The remaining 10.2 miles (11 percent) would be constructed in newly created corridors. Approximately 9.1 miles of newly created corridors would be located on BLM lands.

It would be necessary to deviate from the existing corridor and create new utility corridors in three main areas. Several corridor deviations would be required from Meeker-South mileposts 31.4 to 37.5 to avoid topographically constrained narrow ridgetops, steep side and ascent-descent slopes, and rock outcrops. These areas require new right-of-way to avoid the steep side slopes and rock outcrops to allow for safe, efficient construction. A corridor deviation would be required from Meeker-South mileposts 37.5 to 40.3 to minimize the number of Piceance Creek crossings. A deviation would be needed along portions of the existing corridor from Meeker-West mileposts 25.7 to 27.6 to avoid narrow construction areas, rock outcrops, deeply incised washes, and steep side and ascent-descent slopes.

Temporary Use Areas

EnCana has identified temporary use areas where additional right-of-way width would be required at foreign pipeline and road crossings, waterbody crossings, and steep side and ascent-descent slopes. The locations and sizes of the temporary workspaces are identified in the Table 2-5.

Table 2-5 Proposed Action Temporary Use Areas

Milepost	Land Ownership	Size (acres)	Relationship to Centerline	Feature
Meeker-South				
3.7	fee	0.7	north	steep slope
5.6	fee	5.0	east	Long Point
6.0	fee	3.7	west	steep slope
6.9	fee	2.8	east	Long Point
8.1	fee	4.6	west	Long Point
8.6	fee	0.8	south	steep slope
9.7	fee	1.1	west	steep slope
10.6	fee	1.6	west	steep slope
11.2	fee	2.1	west	steep slope
12.3	fee	1.9	west	steep slope
13.2	fee	2.7	west	steep slope
14.5	fee	3.1	west	steep slope
15.7	fee	0.6	west	steep slope
15.9	fee	2.7	west	drainage, staging area
16.2	fee	2.4	west	steep slope
17.8	fee	2.8	west	steep slope
18.9	fee	2.6	west	steep slope
19.9	fee	1.7	west	steep slope
21.5	fee	1.8	west	steep slope
21.7	fee	3.5	west	staging area
22.2	BLM	1.7	west	steep slope
27.3	BLM	5.0	west	staging area
31.1	BLM	0.24	east	pipeline crossover
31.4	fee	0.60	west	Hunter Creek crossing
31.8	BLM	0.24	west	steep slopes
35.5	BLM	0.22	east	road and drainage crossing
37.3	fee	0.12	east	pipeline crossover
Meeker-West				
5.8	BLM	0.25	south	Rio Blanco CR68 crossing
6.7	BLM	0.21	south	drainage crossing
8.1	BLM	0.29	south	Rio Blanco CR91 and Stake Springs Draw crossing
10.0	BLM	0.12	south	Rio Blanco CR70 crossing
12.6	BLM	0.29	south	Rio Blanco CR70 crossing
12.7	BLM	0.29	south	Rio Blanco CR70 crossing
13.2	BLM	0.26	south	Rio Blanco CR70 crossing
16.6	fee	0.25	south	Rio Blanco CR70 crossing
16.8	fee	0.27	south	Rio Blanco CR70 crossing
17.9	fee	1.69	south	Cathedral Bluffs
18.5	fee	2.84	south	Cathedral Bluffs
22.2	BLM	0.24	north	pipeline crossover
22.3	BLM	0.25	south	pipeline crossover
22.5	BLM	0.29	south	steep slopes
22.9	BLM	0.09	north	East Dry Lake Canyon crossing
23.1	BLM	0.08	north	East Dry Lake Canyon crossing
23.2	BLM	0.26	north	drainage crossing

Table 2-5 Proposed Action Temporary Use Areas

Milepost	Land Ownership	Size (acres)	Relationship to Centerline	Feature
25.0	BLM	0.18	south	road crossing
26.0	BLM	0.25	north	road crossing
26.2	BLM	0.24	north	steep slopes
26.3	BLM	0.22	north	steep slopes
26.7	BLM	0.36	north	road and drainage crossing
26.8	BLM	0.09	north	road and drainage crossing
27.1	BLM	0.12	south	drainage crossing
27.2	BLM	0.28	south	road and drainage crossing
27.3	BLM	0.38	south	West Douglas Creek crossing
27.5	BLM	0.19	north	Highway 139 crossing
27.5	BLM	0.19	south	Highway 139 crossing
29.5	BLM	0.21	south	Little Horse Draw crossing
29.6	BLM	0.20	south	road crossing
30.0	BLM	0.57	south	pipeline crossover
30.3	BLM	0.18	south	road crossing
31.3	BLM	0.15	south	drainage crossing
36.6	BLM	0.12	north	drainage crossing
36.7	BLM	0.12	north	drainage crossing
38.4	BLM	0.11	south	pipeline crossover
38.8	BLM	0.19	north	drainage crossing
39.4	BLM	0.61	north	drainage crossing
39.8	BLM	0.60	north	Texas Creek crossing
40.1	BLM	0.29	north	drainage crossing
40.3	BLM	0.71	south	drainage crossing
40.5	BLM	0.14	south	Rio Blanco CR109 crossing, pipeline crossover
40.8	BLM	0.22	north	drainage crossing
41.1	fee	0.17	south	pipeline crossover
41.3	fee	0.33	south	drainage crossing
41.6	fee	0.19	south	Texas Creek crossing
41.6	fee	0.23	north	pipeline crossover
41.9	BLM	0.11	north	drainage crossing
41.9	BLM	0.23	north	drainage crossing
42.2	BLM	0.24	north	Texas Creek crossing
42.4	BLM	0.14	north	Texas Creek crossing
43.3	fee	0.40	north	Texas Creek crossing
43.8	fee	0.25	north	drainage crossing
44.1	fee	0.74	north	drainage crossing
45.5	fee	0.39	south	road crossing
45.8	fee	0.31	south	road crossing
47.8	BLM, State	1.15	north	Evacuation Creek crossing; tie-in to Dragon Station

Ancillary Facilities

Access Roads

EnCana would use existing roads to gain access to the right-of-way during construction. These access roads are primarily gravel and/or dirt roads utilized during installation of the existing Kinder Morgan, CIG, Questar, and EnCana pipelines.

Contractor/Pipe Storage/Offloading Yards

EnCana proposes to use contractor, pipe storage, and offloading yards on a temporary basis to support construction activities. These yards have been previously disturbed, are located on privately owned land, and have been used for similar activities in the past.

Aboveground Appurtenances

Associated aboveground appurtenances proposed by EnCana include meter stations, block valves, cathodic protection equipment, and pipeline markers.

Meter stations would be required at each interconnect/outlet to existing/proposed pipelines and at the Logan Wash Facility, Meeker Gas Plant, Dragon Trail Facility, and Dragon Station. In addition to meters, the meter stations would consist of gas quality measurement equipment, valves, and related piping located within prefabricated metal buildings. The perimeter of the facility would be surrounded with suitable security fencing. EnCana would provide exact locations, property ownership, and land requirements for the meter stations to the BLM Authorized Officer prior to construction.

Sectionalized *block valves* would be installed with the pipelines at locations dictated by project design and at intervals required by Department of Transportation (DOT) regulations. The perimeter of the block valve sites would be surrounded by suitable security fence. Locations, land ownership, and land requirements for the block valves have not yet been determined. EnCana would provide this information to the BLM Authorized Officer prior to construction.

Cathodic protection equipment would be installed as necessary along the pipelines. Exact placement and type of equipment has not yet been designed.

The pipeline location would be marked with *aboveground pipeline markers* in accordance with DOT safety requirements.

Construction Schedule

The project would be constructed between 2005 and 2010, depending upon production volumes. Year 2005 construction would include the 36-inch diameter natural gas pipeline on the Meeker-South segment and the 16-inch diameter natural gas pipeline on the Meeker-West segment. The balance of the lines would be built in 2006 and beyond. To maximize construction efficiency and minimize steep slope disturbance, a portion of the 12-inch diameter NGL pipeline that crosses the Cathedral Bluffs would be constructed at the same time as the 16-inch diameter natural gas pipeline, and a portion of the 10-inch diameter NGL line that crosses Long Point would be

constructed at the same time as the 30-inch diameter natural gas pipeline. Both of these areas are located on fee-lands.

Construction would occur simultaneously on each spread. A contractor would be assigned to each spread and would utilize an average work crew up to 250 persons to construct each pipeline.

Gas Plant

Description

The general arrangement of the gas plant site is illustrated on Exhibit E included in Attachment 1. The initial design includes four main buildings at the site, including a residue compressor building, a control room/office/warehouse, a utility building, and an amine plant. The site would also include four power distribution centers (pre-fabricated buildings that house electrical equipment), slug catchers and pig receivers, compressors, diesel-fired emergency generator, gas coolers, NGL recovery system, hot oil heater, incinerator, flare system, amine storage tank, water storage tank, product storage tanks with truck loading and unloading equipment, towers, vessels, and parking lots. The plant site would be entirely enclosed with a security fence. All buildings would be painted Munsell Soil Chart Juniper Green in accordance with BLM requirements. Containment ditches and stormwater retention ponds would be located on-site, as necessary. Ponds would be designed, at a minimum, to accommodate a 100-year, 6-hour storm event and would have a minimum design life of 25 years. Roads, utilities, and piping networks would be also located at the plant site.

Processing

EnCana would design the gas plant to recover NGL from the natural gas stream and to meet carbon dioxide specifications for natural gas gathered from the Piceance Basin and delivered into inter- and intrastate pipelines. Preliminary design includes amine treatment to reduce carbon dioxide volume content, ethylene glycol injection and recovery to remove water, and a low-level natural gas liquids recovery system. The plant would have discharge compression to deliver natural gas into the various sales outlets in the area. The gas plant would be designed to allow for future upgrades and expansion. EnCana would initially use natural gas-driven compression, but plans to switch eventually to electric-driven compression to reduce air pollutants and noise.

Carbon dioxide removal would be achieved through a closed loop system using amine solvent to absorb the carbon dioxide from the high-pressure gas stream. The solvent would be regenerated for re-use in the system at low pressure using heat. The carbon dioxide stream produced would be incinerated to comply with air permitting requirements.

The treated gas would then flow into the NGL recovery system. Ethylene glycol would be injected into this system to absorb water and natural gas liquids would be condensed. The liquids would be processed to meet NGL Y-grade pipeline specifications and the glycol-water mixture would be processed to regenerate the glycol for reuse in the system. The steam and flash vapors produced by the glycol regeneration equipment would be used as fuel or incinerated as necessary to comply with air permitting requirements.

Raw water would be treated, typically with a reverse osmosis process, for use in the amine plant to prevent process contamination, corrosion, and operational difficulties. The water treatment system would produce a wastewater stream concentrated in salt content, which would be stored and trucked off-site. Wastewater would be used for production activities or would be properly disposed of in accordance with applicable rules and regulations.

Hazardous Materials

Hazardous materials used during operation of the plant would include ethylene glycol, amines, methanol, lube oils, solvents, lab chemicals for testing amines, and thermal fluid (heat medium oil). Hazardous materials would be properly stored and identified within storage buildings at the respective sites. Gasoline and diesel fuel would be stored in aboveground tanks within a bermed area. Hazardous materials would be labeled and stored in accordance with EnCana's Spill Prevention, Containment, and Countermeasure Plan, included in the Plan of Development. Hazardous materials would be used, stored, transported, and disposed of in accordance with applicable federal and state laws.

Land Requirements and Right-of-Way

Construction and operation of the Meeker Gas Plant would require 50 acres of land and would require a 50-acre right-of-way from the BLM WRFO.

Ancillary Facilities and Infrastructure

Access roads

Three access roads, two paved and one gravel, currently exist to the proposed plant site. The paved roads include a private road accessed from Rio Blanco County Road 5 (Piceance Creek Road) and Rio Blanco County Road 31 accessed from Rio Blanco County Road 24. Rio Blanco County Road 83 (Yellow Creek Jeep Trail), accessed off Rio Blanco County Road 31, is dirt and gravel. EnCana would maintain these roads as necessary for the life of the project.

Electrical Power

White River Electrical Association, Inc. (WREA) would permit and build a powerline from their existing 138-kV transmission line to the plant site. WREA would be responsible for acquiring necessary permits and approvals for this powerline.

Water

Potable water would be trucked to the plant site and stored in a potable water tank. Water from the water treating processes would be stored in contained storage tanks on-site and trucked off-site. With the possible exception of stormwater, there would be no off-site water discharges. EnCana plans to utilize the existing American Soda leach field for sewage needs in the immediate future, subject to approval from Rio Blanco County. Provisions would be made to add a septic system to the plant site in the future and EnCana would apply for necessary permits at that time.

Communications, Security, and Lighting

EnCana plans to use the existing American Soda facility for office space. Telephone and data lines are already installed to the American Soda facility. These services would be extended to the plant control room.

Access to the plant site would be controlled with suitable security fence around the site boundary, and the plant would be staffed 24 hours per day.

The site would require lighting during nighttime operation. To reduce the visibility of night lighting, EnCana would minimize lighting and select the least intrusive shade of lighting within the constraints of Occupational Safety and Health Administration (OSHA) requirements and standard industry engineering practices. Lighting would comply with Rio Blanco County Land Use Regulations.

Construction Schedule

EnCana would construct the gas plant over a period of several years. Year 2005 construction would include site preparation and possible installation of natural-gas driven compressor engines. The initial phase of the gas plant would likely be constructed in 2006 and would take up to six months to complete. A work force with an estimated 250 persons would be required complete the initial phase of construction. Future plant expansions would be segmented over a period of two to three years.

American Soda Pipeline Conversion

In 2000, American Soda constructed two 12.75-inch diameter pipelines to transport dissolved nahcolite and water as part of their nahcolite solution mining operation. EnCana recently purchased the pipelines, and plans to convert the pipelines to allow for transport of natural gas or natural gas liquids produced from existing and future EnCana production in the Piceance Basin. EnCana filed an application with the BLM on November 17, 2004 requesting the existing authorization be assigned from American Soda to EnCana and amended from transport of dissolved nahcolite and water to natural gas and natural gas liquids.

Conversion of the pipelines would involve dewatering and drying the lines through pigging operations. Compressed air would be used to move the pigs through the lines. The water from the pipes would be stored in an existing tank at the American Soda Parachute plant site. The pipelines were hydrostatic tested to allow a maximum working pressure of 2160 pounds per square inch gauge (psig). EnCana would operate these lines at pressures up to 1480 psig; therefore, no further strength testing is required. The pipelines would be used to transport gas produced in EnCana's North Parachute field for delivery to the Mamm Creek Conditioning Facility in Rifle, Colorado. Gas would be delivered to the Meeker Gas Plant after it is operational.

Prior to the introduction of natural gas into the pipelines, minor modifications to the pipelines would be made to connect into EnCana's existing facilities and add the necessary block valves for the new service.

Conversion is not contingent upon approval of this Environmental Assessment and would begin after the realty authorization has been assigned and amended.

ALTERNATIVE ACTION

The Alternative Action alternative consists of approximately 192 miles of natural gas, natural gas liquids and water pipelines and related facilities installed in an 89-mile construction corridor. The alternative route follows the same corridor as described for the Proposed Action to the Meeker Hub (T2S R97W Section 4). Under the Alternative Action, the Meeker Gas Plant would be located at the Meeker Hub. From the Meeker Hub, the pipeline corridor parallels the existing Questar/CIG pipeline corridor in a generally east-west direction for approximately 32 miles to EnCana's existing Dragon Trail Facility. The corridor continues in a generally east-west direction as described in the Proposed Action to the Dragon Station in Utah. The Alternative Corridor is depicted on Exhibit A, included in Attachment 1.

Construction of the Alternative Action would disturb approximately 1,393 acres of land, including the pipeline construction right-of-way, temporary workspace areas, gas plant site, and related aboveground appurtenances. Total disturbance on BLM lands is 830 acres. For the purpose of analysis in the Environmental Assessment, it is assumed that the corridor would be new disturbance. In actuality, up to 25 feet of the construction right-of-way overlaps existing utility corridors in most locations. New disturbance on BLM lands is estimated at 686 acres, including temporary use areas. The construction right-of-way that overlaps existing pipeline corridors has been analyzed in five previous environmental assessments or environmental impact statements (BLM 1991, BLM 1992, BLM 1999, BLM 1994a, and BLM 1994b).

Pipeline

Description

The proposed natural gas, natural gas liquids and water pipelines consist of approximately 40 miles of up to 30-inch diameter natural gas pipeline, 45 miles of up to 16-inch diameter natural gas pipeline, 49 miles of up to 12-inch diameter NGL pipeline, 40 miles of up to 10-inch diameter NGL pipeline, and 18 miles of up to 12-inch diameter natural gas or water pipelines. The pipelines would be designed as discussed for the Proposed Action.

Land Requirements

As indicated in Table 2-6, construction of the pipelines would disturb 1,343 acres of land, including the pipeline construction rights-of-way and temporary use areas. Approximately 508 acres used for construction would be required for operations (permanent pipeline easement) and 835 acres would be disturbed for construction. Approximately 62 percent of the land affected by construction and operation of the pipeline projects would be on public lands managed by the BLM. Less than 0.001 percent of the project would be on lands managed by the State of Utah Institutional Trust and 38 percent of the project would occur on fee-lands.

Table 2-6 Alternative Action Pipeline Land Requirements

Land Ownership	Permanent Easement (acres)	Construction Width (acres)	Temporary Use Areas (acres)	Total (acres)
BLM	330	480	20	830
Fee	178	277	57	512
State of Utah	0.3	0.5	0.4	1.2
Total	508.3	757.5	77.4	1343.2

Corridor

The pipeline corridor is divided into two sections with a total of six segments. The proposed Meeker Gas Plant would be the dividing point between the north-south section (Meeker-South) and the east-west section (Meeker-West). The north-south section would consist of four segments (A, B, C, and D) and the east-west section would consist of three segments (D, E, and F). Table 2-7 identifies pipelines in each segment.

Table 2-7 Alternative Action Pipeline Corridor

Mileposts	Segment	Description	Pipelines in Segment
Meeker-South			
0.0 to 24.3	A	Logan Wash Facility to County Line Compressor Station (CLCS)	30-inch natural gas 10-inch NGL
24.3 to 35.4	B	CLCS to Hunter Creek Compressor Station (HCCS)	30-inch natural gas 10-inch NGL 16-inch natural gas 12-inch water or natural gas
35.4 to 39.3	C	HCCS to Piceance Creek	30-inch natural gas 10-inch NGL 12-inch water or natural gas
39.3 to 40.3	D	Piceance Creek to Meeker Gas Plant	30-inch natural gas 10-inch NGL 12-inch water or natural gas 16-inch natural gas 12-inch NGL
Meeker-West			
0.0 to 1.0	D	Meeker Gas Plant to Piceance Creek	30-inch natural gas 10-inch NGL 12-inch water or natural gas 16-inch natural gas 12-inch NGL
0.0 to 31.8	E	Dragon Trail Facility to Meeker Gas Plant	16-inch natural gas 12-inch NGL
31.8 to 48.5	F	Dragon Trail Facility to Dragon Plant	12-inch NGL

Right-of-Way

The nominal construction right-of-way width would vary between 90 and 160 feet. Following construction of the pipelines, the width of the right-of-way would be reduced to a permanent

right-of-way that varies between 30 and 75 feet. Temporary construction widths, permanent easements, and total disturbance widths are provided Table 2-8.

Table 2-8 Alternative Action Right-of-Way Configurations

Segment	Length (miles)	Permanent Easement Width (feet)	Temporary Construction Width (feet)	Total Disturbance Width (feet)	Total Disturbance (acres)
A	24.3	45	75	120	353.5
B	11.1	75	65	140	188.4
C	3.9	60	70	130	61.5
D	1.0	75	65	140	17.0
E	30.8	45	75	120	448.0
F	16.7	30	60	90	182.2
Hunter Creek Lateral	0.9	45	75	120	13.1
Dragon Trail Lateral	0.2	30	60	90	2.2
Total					1265.9

As discussed for the Proposed Action, EnCana would not utilize the entire workspace requested unless all pipelines are installed at once.

EnCana would install the first pipeline at the standard offset (25-foot) and would install each subsequent pipeline at a 15-foot offset, as discussed for the Proposed Action. At certain locations, the proposed route deviates from this standard offset configuration due to terrain, environmental features, or at the request of land management agencies. Table 2-9 summarizes the location and length of each atypical offset and route deviation and provides the rationale for adopting them as part of the route.

Table 2-9 Alternative Action Corridor Deviations and Rationale

Milepost (Start)	Milepost (End)	Land Ownership	Relationship to Existing Corridor	Maximum Offset (feet)	Reason for Atypical Offset or Route Deviation
Meeker-South					
31.4	32.1	fee, BLM	south	1103	avoid steep slopes; no workspace parallel to existing pipeline
33.0	33.5	BLM	west	337	avoid rock outcrops and steep slopes
33.7	34.0	BLM	west	85	allow for better foreign pipeline crossing
34.2	35.9	BLM	east	1990	avoid steep slopes and dry wash; minimize Hunter Creek crossing; no workspace parallel to existing pipeline

Table 2-9 Alternative Action Corridor Deviations and Rationale

Milepost (Start)	Milepost (End)	Land Ownership	Relationship to Existing Corridor	Maximum Offset (feet)	Reason for Atypical Offset or Route Deviation
36.8	37.3	BLM	east	377	avoid steep slopes; no workspace parallel to existing pipeline
37.3	37.5	fee	west	287	avoid steep slopes; no workspace parallel to existing pipeline
37.5	40.3	fee	west	920	minimize Piceance Creek crossings
Meeker-West					
0.0	1.1	fee	west	920	minimize Piceance Creek crossings
1.1	2.6	fee, BLM	south	3840	avoid Ryan Gulch ACEC
3.6	3.7	BLM	north	85	allow for better road crossing alignment
5.4	5.7	BLM	south	90	allow for better dry wash crossing alignment
5.8	6.1	BLM	south	260	avoid dry wash and rock outcrops
7.8	8.1	BLM	south	161	avoid dry wash, steep slopes, and rock outcrops
12.3	12.4	BLM	south	90	avoid rock outcrop and steep slopes
13.4	13.5	BLM	south	52	avoid pipeline crossover
19.0	19.2	fee	south	81	cease Questar co-locate and begin CIG co-locate
23.9	24.2	BLM	south	423	avoid steep slopes; no workspace parallel to existing pipeline
25.3	26.0	BLM	south	400	corridor is full; avoid dry wash and steep slopes
26.6	27.7	BLM	south	1105	avoid steep slopes and rock; no workspace parallel to existing pipeline
27.7	28.5	BLM	south	251	avoid steep slopes and rock; no workspace parallel to existing pipeline
32.7	34.0	BLM	south	460	avoid steep slopes; no workspace parallel to existing pipeline
34.2	34.2	BLM	south	51	avoid valve and dog leg tie-in
34.5	34.5	BLM	south	95	avoid existing well
34.7	34.8	BLM	south	110	avoid steep slopes and existing well
35.0	35.0	BLM	south	105	avoid steep slopes; no workspace parallel to existing pipeline
35.4	35.6	BLM	north	306	avoid steep slopes; no workspace parallel to existing pipeline
35.7	35.7	BLM	north	62	allow for better pipeline crossing alignment
37.0	38.0	BLM	south	540	avoid dry wash; no workspace parallel to existing pipeline
40.0	40.4	BLM	north	75	avoid ponds

Table 2-9 Alternative Action Corridor Deviations and Rationale

Milepost (Start)	Milepost (End)	Land Ownership	Relationship to Existing Corridor	Maximum Offset (feet)	Reason for Atypical Offset or Route Deviation
40.3	40.6	BLM	north	210	avoid dry wash
41.3	41.6	BLM	north	165	avoid dry wash; allow for better dry wash crossing alignment
43.0	43.1	BLM	north	46	allow for better Texas Creek crossing alignment
45.0	45.6	BLM	north	225	allow for better dry wash crossing alignment
46.0	46.1	fee	north	46	allow for better dry wash crossing alignment
47.0	47.3	fee	north	75	avoid side slope and road
47.8	48.0	BLM	south	275	allow for better dry wash crossing alignment

Approximately 73 miles (83 percent) of the 89-mile corridor would be constructed adjacent to existing Kinder Morgan, CIG, Questar, EnCana, Wild Horse or Rio Blanco County road and utility corridors using the standard 25-foot offset. Another 3.8 miles (4 percent) would be constructed with an atypical offset of 25 to 225 feet. The remaining 11.8 miles (13 percent) would be constructed in newly created corridors. Approximately 10.6 miles of newly created corridors would be located on BLM lands.

It would be necessary to deviate from the existing corridor and create new utility corridors in four main areas. A corridor deviation would be required from Meeker-South milepost 31.4 to 37.5 to avoid topographically constrained narrow ridgetops, steep side and ascent-descent slopes, and rock outcrops to allow for safe, efficient construction. A corridor deviation would be required from Meeker-South mileposts 37.5 to 40.3 and Meeker-West mileposts 0.0 to 1.1 to minimize the number of Piceance Creek crossings. From Meeker-West milepost 1.1 to 2.6, the existing utility corridor snakes through the Ryan Gulch ACEC. This area has rock outcrops and extreme side and ascent-descent slopes. A corridor deviation would be necessary to avoid these construction constraints and sensitive plant habitat. Corridor deviations would be needed along portions of Meeker-West from milepost 24.0 to 28.5 to avoid narrow construction areas, rock outcrops, deeply incised washes, and steep side and ascent-descent slopes to allow safe, efficient construction.

Temporary Use Areas

EnCana has identified temporary use areas where additional right-of-way width would be required at foreign pipeline and road crossings, waterbody crossings, and steep side and ascent-descent areas. The locations and sizes of the temporary use areas are identified on Table 2-10.

Table 2-10 Alternative Action Temporary Use Areas

Milepost	Land Ownership	Size (acres)	Relationship to Centerline	Feature
Meeker-South				
3.7	fee	0.7	north	steep slope
5.6	fee	5.0	east	Long Point
6.0	fee	3.7	west	steep slope
6.9	fee	2.8	east	Long Point
8.1	fee	4.6	west	Long Point
8.6	fee	0.8	south	steep slope
9.7	fee	1.1	west	steep slope
10.6	fee	1.6	west	steep slope
11.2	fee	2.1	west	steep slope
12.3	fee	1.9	west	steep slope
13.2	fee	2.7	west	steep slope
14.5	fee	3.1	west	steep slope
15.7	fee	0.6	west	steep slope
15.9	fee	2.7	west	drainage, staging area
16.2	fee	2.4	west	steep slope
17.8	fee	2.8	west	steep slope
18.9	fee	2.6	west	steep slope
19.9	fee	1.7	west	steep slope
21.5	fee	1.8	west	steep slope
21.7	fee	3.5	west	staging area
22.2	BLM	1.7	west	steep slope
27.3	BLM	5.0	west	staging area
31.1	BLM	0.24	east	pipeline crossover
31.4	fee	0.60	west	Hunter Creek crossing
31.8	BLM	0.24	west	steep slopes
35.5	BLM	0.22	east	road and drainage crossing
37.3	fee	0.12	east	pipeline crossover
Meeker-West				
3.5	BLM	0.14	north	Rio Blanco CR24 crossing
3.6	BLM	0.16	north	Rio Blanco CR24 crossing
4.1	BLM	0.13	north	pipeline crossover
6.5	BLM	0.22	south	Rio Blanco CR24 crossing
6.6	BLM	0.26	south	Rio Blanco CR24 crossing
6.8	BLM	0.41	south	Rio Blanco CR68 crossing
6.9	BLM	0.25	south	Rio Blanco CR68 crossing
7.8	BLM	0.21	south	drainage crossing
9.2	BLM	0.29	south	Rio Blanco CR91 crossing and Stake Springs Draw crossing
11.1	BLM	0.12	south	Rio Blanco CR70 crossing
13.7	BLM	0.29	south	Rio Blanco CR70 crossing
13.8	BLM	0.29	south	Rio Blanco CR70 crossing
14.3	BLM	0.26	south	Rio Blanco CR70 crossing
17.7	fee	0.25	south	Rio Blanco CR70 crossing
17.9	fee	0.27	south	Rio Blanco CR70 crossing
19.0	fee	1.69	south	Cathedral Bluffs staging area
19.6	fee	2.84	south	Cathedral Bluffs staging area

Table 2-10 Alternative Action Temporary Use Areas

Milepost	Land Ownership	Size (acres)	Relationship to Centerline	Feature
23.3	BLM	0.24	north	pipeline crossover
23.4	BLM	0.25	south	pipeline crossover
23.6	BLM	0.29	south	steep slopes
24.0	BLM	0.09	north	East Dry Lake Canyon crossing
24.2	BLM	0.08	north	East Dry Lake Canyon crossing
24.3	BLM	0.26	north	East Douglas Creek crossing
25.9	BLM	0.18	south	road crossing
26.9	BLM	0.25	north	road crossing
27.1	BLM	0.24	north	steep slopes
27.2	BLM	0.22	north	steep slopes
27.6	BLM	0.36	north	road and drainage crossing
27.7	BLM	0.09	north	road and drainage crossing
28.0	BLM	0.12	south	drainage crossing
28.0	BLM	0.28	south	road and drainage crossing
28.1	BLM	0.38	south	West Douglas Creek crossing
28.3	BLM	0.19	north	Highway 139 crossing
28.4	BLM	0.19	south	Highway 139 crossing
30.3	BLM	0.21	south	Little Horse Draw crossing
30.4	BLM	0.20	south	road crossing
30.8	BLM	0.57	south	pipeline crossover
31.1	BLM	0.18	south	road crossing
32.1	BLM	0.15	south	drainage crossing
37.4	BLM	0.12	north	drainage crossing
37.5	BLM	0.12	north	drainage crossing
39.2	BLM	0.11	south	pipeline crossover
39.6	BLM	0.19	north	drainage crossing
40.2	BLM	0.61	north	drainage crossing
40.6	BLM	0.60	north	Texas Creek crossing
40.9	BLM	0.29	north	drainage crossing
41.1	BLM	0.71	south	drainage crossing
41.3	BLM	0.14	south	Rio Blanco CR109 crossing, pipeline crossover
41.6	BLM	0.22	north	drainage crossing
41.9	fee	0.17	south	pipeline crossover
42.1	fee	0.33	south	drainage crossing
42.4	fee	0.19	south	Texas Creek crossing
42.4	fee	0.23	north	pipeline crossover
42.7	BLM	0.11	north	drainage crossing
42.7	BLM	0.23	north	drainage crossing
43.0	BLM	0.24	north	Texas Creek crossing
43.2	BLM	0.14	north	Texas Creek crossing
44.1	fee	0.40	north	Texas Creek crossing
44.6	fee	0.25	north	drainage crossing
44.9	fee	0.74	north	drainage crossing
46.3	fee	0.39	south	road crossing
46.6	fee	0.31	south	road crossing
48.4	BLM, State	1.15	north	Evacuation Creek crossing, tie-in to Dragon Station

Ancillary Facilities

Access roads, contractor/pipe storage/offloading yards, aboveground appurtenances would be the same as discussed for the Proposed Action.

Construction Schedule

The construction schedule would be the same as discussed for the Proposed Action.

Gas Plant

Description

The facility layout would involve similar equipment and buildings as discussed for the Proposed Action, but the physical layout of the facility would be changed significantly to fit within the proposed site. The processing operations and hazardous materials used during operation would be the same as discussed for the Proposed Action.

Land Requirements

The plant site would be located on 50 acres of fee-lands owned by EnCana.

Ancillary Facilities and Infrastructure

Access Roads

EnCana would construct an access road off Rio Blanco County Road 5 (Piceance Creek Road). Rio Blanco County Road 5 would need to be widened to include a turn lane into the plant site. EnCana would acquire appropriate road permits from the Rio Blanco County Road and Bridge Department.

Electrical Power

Electrical power for the gas plant would be provided by WREA. A 1.8-mile powerline would be constructed from WREA's existing 138-kilovolt (kV) powerlines south to the gas plant.

Water

Potable water would be trucked to the plant site and stored in a potable water tank. Water from water treatment processes would be stored on-site in contained storage tanks and would be trucked off-site. With the possible exception of stormwater, there would be no off-site water discharges. An on-site septic system would be constructed, in accordance with Rio Blanco County Land Use Regulations, for the disposal of sewage.

Communications, Security, and Lighting

EnCana would construct an office building on-site. Telephone and data lines would need to be installed to the building.

Access to the plant site would be controlled with suitable security fence around the site boundary, and the plant would be staffed 24 hours per day.

The site would require lighting during nighttime operation. To reduce the visibility of night lighting, EnCana would minimize lighting and select the least intrusive shade of lighting within the constraints of OSHA requirements and standard industry engineering practices. Lighting would comply with Rio Blanco County Land Use Regulations

Construction Schedule

Construction of the Meeker Gas Plant would take up to eight months to complete the initial phase due to the increased amount of soils and foundation work required to stabilize the site due to soil characteristics and the high groundwater table. Future plant expansions would be segmented over a period of two to three years. A work force with an estimated 250 persons would be required to complete the initial phase of construction.

NO ACTION ALTERNATIVE

Under this alternative, the right-of-way application for use of BLM-administered lands would be denied and construction would not occur on BLM-administered lands.

ALTERNATIVES CONSIDERED, BUT REJECTED

EnCana considered three alternative corridors for the Meeker-South pipelines and two alternative plant sites. These routes were dropped from consideration because they involved additional construction disturbance and/or impacted Greater sage grouse production areas and Areas of Critical Environmental Concern (ACEC). Alternatives routes and sites considered, but rejected are depicted Exhibit A included in Attachment 1.

Alternative A, Considered but Rejected

EnCana would construct the Meeker-South pipeline along the Highway 13 and the Magnolia-Cascade utility corridor. The pipeline would begin at EnCana's existing Mamm Creek Conditioning Facility near Rifle, Colorado and travel in a generally northwesterly direction along the existing Questar/Public Service Utility of Colorado pipeline corridor to the Greasewood Hub area. The alternative plant site considered, but rejected would be located at the Greasewood Hub. The Meeker-West pipeline corridor would begin at the Greasewood Hub and would head west through the Park Canyon-Magnolia designated utility corridor to the Meeker Hub. This pipeline corridor from the Mamm Creek Conditioning Facility to the Greasewood Hub would be approximately 36 miles and the corridor from the Greasewood Hub to the Meeker Hub would be approximately 6 miles.

EnCana would utilize the TransColorado corridor, as described for the Proposed Action, to construct the 10-inch diameter NGL pipeline from the Logan Wash Facility to the Meeker Hub, the 16-inch natural gas pipeline between the County Line Compressor Station and the Hunter Creek Compressor Station, and the 12-inch diameter natural gas or water pipeline between the Hunter Creek Compressor Station and the Meeker Hub. These pipelines would continue from the Meeker Hub to the gas plant at the Greasewood Hub.

This alternative was removed from consideration for several reasons. This corridor contains numerous existing pipelines and is topographically constrained in some areas due to geologic features and Government Creek, a deeply incised channel with highly erodible banks. The Meeker-West portion of the corridor would travel through the Dudley Bluffs ACEC where new right-of-way activities would be limited to the existing disturbance footprint. There is not sufficient space to construct five additional pipelines in the Dudley Bluffs ACEC disturbance footprint. New corridors would be created to avoid the ACEC, geologic features, and Government Creek. This alternative would result in two utility corridors for the Meeker-South pipelines, would result in 83 miles of disturbance instead of 45 miles with the Proposed Action, and would disturb 420 acres more than the Proposed Action. Therefore, this alternative would increase disturbance and construction cost in comparison to the Proposed Action.

Alternative B, Considered but Rejected

EnCana would construct the Meeker-South pipeline along the American Soda/CIG corridor from the Parachute area north to the American Soda site. The pipeline would begin at EnCana's existing Logan Wash Facility near Debeque, Colorado and travel in an easterly direction to the Parachute area. The pipeline would turn north and generally follow the American Soda/CIG corridor to the Greasewood Hub area where the route would turn west, cross through Hatch Gulch, and continue into the American Soda facility (proposed gas plant site). The Meeker-South pipeline would be approximately 59 miles in length.

EnCana would utilize the TransColorado corridor, as described for the Proposed Action, to construct the 16-inch natural gas pipeline between the County Line Compressor Station and the Hunter Creek Compressor Station and the 12-inch diameter natural gas or water pipeline between the Hunter Creek Compressor Station and the Meeker Hub. These pipelines would continue from the Meeker Hub to the proposed gas plant site.

This alternative was removed from consideration for several reasons. The corridor would travel Dudley Bluffs ACEC and new right-of-way activities would be limited to the existing disturbance footprint. The south end of the route crosses Davis Point and there is not sufficient workspace to install and bury two additional pipelines across the face of Davis Point. The pipeline corridor would pass through Greater sage grouse production habitat, brood areas and wintering habitat on Barnes Ridge. One lek is crossed by the pipeline corridor and a second lek is located within 1-mile of the corridor. New corridors would be created to avoid the ACEC, Davis Point, and the sage grouse production areas. This alternative would result in two utility corridors for the Meeker-South pipelines, would result in 77 miles of disturbance instead of 45 miles with the Proposed Action, and would disturb an additional 413 acres than the Proposed Action. Therefore, this alternative would increase disturbance and construction cost in comparison to the Proposed Action.

Alternative C, Considered but Rejected

EnCana would utilize the TransColorado pipeline corridor as discussed under the Proposed Action. The gas plant would be built at the Occidental Oil Shale Cb Tract (Cb Tract), a reclaimed oil shale processing site. This site was deleted from consideration because discharge

pipe (from the outlet of the plant to the Meeker Hub) would increase by 7 miles, the American Soda pipelines would be extended 15 miles from their terminus at the American Soda Processing Facility to the Cb Tract, and a major utility corridor would be created between the TransColorado Pipeline corridor and the Cb Tract. This alternative would result in an additional utility corridor (Meeker-North/American Soda pipelines), 26 miles of additional pipe length, and would disturb 30 additional acres as compared to the Proposed Action. The Cb Tract would require extensive removal of left in place, broken down concrete foundation areas that were part of the original oil shale site operations. Telephone lines, and a septic system would need installed, and an office building would need constructed instead of utilizing existing infrastructure as described for the Proposed Action. This would result in more disturbance and increased construction costs.

NEED AND PLAN CONFORMANCE

NEED FOR THE ACTION

EnCana plans to increase production in the Piceance Basin by approximately 100 to 200 million standard cubic feet per day (mscfd), each year, for the next several years. The proposed project would provide a natural gas gathering and processing system that would transport and process the projected future volumes of natural gas from the western slope of Colorado and the Rocky Mountain region to major interconnections with other interstate pipelines. The proposed pipelines would transport approximately 1 Bscfd of natural gas from the Piceance Basin of western Colorado to existing inter- and intrastate pipelines operated by Questar, Kinder Morgan, Mid-American Pipeline Company (MAPCO), Northwest, Rocky Mountain Natural Gas (RMNG), Colorado Interstate Gas (CIG) and proposed pipelines operated by Entrega and CIG. The proposed gas plant could ultimately process up to 1.6 Bscfd.

Natural gas produced in the Piceance Basin generally cannot meet pipeline specifications due to high hydrocarbon dewpoint, high level of carbon dioxide, and in some instances, high levels of nitrogen. Therefore, both gathering and processing facilities must be built in order to deliver gas to sales outlets. Gas gathering development in the Piceance Basin has historically consisted of building gathering and processing facilities in each gas-producing field and then connecting the outlet of each gas plant to the nearest natural gas sales outlet. The NGL produced from each of these small facilities is loaded onto trucks and hauled to terminal points in the Piceance and Paradox Basins for injection into existing NGL pipelines.

In order to maximize processing technology and minimize the number of processing facilities, land disturbance, noise, and truck traffic, EnCana developed a new strategy to construct an off-specification gas pipeline through the Piceance Basin to a central gas plant with an NGL pipeline connected from the facility to an existing NGL pipeline. A central Piceance Basin gas plant, due to economies of scale, would also allow more efficient technology to be incorporated into the facility design which would reduce engine and volatile organic compound emissions (e.g., a large facility would incorporate large turbine or electric driven compressors which have significantly lower emissions and noise compared to typical four-cycle engine-driven compressors that are installed in smaller processing facilities). With processing facilities scattered throughout the Basin, several hundred truckloads per day would be necessary to remove all of the forecasted NGL production. At a central facility, an NGL pipeline becomes economically advantageous and substantially eliminates the need for the trucks and the noise, fugitive dust, and emissions associated with their use. Consolidation of natural gas at one location also allows for blending off-specification gas that cannot be economically processed on its own and made marketable.

The Piceance Creek area near Meeker, Colorado was selected for the central gas plant due to the ability to bring the off-specification pipelines to the central facility through existing pipeline corridors, the ability to construct NGL pipelines along existing pipeline corridors, and its proximity to existing and proposed major natural gas sales outlets in the Piceance Basin including Northwest, CIG, Kinder Morgan, Questar, RMNG, MAPCO, and Entrega.

PLAN CONFORMANCE REVIEW

The proposed project is subject to and has been reviewed for conformance with Resource Management Plans (RMP) (43 Code of Federal Regulations (CFR) 1610.5, BLM 1617.3) from the BLM's Grand Junction Field Office (GJFO), White River Field Office (WRFO), and Vernal Field Office (VFO).

Name of Plan
White River Record of Decision (ROD) and Approved Resource Management Plan (RMP).

Date Approved
July 1997

Decision Number/Page
Page 2-5

Decision Language
"To make public lands available for the siting of public and private facilities through the issuance of applicable land use authorizations, in a manner that provides for reasonable protection of other resource values."

Name of Plan
Grand Junction Resource Management Plan and Record of Decision

Date Approved
January 1987

Decision Number/Page
Page 2-29

Decision Language
"To respond, in a timely manner, to requests for utility authorizations on public land while considering environmental, social, economic, and interagency concerns."

Name of Plan
Book Cliffs Resource Management Plan

Date Approved
May 1985

Decision Number/Page
Page 28

Decision Language
"Authorization, including environmental review of rights-of-way, would be handled on a case-by-case basis."

ENVIRONMENTAL ANALYSIS

This section provides descriptions of the affected environment and discloses the environmental consequences of implementing the Proposed Action and alternatives in accordance with the Council on Environmental Quality (CEQ) guidelines. The Affected Environment section describes the present condition of the environment within the project area prior to the initiation of the Proposed Action, Alternative Action, or No Action Alternative. The Environmental Consequences section provides an analysis of the impacts that could result from the implementation of the Proposed Action, Alternative Action, or No Action Alternative. The Mitigation Measures section describes measures that would avoid or reduce impacts.

EnCana has developed a Plan of Development (POD) (EnCana 2005a), available at the BLM GJFO, WRFO, and VFO, that describes construction methods and best management practices to be taken by EnCana during construction, operation, and maintenance of the project. BLM mitigation measures included in the Environmental Assessment will be incorporated into the final POD. The POD establishes procedures for implementation of mitigation measures described in the Environmental Assessment and includes the following environmental compliance plans: Biological Resources Protection Plan (EnCana 2005b); Blasting Plan (EnCana 2005c); Cultural Resources Protection Plan (EnCana 2005d); Environmental Compliance Management Plan (EnCana 2005e); Fire Prevention and Suppression Plan (EnCana 2005f); Fugitive Dust Control Plan (EnCana 2005g); Noxious Weed Management Plan (EnCana 2005h); Paleontological Resources Protection Plan (EnCana 2005i); Reclamation Plan (EnCana 2005j); Safety Plan (EnCana 2005k); Soil Conservation, Sedimentation, and Erosion Control Plan (EnCana 2005l); Spill Prevention, Containment, and Countermeasure Plan (EnCana 2005m); Stormwater Pollution Prevention Plan (EnCana 2005n); Strength Testing Plan (EnCana 2005o); Transportation Management Plan (EnCana 2005p); and Waterbody Crossing and Wetland Protection Plan (EnCana 2005o).

The environmental consequences (also termed impacts or effects) of implementing the Proposed Action would vary in duration and magnitude. The effect, or impact, is defined as any change or alteration in the pre-existing condition of the environment produced by the Proposed or Alternative Action, either directly or indirectly. Impacts can be beneficial or adverse to the resource and can be temporary, short-term, or long-term. Temporary impacts generally occur during construction with the resource returning to pre-construction conditions almost immediately afterward. Short-term impacts could continue for two to three years following construction. Long-term impacts would require more than five years for the resource to recover.

The impact analysis evaluated the environmental consequences that would occur as a result of the project regardless of land ownership. However, the BLM's decision on this project would only apply to federal lands. Mitigation on state or fee-lands cannot be required by the BLM. The manager/fee-landowner of non-federal lands would specify such measures. The impacts on non-federal lands may occur regardless of the BLM decision. Impacts on non-federal lands are included to provide full disclosure of consequences for the entire project and to support other environmental requirements and permitting associated with the project.

STANDARDS FOR PUBLIC LAND HEALTH

In February 1997, the Colorado Standards for Public Land Health became effective for all public lands in Colorado. These standards apply to five categories of resource values: (1) upland soils, (2) riparian systems, (3) plant and animal communities, (4) threatened and endangered species including BLM sensitive species, and (5) water quality. Standards describe conditions needed to sustain public land health and relate to all uses of the public lands. These findings are located in specific elements listed below.

CRITICAL ELEMENTS

AIR QUALITY

Affected Environment

The climate of northwestern Colorado and northeastern Utah can generally be classified as a semi-arid, continental climate regime with a warm semi-desert climate regime near the Utah state line. The project corridor is characterized by low precipitation, dry air, abundant sunshine, and large diurnal temperature ranges (BLM 1994c). Because of the surrounding mountains, low pressure storms tend to pass around the region, whereas high-pressure cells stagnate, blocked by the Rocky Mountains, resulting in moderate temperature and abundant sunshine (BLM 1985a). The region's complex topography causes considerable variations in site-specific temperature, precipitation, and winds, but these influences are more in the valleys than the plateaus (BLM 2003a).

Temperatures vary mostly with elevation, and to a lesser extent, local microclimate. Annual precipitation is highly variable and appears to be a function of elevation, increasing about 0.15-inch for every 100-foot increase in elevation (In Situ, Inc. 1984). Table 4-1 presents a summary of temperature and precipitation for the project area, as recorded at Grand Junction, Little Hills, Rangely, and Rifle, Colorado for the period 1971-2000. January temperatures range from daily minimums in the single digits and teens to daily maximums in the low to mid-30s. Daily minimum temperatures in July range from the mid-40s to mid-60s, while daily maximums average in the high 80s to low 90s. A high frequency of clear skies and low relative humidity in the region provides for rapid nighttime cooling. The average diurnal range between maximum and minimum temperatures is from 25 to 40° F. Average annual precipitation ranges from 9 to 18 inches in the project area. Snowfall across the project ranges from 26 to 84 inches, with more snow falling in higher elevations. The late summer and winter months tend to receive the majority of the precipitation from late summer thunderstorms and winter frontal storms associated with easterly movement of Pacific Ocean storms (BLM 1992).

The average relative humidity in mid-afternoon is less than 33 percent in spring and about 44 percent the rest of the year. The sun shines 77 percent of the time in the summer and 61 percent in the winter (SCS 1982 and 1985 and NRCS 2003). Data collected from the Cb Tract in 1984 indicates that the prevailing wind is from the south-southwest (BLM 1999), but surface wind patterns are usually dependent upon local terrain and ground cover. Synoptic (high or low-pressure gradient) winds may be forced around hills or channeled through valleys, but if there are no strong gradient flows, diurnal upslope/downslope winds may predominate (BLM 2003a).

Table 4-1 Temperature and Precipitation Data

Locality	January Mean Temperature (° F)	July Mean Temperature (° F)	Annual Precipitation (inches)
Grand Junction	26.1	76.8	9.0
Little Hills	19.2	64.7	14.7
Rangely	17.6	73.4	11.1
Rifle	23.5	71.0	12.8

Source: Western Regional Climate Center 2005

The ambient air quality in the United States is protected by the Clean Air Act (CAA) and its amendments as well as other federal, state, and local regulations. The Environmental Protection Agency (EPA) has developed National Ambient Air Quality Standards (NAAQS) for certain criteria pollutants. These criteria pollutants are nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter less than 10 or 2.5 microns in diameter (PM_{10} and $PM_{2.5}$), carbon monoxide (CO), ozone (O_3), and lead (Pb). Colorado has adopted the NAAQS with a modification for SO_2. These Ambient Air Quality Standards were established to protect public health (primary standards) and public welfare (secondary standards).

Areas in which the ambient pollutant concentrations are measured or are believed to be below the NAAQS are classified as attainment or unclassified. Areas in which ambient pollutant concentrations are above the NAAQS are classified as non-attainment. To preserve existing air quality in areas where pollutant levels are below the NAAQS and to protect areas classified as attainment or unclassified, the EPA established Prevention of Significant Deterioration (PSD) regulations through the CAA Amendments of 1977. Under the PSD regulations, areas in the United States are classified into three classes (Class I, Class II, and Class III) based on the additional amounts of NO_2, SO_2, and PM_{10} degradation that would be allowed. PSD Class I areas are public lands such as wilderness areas, national parks, and memorial parks established prior to 1977 that have special protection under the CAA and have the greatest limitations as nearly any degradation would be significant. Areas where moderate, controlled growth can take place are designated as PSD Class II areas. PSD Class III areas are areas in which deterioration is acceptable as long as NAAQS are maintained; however, no PSD Class III areas have been established to date.

The project area is located within the Western Slope Colorado Air Quality Control Region in Colorado and the Uinta Basin Air Quality Control Region in Utah. The region has been designated as either attainment or unclassified for all pollutants and has further been designated Class II with regard to prevention of significant deterioration (BLM 1985a, BLM 1991, BLM 1994c, BLM 2004a, and BLM 2004b). The Flat Tops Wilderness Area is the nearest Class I area, and is located approximately 45 miles east of the proposed Meeker Gas Plant.

Air quality in the project area is typical of undeveloped regions in the western United States. The primary sources of air pollutants in the region are from unpaved roads and streets, seasonal sanding for winter travel, motor vehicles, and wood burning stove emissions (BLM 1985a, BLM

1991, BLM 1994c and BLM 2003a). In recent years, air pollution and impacts from energy development, including direct emissions, support services, and associated growth, have become significant concerns in the region (CDPHE 2004a). The major regional sources of regulated air pollutants include coal-fired power plants near Craig, Hayden, and Palisade, Colorado and various natural gas compressor stations in the Piceance Basin of Rio Blanco and Garfield Counties, Colorado. The ambient pollutant levels are usually near or below measurable limits, except for high short-term increases in PM_{10} levels (primarily wind-blown dust), ozone, and carbon monoxide (BLM 1992). Within the Rocky Mountain region, occasional peak ozone levels are relatively high, but are of unknown origin. Elevated concentrations may be the result of long-range transport from urban areas, subsidence of stratospheric ozone or photochemical reactions with natural hydrocarbons (BLM 2003a). Occasional peak concentrations of CO and SO_2 may be found in the immediate vicinity of combustion equipment (BLM 1994c). Locations vulnerable to decreasing air quality include the immediate areas around mining and farm tilling, local population centers, and distant areas affected by long-range transportation of pollutants (BLM 1994c). Representative monitoring of air quality in the general area indicates that the existing air quality is well within acceptable standards.

Environmental Consequences of the Proposed Action

Air quality would decrease during construction of the gas plant and pipelines due to construction emissions that would include vehicle exhaust and fugitive dust. Construction activities would take place mainly during the hours of 7:00 a.m. and 7:00 p.m. each day for approximately 6 months, after which they would cease. Exhaust emissions would increase from the operation of construction vehicles and equipment. Fugitive dust would increase and the intensity of impacts would be dependent on the level of construction activity and the soil composition and dryness. Fugitive dust would increase from vehicular traffic on unpaved roads and during grading, trenching, padding, backfilling, and reclamation activities. Actual concentrations of vehicle exhaust and fugitive dust in the air cannot be easily estimated because construction is a linear process in which equipment does not stay at one location for an extended period as the project progresses. Wind dispersion and dilution would reduce the impacts from emissions and these impacts would be localized to the construction right-of-way and access roads during the construction phase of the project. Air quality impacts from construction activities would be temporary until stabilization and revegetation of disturbed areas is complete.

Operation of the pipelines would not result in any impacts to air quality and operation of the gas plant would result in minimal impacts. The potential air quality impacts were estimated using the EPA-approved Industrial Source Complex (ISC) dispersion model with the Bowman Environmental, Inc. BEEST for Windows software package (Buys and Associates 2005).The ISC model requires meteorological data, receptor elevation data, and emission source parameters.

Initially, gas compression for the plant would be driven by natural gas-fired compressor engines. Eventually, the compressor engines would be replaced by electric motors, thereby eliminating a considerable source of pollutant emissions from the plant. Emission sources from the gas plant would be compressor engines (until replaced by electric motors), a hot oil heater, and an incinerator. Pollutants would be nitrogen oxides (NO_x), CO, PM_{10}, and hazardous air pollutants (HAPs). Since these are combustion processes, most of the PM_{10} are particles approximately one

micron in diameter; therefore, the $PM_{2.5}$ is accounted for under PM_{10}. Emissions provided by vendors are presented in Table 4-2.

Table 4-2 Meeker Gas Plant Pollutant Emissions

Pollutant	Hot Oil Heater		Incinerator		G3608 Totals for 2 Engines		G3516 Totals for 4 Engines	
	lbs/hr	tons/year	lbs/hr	tons/year	lbs/hr	tons/year	lbs/hr	tons/year
NO_x	13.86	60.7	6.7	29.3	6.36	27.87	15.40	67.49
CO	11.64	51.0	22.5	98.6	11.36	49.78	9.77	42.75
PM_{10}	1.06	4.6	2.5	11.0	0.64	2.81	0.72	3.17

The fuel oil heater would have a heat rating of 138.6 mmBtu/hr and the incinerator used to combust fuel gas and vent gas from the plant process would have an effective heat rating of 64 mmBtu/hr. The hazardous air pollutant emissions from the incinerator are based on a 98 percent HAPs destruction efficiency.

Two Caterpillar G3608 engines rated at 2,062 horsepower (hp) each at the 7,000 feet above mean sea level elevation rating correction of 0.87 and four Caterpillar G3516 compressor engines rated at 1,165 hp each would be operated. Oxidation catalysts would be installed on the engines to reduce CO emissions by at least 50 percent. NOx and CO emission factors for the Caterpillar engines are based on published Caterpillar factors (Caterpillar 2005). Table 4-3 shows the hourly and annual HAP emissions based on full operation 8,760 hours per year.

Table 4-3 Meeker Gas Plant HAP Emissions

HAP	Vent Gas to Incinerator (lbs/hr)	Emissions to Atmosphere (lbs/hr) [1]	Emissions to Atmosphere (tons/year) [1]
Benzene	62.31	1.25	5.48
Toluene	89.04	1.78	7.80
Ethyl Benzene	33.38	0.67	2.94
Xylene	2.88	0.06	0.27
n-Hexane	10.50	0.21	0.92
Total	198.11	3.97	17.41

[1] After 98% destruction during incineration.

Receptors were spaced at 50-meter intervals along the plant fence line and then at 100-meter spacing out to 2 kilometers from the plant boundary, and 250-meter spacing from 2 to 4 kilometers. Receptor and source elevations were determined from 1:24,000 scale, electronic 7.5` Digital Elevation Models (DEM) downloaded from www.mapmart.com. Elevations of all sources and receptors were then calculated using the BEEST software.

Four years of surface and upper air data from Grand Junction, Colorado was obtained from the Support Center for Regulatory Models website (SCRAM 2005). The SCRAM data was

processed into the format needed for the ISC model using the PCRAMMET (PCRAMMET 1999) meteorological preprocessor program, also available from SCRAM.

The stack and exhaust gas parameters used were based on preliminary plant design features and information about Caterpillar engines. Modeling parameters are shown in Table 4-4.

Table 4-4 Emission Source Exhaust Parameters

Emission Parameter	Hot Oil Heater	Incinerator	G3608 Engine	G3516 Engine
Stack Height (feet)	50	70	33	33
Exhaust Temperature (° F)	1,000	1,000	870	840
Exhaust Velocity (feet/second)	65.6	50	111.5	134.8
Stack Inside Diameter (feet)	5.7	5.2	1.0	1.0

The modeling was performed for NO_2, CO, and PM_{10} for both natural gas-driven compressor engines and electric motors, and compared to National Ambient Air Quality Standards. Comparisons were also made to the PSD increments; however, comparisons with PSD increments were intended only to evaluate potential significance, and do not represent a regulatory PSD increment consumption analysis. PSD increment consumption analyses are typically applied during the New Source Review permitting process, and are solely the responsibility of the State of Colorado and the Environmental Protection Agency.

As shown on Table 4-5, the modeling results indicate that the ambient air concentrations for all pollutants and for all applicable averaging periods would be less than 5 percent of applicable ambient air quality standards when gas compression for the plant is driven by natural gas-fired compressor engines. When gas compression is driven by electric motors, modeling results, as shown in Table 4-6, indicate that the ambient air concentrations for all pollutants and for all applicable averaging periods would be less than 1 percent of applicable ambient air quality standards. It can be concluded that the operation of the Meeker Gas Plant would comply with all federal and state air quality rules and regulations; therefore, impacts would not be significant.

Table 4-5 Predicted Ambient Air Quality Impacts with Natural Gas-Fired Compressor Motors

Pollutant	Averaging Period	Maximum Concentration ($\mu g/m^3$)	Applicable Ambient Air Quality Standard ($\mu g/m^3$)	Percent Applicable Ambient Air Quality Standard	Applicable PSD Class II Increment ($\mu g/m^3$)	Percent of Class II Increment
NO_2	Annual	4.1	100	4.1	25	16.4
CO	1-hour	323	40,000	<0.1	None	N/A
CO	8-hour	135	10,000	1.3	None	N/A
PM_{10}	24-hour	1.8	150	1.2	30	6.0
PM_{10}	Annual	0.3	50	0.6	17	1.8

($\mu g/m^3$) micrograms of pollutant / cubic meter air

Table 4-6 Predicated Ambient Air Quality Impacts with Electric Compressor Motors

Pollutant	Averaging Period	Maximum Concentration ($\mu g/m^3$)	Applicable Ambient Air Quality Standard ($\mu g/m^3$)	Percent Applicable Ambient Air Quality Standard	Applicable PSD Class II Increment ($\mu g/m^3$)	Percent of Class II Increment
NO_2	Annual	0.028	100	0.03%	25	0.11%
CO	1-hour	12.5	40,000	0.03%	None	NA
CO	8-hour	3.5	10,000	0.03%	None	NA
PM_{10}	24-hour	0.14	150	0.09%	30	0.47%
PM_{10}	Annual	0.012	50	0.02%	17	0.07%

($\mu g/m^3$) micrograms of pollutant / cubic meter air

Environmental Consequences of the Alternative Action

Environmental consequences would be the same as discussed for the Proposed Action.

Environmental Consequences of the No Action Alternative

None.

Mitigation

Construction impacts to air quality would be minimized by acquiring Colorado Department of Public Health and Environment (CDPHE) Air Pollution Control Division (APCD) construction emissions permits, complying with permit stipulations, and implementing emission control measures proposed in EnCana's Fugitive Dust Control Plan (EnCana 2005g), included in the Plan of Development (EnCana 2005a). EnCana would:

- Maintain and tune equipment to manufacturers' specifications.
- Transport the majority of workers from contractor yards to the construction site in buses provided by the contractor.
- Limit opacity of fugitive dust to 20 percent or less.
- Apply water and/or an approved dust suppressant on unpaved roads and construction workspaces.
- Clean soil tracked onto paved roads more than 50 feet from the point of origin within one hour of discovery and clean soil tracked less than 50 feet from the point of origin by the end of the working day.
- Cease construction operations when wind speeds exceed 30 miles per hour (mph).
- Limit vehicle speed to 15 mph on the right-of-way and to posted speed limits on roads.
- Seed disturbed areas as discussed in the Vegetation section.

EnCana would obtain permits for regulated air pollution sources through the CDPHE APCD to ensure compliance with all federal and state air quality standards, and would comply with all county and state permit conditions and stipulations.

AREAS OF CRITICAL ENVIRONMENTAL CONCERN

Affected Environment

The project area is located within or adjacent to six Areas of Critical Environmental Concern (ACEC). The six ACECs are Duck Creek, Dudley Bluffs, Ryan Gulch, South Cathedral Bluffs, East Douglas Creek, and Coal Draw, as described in Table 4-7.

Table 4-7 ACECs Along Project Route

Name	Size (acres)	Reason Established
Coal Creek	1,840	protects paleontological resources
Duck Creek	3,430	protects threatened and endangered plant species and cultural resources
Dudley Bluffs	1,630	protects remnant vegetation associations (RVAs) and Dudley Bluffs bladderpod (Lesquerella congesta) and Piceance twinpod (Physaria obcordata)
East Douglas Creek	47,610	protects important biologically diverse plant communities, riparian habitat, and Colorado River cutthroat trout habitat
Ryan Gulch	1,440	protects Dudley Bluffs bladderpod and Piceance twinpod
South Cathedral Bluffs	1,330	protects sensitive plant species and RVAs

The Proposed Action gas plant is located 1.6 miles southeast of the Duck Creek ACEC, 2.1 miles northwest of the Dudley Bluffs ACEC and 0.7 miles northwest of the Ryan Gulch ACEC. The northern portion of the Meeker-South Proposed Action pipeline corridor is located 0.3 miles west of the Dudley Bluffs ACEC and traverses the Ryan Gulch ACEC for 0.8 miles (12 acres) between Meeker-South mileposts 42.6 and 43.4. The central portion of the Meeker-West Proposed Action pipeline corridor is located 2.2 miles north of the East Douglas Creek ACEC, 2.4 miles north of the South Cathedral Bluffs ACEC, and 0.1 miles south of the Coal Draw ACEC.

The Alternative Action gas plant is located 0.3 miles west of the Dudley Bluffs ACEC and 0.7 miles east of the Ryan Gulch ACEC. The northern portion of the Meeker-South Alternative Action pipeline corridor is located 0.3 miles west of the Dudley Bluffs ACEC and 0.1 miles south of the Ryan Gulch ACEC. The central and western portions of the Meeker-West Alternative Action pipeline corridor are located adjacent to the South Cathedral Bluffs ACEC, East Douglas Creek ACEC, and Coal Draw ACEC as described above.

Environmental Consequences of the Proposed Action

Construction of the gas plant would not affect any ACEC. The portion of the Meeker-South pipeline corridor located within the Ryan Gulch ACEC would not result in any new disturbance,

as the construction would occur within the existing disturbance footprint created by construction of the American Soda pipelines in 2000.

Environmental Consequences of the Alternative Action

No ACECs would be affected because the pipelines and gas plant have been located outside of ACECs.

Environmental Consequences of the No Action Alternative

None.

Mitigation

Construction activities would remain inside the existing disturbance footprint (125 feet wide) within the Ryan Gulch ACEC between Meeker-South mileposts 42.6 and 43.4.

CULTURAL RESOURCES

Affected Environment

Local and regional archaeological studies suggest nearly continuous human occupation of west-central Colorado for the past 12,000 years. Evidence of the Paleo-Indian, Archaic, Formative, and Protohistoric periods has been found in the project area (BLM 1999). Historic records document occupation or use by EuroAmerican trappers, settlers, prospectors, and ranchers as well. Overviews of the prehistory and history of the region are provided in the Colorado Historical Society's context documents for the project area (Husband 1984 and Reed and Metcalf 1999).

The project area passes through the 16,000-acre Canyon Pintado National Historic District (NHD), which is listed on the National Register of Historic Places (NRHP) and contains archaeological sites dating back 11,000 years. Site densities average one site or isolated find every 52 acres (BLM 1994c). The pipeline corridor crosses 2.1 miles (7.3 acres) of the Canyon Pintado NHD between Meeker-West Proposed Action mileposts 26.4 to 27.7 and 28.6 to 29.2 and Meeker-West Alternative Action mileposts 27.3 to 28.6 and 29.5 to 30.1. A new corridor would be created for 0.5 miles within the NHD between Meeker-West Proposed Action mileposts 26.4 to 26.9 and Alternative Action mileposts 27.3 to 27.8.

Cultural resource inventories must be completed to meet requirements of the National Environmental Policy Act of 1969, Executive Order 11593, the National Historic Preservation Act of 1966 as amended, the Federal Land Policy and Management Act of 1976, the Antiquities Act of 1906, the Historic Sites Act of 1935, the Archaeological and Historic Data Preservation Act of 1974, the American Indian Religious Freedom Act of 1978, and the Native American Graves Protection and Repatriation Act of 1990. These laws are concerned with the identification, evaluation, and protection of fragile, non-renewable evidences of human activity, occupation, and endeavor reflected in districts, sites, structures, artifacts, objects, ruins, and works of art, architecture, and natural features that were of importance in human events. These resources tend to be localized and highly sensitive to disturbance.

Class III (pedestrian) cultural resources surveys covering 3,750 acres were conducted for the American Soda Piceance Site between 1987 and 1998 (Conner et al. 1998; Grand River Institute 1994, 1996a, 1996b, 1997a, and 1997b; and Weber et al. 1987). The proposed gas plant site and a portion of the pipeline corridor (Meeker-South mileposts 42.6 to 44.5) that parallels American Soda lies on lands inventoried during these surveys. Inventory of the American Soda Piceance Site project area resulted in the identification of 98 new cultural resources, including 48 prehistoric sites, 5 historic sites, and 45 prehistoric isolated finds (BLM 1999). The types of sites recorded include a dugout, historical drift fences, prehistoric open camps, open lithic scatters, sheltered camps, and open architecture sites. The isolated finds and historic sites were determined ineligible for listing on the NRHP. Seven prehistoric sites have been recommended as eligible for listing on the NRHP, 27 have been recommended as ineligible and 14 sites required additional data in order to determine NRHP eligibility.

Approximately 81 miles of the 93-mile Proposed Action pipeline corridor and 81 miles of the 85-mile Alternative Action pipeline corridor have been inventoried along a 300-foot wide corridor, centered on the proposed corridor centerline. Areas requiring inventories are presented in Table 4-8. These segments were not inventoried because the pipeline corridor was modified after the ground surface was covered with snow. These areas will be surveyed after snowmelt. No construction activities will occur until approved in writing by the BLM Authorized Officer.

Table 4-8 Areas Requiring Cultural Inventories

Location	Proposed Action Mileposts	Alternative Action Mileposts
T2S R97W Section 4 T1S R97W Sections 33 and 28	Meeker-South mileposts 40.3 to 42.6	N/A
T1S R97W Section 19 T1S R98W Sections 24, 25, 36, 35 and 34 T2S R98W Sections 3 and 4	Meeker-West mileposts 0.0 to 5.7	N/A
T2S R101W Sections 36 and 35	Meeker-West mileposts 23.2 to 24.7	Meeker-West mileposts 24.2 to 25.7
T2S R101W Section 32	Meeker-West mileposts 27.7 to 28.8	Meeker-West mileposts 28.6 to 29.7
T2S R102W Section 35	Dragon Trail Lateral from Meeker-West milepost 31.0 into the Dragon Trail Plant	Dragon Trail Lateral from Meeker-West milepost 31.9 into the Dragon Trail Plant
T3S R103W Sections 11, 10, and 9	Meeker-West mileposts 38.5 to 40.0	Meeker-West mileposts 39.3 to 40.8

A Class I inventory (literature search) was conducted for cultural resources present within the proposed pipeline corridor (with the exception of areas discussed above), as well as within a 1.0-mile wide corridor on each side of the centerline. File searches were completed through the Grand Junction Field Office BLM and White River Field Office BLM in Colorado and the Vernal Field Office BLM in Utah, the Utah State Historical Preservation Office (SHPO) in Utah, and the Colorado SHPO online database. The records search identified several previous cultural investigations within the project area, including archaeological investigations for the TransColorado and Uintah Basin pipelines adjacent to the proposed route. The records search identified 16 cultural sites that have been previously recorded. Previously recorded sites include rock art, historic road/trail, sheltered and open camps, lithic scatters, and the Uintah Railroad.

A Class III (pedestrian) inventory was completed for the pipeline corridor and temporary use areas (with the exception of areas discussed above). A 50-foot wide swath was surveyed around temporary use areas that were not included in the 300-foot wide survey corridor. The Class III inventory of the pipeline corridor resulted in the identification of 16 new cultural resources, including 7 isolated finds, 5 prehistoric archaeological sites, and 4 historic sites. The 7 isolates, 2 prehistoric sites, and 3 historic sites are recommended ineligible for listing on the NRHP. Three prehistoric sites (lithic scatter and rock alignments) and one historic site (sheltered camp) were field evaluated and recommended as eligible for listing on the NRHP. Three NRHP eligible sites and one isolated find were recommended for testing prior to surface disturbing activities to determine if the sites possess sufficient data to determine them eligible to the NRHP. Three newly recorded sites and one area known to contain proven potential for cultural resources were recommended for monitoring during construction. One historic site was recommended for avoidance.

Fifteen previously recorded cultural resource sites within or near the survey corridor were revisited. Four sites had been previously determined as eligible by the Colorado or Utah SHPO, and three sites in Colorado had been determined as needing data. Two previously recorded sites were recommended for testing prior to surface disturbing activities to determine if the sites possess sufficient data to determine them eligible to the NRHP, and four previously recorded sites were recommended for monitoring during construction.

No cultural sites were located within the Canyon Pintado NHD (UAC 2004). Meeker-West Proposed Action mileposts 28.6 to 28.8 (Meeker-West Alternative Action mileposts 29.5 to 29.7) will be inventoried, as discussed, but cultural resources are unlikely because this area has been heavily compromised by oil and gas pipeline installation.

Environmental Consequences of the Proposed Action

Construction of the gas plant would not affect any known cultural resources. Construction of the pipelines could affect five known cultural sites. Construction impacts not only include the physical disturbance of a cultural resource, but could also include the introduction, removal, or alteration of various visual or auditory elements, which could alter the traditional setting or ambience of a cultural resource.

Environmental Consequences of the Alternate Action

Environmental consequences would be the same as discussed for the Proposed Action.

Environmental Consequences of the No Action Alternative

None.

Mitigation

Impacts to cultural resources would be minimized by implementing the following BLM mitigation measures. Mitigation measures would be incorporated into EnCana's Cultural Resources Protection Plan (EnCana 2005d), included in the Plan of Development (EnCana 2005a). EnCana would:

- Complete cultural inventories, prior to construction, along segments of the route not surveyed.

- Avoid known cultural resource sites by realigning the centerline, removing temporary use areas, not utilizing the entire construction workspace, and/or completing data recovery.

- Test recommended sites to determine eligibility to the NRHP. If the sites were not eligible, no further mitigation would be necessary. If the sites are eligible, either the sites would be avoided by shifting the centerline or data recovery would occur.

- Monitor eight sites (4 previously recorded, 3 newly recorded, and 1 potential area) within or adjacent to the right-of-way during construction.

- Monitor construction activities within the Canyon Pintado NHD.

- Inform all persons associated with the project that they would be subject to prosecution for knowingly disturbing historic or archaeological sites, or for collecting artifacts. If historic or archaeological materials are uncovered during any project or construction activities, activities would stop in the immediate area of the find, and the BLM Authorized Officer would be immediately contacted. Within five working days, the BLM Authorized Officer would inform EnCana as to:

  - whether the materials appear eligible for the NRHP,
  - the mitigation measures EnCana would likely have to undertake before the site can be used (assuming in situ preservation is not practicable), and
  - a timeframe for the BLM Authorized Officer to complete an expedited review under 36 CFR 800.11 to confirm, through the SHPO, that the findings of the BLM Authorized Officer were correct and that mitigation was appropriate.

- Notify the BLM Authorized Officer by telephone and with written confirmation, immediately upon discovery of human remains, funerary items, sacred objects, or objects of cultural patrimony. Activities would stop in the immediate area of the find, and the discovery would be protected for 30 days or until notified to proceed in writing by the BLM Authorized Officer.

FARMLANDS, PRIME AND UNIQUE

Affected Environment

Prime farmland is land that is irrigated and has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops (NRCS 2003). Soil mapping units crossed by the proposed project that meet the requirements for prime farmland, if irrigated, are Forelle loam, Glendive fine sandy loam, Havre loam, Panitchen loam, Patent loam 0 to 3 percent slopes, and Patent loam 3 to 8 percent slopes. Prime farmlands are typically located along stream bottoms and floodplains. On fee-lands, irrigated prime farmland is under

hay production. On BLM lands, soils that meet the requirements for prime farmland, if irrigated, have not been irrigated and are not likely to be irrigated in the future.

The Proposed and Alternative Action gas plant sites are not located on soils mapped as prime farmlands. The Proposed Action pipeline corridor crosses 1.0 miles (15 acres) of irrigated soils that meet the requirements for prime farmland between Meeker-South mileposts 37.6 and 38.2 and Meeker-South mileposts 42.2 and 42.6. The Alternative Action pipeline corridor crosses 0.6 miles (10 acres) of irrigated soils that meet the requirements for prime farmland between Meeker-South mileposts 37.6 and 38.2.

Environmental Consequences of the Proposed Action

No prime farmlands would be impacted by construction of the gas plant. Construction of the pipeline could affect prime farmlands from compaction, reduced fertility, poor revegetation potential, subsidence, and introduction of noxious weeds. Movement and operation of construction equipment could compact the soil and result in an increased erosion hazard and reduced revegetation potential. Clearing the existing vegetation would provide an opportunity for weed species to invade the right-of-way, and the movement and operation of construction vehicles and equipment could transport weed seed and plant parts from one location to another. Grading, trenching, and backfilling activities could cause mixing of the soil horizons and could result in reduced soil fertility and reduced revegetation potential. Subsidence could occur if the pipeline trench is not adequately compacted. These impacts would be short-term, lasting until successful reclamation has been achieved.

Environmental Consequences of the Alternative Action

No prime farmlands would be impacted by construction of the gas plant. Environmental consequences from construction of the pipelines would be the same as discussed for the Proposed Action.

Environmental Consequences of the No Action Alternative

None.

Mitigation

Impacts to prime farmland soils would be minimized by implementing measures for the proper handling of topsoil and spoil, erosion control, and reclamation procedures as proposed in EnCana's Reclamation Plan (EnCana 2005j), Noxious Weed Management Plan (EnCana 2005h), and Soil Conservation, Sedimentation, and Erosion Control Plan (EnCana 2005l) included in the Plan of Development (EnCana 2005a). EnCana would:

- Segregate up to 12 inches of topsoil from the entire construction workspace and temporary use areas, unless requested otherwise by the fee-landowner, to prevent mixing of topsoil and subsoil layers.
- Stockpile topsoil separately from subsoil.
- Compact the pipeline trench during backfill activities to prevent subsidence.

- Rip or plow compacted subsoil at least 6 to 10 inches deep before replacing segregated topsoil across the right-of-way.

- Return topsoil to pre-construction depths and locations.

- Remove rocks from the top 12 inches of soil and make diligent efforts to remove stones greater than 4 inches in any dimension if the off-right-of-way areas do not contain stones greater than 4 inches in any dimension.

- Control noxious weeds as discussed in the Invasive, Non-Native Species section.

- Minimize the potential for accidental spills or leaks as discussed in the Wastes, Solid or Hazardous section.

FLOODPLAINS

Affected Environment

Floodplains are defined as the relatively flat area or lowlands adjoining a body of standing or flowing water that has been or might be covered with water. Flood insurance rate maps from the Federal Emergency Management Agency (FEMA) were reviewed to determine floodplains in the project area. The project area crosses the 100-year floodplain of Willow Creek, Hunter Creek, Black Sulphur Creek, Piceance Creek, Ryan Gulch, Hatch Gulch, Dudley Gulch, Stake Springs Draw, Horse Pasture Canyon, East Douglas Creek, West Dry Lake Canyon, Pollock Canyon, West Douglas Creek, Little Horse Draw, North Fork Texas Creek, Texas Creek, Missouri Creek, and Evacuation Creek. All of these drainages are susceptible to scouring during winter snowmelt and intense summer rainstorms.

The Proposed Action gas plant site would not located within or adjacent to a 100-year floodplain, and the Proposed Action pipeline corridor would cross 6.0 miles (77 acres) of 100-year floodplain.

Approximately 0.1 acres of the Alternative Action gas plant site would be located within the 100-year floodplain of Piceance Creek. EnCana would place construction fill in this area to support full development of the gas plant site. An estimated minimum 138,000 cubic yards of fill would be required (Cordilleran 2004b). The Army Corps of Engineers (COE) visited the site in August, expressed concern over placement of fill in the Piceance Creek floodplain, and recommended that an alternative location be considered (COE 2004). The Alternative Action pipeline corridor would cross 5.9 miles (76 acres) of 100-year floodplain.

Environmental Consequences of the Proposed Action

No floodplains would be impacted by construction of the gas plant and no floodplains would be permanently modified or altered from construction of the pipelines. Pipelines could be uncovered during a significant flood event due to scouring, and it is recommended that the pipeline be buried below the existing depth of channel scour and degradation in accordance with the

Hydraulic Considerations for Pipeline Stream Crossings (BLM 2003b). This would apply to perennial streams, and Texas, Missouri and Evacuation Creeks.

Environmental Consequences of the Alternative Action

Construction of the gas plant would affect the Piceance Creek 100-year floodplain for the life of the project. Placing fill in the floodplain would reduce the available storage capacity of the floodplain, which could result in downstream floods of greater magnitude and could cause the next flood of equal intensity to crest at higher levels. Environmental consequences from construction of the pipelines would be the same as discussed for the Proposed Action.

Environmental Consequences of the No Action Alternative

None.

Mitigation

Impacts to floodplains would be mitigated by implementing measures proposed in EnCana's Waterbody Crossing and Wetland Protection Plan (EnCana 2005q), included in the Plan of Development (EnCana 2005a). EnCana would:

- Cross drainages perpendicular to the stream channel, where topographic conditions allowed.
- Bury pipelines at least 5 feet deep in areas within the 100-year floodplain and/or use acceptable engineering practices to ensure negative buoyancy during flood events.

EnCana would also implement the following BLM mitigation measure, which would be incorporated into the Plan of Development:

- Assess the pipeline route along perennial streams, and Texas, Missouri and Evacuation Creeks in accordance with Hydraulic Considerations for Pipeline Stream Crossings (BLM 2003b) to determine if additional mitigation measures are necessary. If necessary, a combination of the following measures would be implemented to protect against scour and bank erosion:
    - bury pipelines below scour depth;
    - use concrete-coated pipe or set-on weights; and/or
    - implement other acceptable engineering practices.

INVASIVE, NON-NATIVE SPECIES

Affected Environment

Noxious weeds and other invasive plants are considered non-native, undesirable native, or introduced species that are able to exclude and out-compete desired native species, thereby decreasing overall species diversity. A noxious weed is commonly defined as a plant that grows out of place and is competitive, persistent, and pernicious (James et al. 1991). Invasive plants include noxious weeds and other plants not native to the United States, and may include plants introduced into an environment where it did not evolve. Invasive plants and noxious weeds often

invade and persist in areas where native vegetation has been disturbed. An infestation of noxious weeds can reduce agricultural productivity or wildlife habitat, poison wildlife or livestock, decrease biodiversity, diminish aesthetics, impair wetland ability, and cause many other detrimental effects. Once established, noxious weeds can be very difficult to eradicate. Noxious weeds and their continued encroachment on both public and private lands represent a serious threat to the BLM objective to maintain healthy and diverse ecosystems and rangelands on BLM-administered lands.

Noxious weed lists were compiled based on consultations with the BLM GJFO, WRFO, and VFO and published Rio Blanco County (RBC), Garfield County (GC), and Uintah County weed lists. Table 4-9 identifies noxious weeds that may be present in the project area.

Table 4-9 Noxious Weed Species that May be Present in the Project Area

Common Name	Scientific Name	BLM GJFO	BLM WRFO	BLM VFO	Garfield County	Rio Blanco County	Uintah County
Bermuda grass	*Cynodon dactylon*			X			X
Black henbane	*Hyoscyamus niger*		X			X	
Black knapweed	*Centaurea nigra*					X	
Bluebur stickseed	*Lappula redowski*		X				
Bull thistle	*Cirsium bulgare*	X	X				
Canada thistle	*Cirsium arvense*	X	X	X	X	X	X
Chicory	*Cichorium intybus*				X		
Common burdock	*Arctium minus*		X		X	X	
Common mullein	*Verbascum thapsus*		X			X	
Dalmatian toadflax	*Linaria dalmatica*	X			X	X	
Diffuse knapweed	*Centaurea diffusa*	X	X	X	X	X	X
Dyers woad	*Isatis tinctoria*	X		X			X
Field bindweed	*Convolvulus arvensis*		X	X		X	X
Halogeton	*Halogeton glomeratus*		X			X	
Hoary cress	*Cardia draba*	X	X	X	X	X	X
Houndstongue	*Cynoglossum officinale*	X	X		X	X	
Jointed goatgrass	*Aegilops cylindrical*				X		
Leafy spurge	*Euphorbia esula*	X	X	X	X	X	X
Medusahead	*Taeniatherum caput-medusae*			X			X
Musk thistle	*Carduus nutans*	X	X	X	X	X	X
Oxeye daisy	*Chyrsanthemum leucantheum*	X			X		
Perennial pepperweed	*Lepidium latifolium*		X	X		X	X

Table 4-9 Noxious Weed Species that May be Present in the Project Area

Common Name	Scientific Name	BLM GJFO	BLM WRFO	BLM VFO	Garfield County	Rio Blanco County	Uintah County
Plumeless thistle	*Carduus acanthoides*	X			X	X	
Puncturevine	*Tribulus terrestris*	X					
Purple loosestrife	*Lythrm salicaria*	X		X	X		X
Quackgrass	*Agropyron repens*			X			X
Russian knapweed	*Acroptilion repens*	X	X	X	X	X	X
Russian olive	*Eleagnus angustifolia*		X	X	X	X	X
Scotch thistle	*Onopordum acanthium and O. tauricum*	X		X	X	X	X
Spotted knapweed	*Centaurea maculosa*	X	X	X	X	X	X
Squarrose knapweed	*Centaurea virgata*			X			X
Sulfur cinquefoil	*Potentilla recta*					X	
Tamarisk/ Salt cedar	*Tamarix parviflora and T. ramosissima*	X	X	X	X	X	X
Yellow starthistle	*Centaurea solstitalis*	X	X	X	X		X
Yellow toadflax	*Linaria vulgaris*	X	X		X	X	

Environmental Consequences of the Proposed Action

The removal of vegetation and the disturbance of soils during construction would create optimal conditions for the invasion and establishment of invasive, non-native species that may continue for many years after the initial disturbance. Construction equipment traveling from weed-infested areas to weed-free areas could also facilitate the dispersal of invasive, non-native seeds and propagules and could result in the establishment of invasive, non-native plants in previously weed-free areas. The establishment of invasive, non-native plants could result in the reduction in the overall visual character of the area; competition with, or elimination of native plants; reduction or fragmentation of wildlife habitats; increased soil erosion; and loss of forage for livestock and wildlife. Impacts would be minimized by implementing preventative and remedial noxious weed management and revegetation measures.

Environmental Consequences of the Alternative Action

Environmental consequences would be the same as discussed for the Proposed Action.

Environmental Consequences of the No Action Alternative

None.

Mitigation

Impacts to invasive, non-native species would be mitigated by implementing measures to treat existing infestations, prevent introduction/expansion of infestations during construction, and monitor and treat infestations after construction is complete as proposed in EnCana's Noxious Weed Management Plan (EnCana 2005h), included in the Plan of Development (EnCana 2005a). EnCana would:

- Conduct pre-construction field surveys, each spring prior to construction, to identify existing noxious weed infestations within the project area.
- Consult with BLM and local weed agencies to determine pre-treatment for noxious weed infestations identified during spring surveys.
- Require vehicles and equipment to arrive at the work site clean, power-washed, and free of soil and vegetative debris capable of transporting weed seeds or other propagules.
- Install wash stations at designated infestation areas. Equipment would be power-washed to remove soil and propagules prior to leaving the infested areas. Wash station locations would be determined in conjunction with the BLM and local weed agencies after spring surveys have been completed.
- Seed disturbed areas as discussed in the Vegetation section.
- Use certified weed-free erosion control and reclamation materials (i.e., straw bales and seed mixes).
- Monitor the distribution and density of noxious weeds on the right-of-way, and control and/or eradicate any new or expanded population for the life of the pipelines and gas plant.

MIGRATORY BIRDS

Affected Environment

The Migratory Bird Treaty Act (MBTA), established in 1918, makes it unlawful to pursue, hunt, kill, capture, possess, sell, purchase, or barter any migratory bird, including the feathers or other parts, nests, eggs or migratory bird products. In addition to the MBTA, Executive Order 13186 sets forth the responsibilities of federal agencies to implement further the provisions of the MBTA by integrating bird conservation principles and practices into agency activities and by ensuring that federal actions evaluate the effects of actions and agency plans on migratory birds. A variety of migratory birds may nest during the months of May, June, and July within the vegetative communities that are found in the project area. Species listed on the US Fish and Wildlife Service (FWS) Birds of Conservation Concern list (FWS 2002) and in the Partners in Flight North American Landbird Conservation Plan (Rich et al. 2004) that may be present within the project area are listed in Table 4-10.

Table 4-10 Migratory Bird Species that May be Present in the Project Area

Common Name	Pinyon-Juniper	Mountain Shrub	Sagebrush Steppe	Douglas Fir	Aspen
Bewick's wren	X				
Black-throated gray warbler	X				
Brewer's sparrow		X	X		
Broad-tailed hummingbird				X	X
Golden eagle	X				
Gray vireo	X				
Loggerhead shrike	X				
Mountain bluebird	X				X
Northern harrier		X	X		
Pinyon jay	X				
Prairie falcon	X				
Red-naped sapsucker					X
Sage sparrow		X	X		
Swainson's hawk		X	X		
Virginia's warbler		X	X		
Williamson's sapsucker					X

The Proposed Action gas plant site is comprised of 50 acres of pinyon-juniper woodland. The Proposed Action pipeline corridor crosses 34.1 miles of pinyon-juniper woodland community (515 acres) (including 20.5 miles (301 acres) of mature pinyon-juniper), 12.5 miles (208 acres) of mountain shrub community, 35.6 miles (511 acres) of sagebrush steppe community, 0.2 miles (3 acres) of mature Douglas fir community, 5.4 miles (95 acres) of mature aspen woodland community, 3.6 miles (59 acres) of grass and forb community, 0.4 miles (7 acres) of riparian and wetland community, and 1.1 miles (13 acres) of disturbed soil. The Douglas fir and aspen woodlands are located adjacent to the existing corridor, 16.7 miles (245 acres) of mature pinyon-juniper are located adjacent to the existing corridor, and the remaining 3.8 miles (56 acres) of mature pinyon-juniper are bisected by the pipeline where the pipeline corridor deviates from the existing corridor. Douglas fir and aspen woodlands are located on fee-lands and pinyon-juniper woodlands are located on BLM and fee-lands.

The Alternative Action gas plant site is comprised of 50 acres of grass and forb vegetation community. The Alternative Action pipeline corridor crosses 35.6 miles (536 acres) of pinyon-juniper woodland community (including 22.4 miles (336 acres) of mature pinyon-juniper), 12.5 miles (208 acres) of mountain shrub community, 31.4 miles (444 acres) of sagebrush steppe community, 0.2 miles (3 acres) of mature Douglas fir community, 5.4 miles (95 acres) of mature aspen woodland community, 2.6 miles (42 acres) of grass and forb community, 0.2 miles (3 acres) of riparian and wetland community, and 1.0 miles (12 acres) of disturbed soil. The Douglas fir and aspen woodlands are located adjacent to the existing corridor, 17.4 miles (264 acres) of mature pinyon-juniper are located adjacent to the existing corridor, and the remaining 5.0 miles (72 acres) of mature pinyon-juniper woodlands are bisected by the pipeline where the pipeline corridor deviates from the existing corridor. Douglas fir and aspen woodlands are located on fee-lands and pinyon-juniper woodlands are located on BLM and fee-lands.

Environmental Consequences of the Proposed Action

Construction would result in habitat loss and displacement of migratory birds from areas on or adjacent to the project route. Construction could also disrupt the courting or nesting of birds on or adjacent to the route. Given that abundant habitat exists outside of the right-of-way, birds displaced by construction would relocate to adjacent suitable habitat; therefore, no long-term impacts would occur. Construction and operation of the gas plant would remove potential habitat for the life of the project, but would have no measurable influence on the abundance or distribution of migratory birds at the scale proposed. Impacts associated with construction of the pipelines would be limited to the construction and reclamation phase of the pipeline project, and would have no measurable influence on the abundance or distribution of migratory birds at the scale proposed. Impacts would be temporary to long-term until successful revegetation occurs.

Environmental Consequences of the Alternative Action

Environmental consequences would be the same as discussed for the Proposed Action.

Environmental Consequences of the No Action Alternative

None.

Mitigation

Impacts to migratory birds would be minimized by implementing the following BLM mitigation measures. Measures would be incorporated into EnCana's Biological Resources Protection Plan (EnCana 2005b), included in the Plan of Development (EnCana 2005a). EnCana would:

- Conduct pre-construction migratory bird surveys each spring prior to construction to identify active nests within the project area. BLM-approved biologists would be required to meet with BLM biologists prior to initiating surveys, and would conduct the surveys using BLM survey protocols.

- Develop nest avoidance, timing restrictions, and/or additional mitigation measures for nests located on or adjacent to the right-of-way. The FWS would be consulted with if any special status species nests were discovered on or adjacent to the right-of-way.

NATIVE AMERICAN RELIGIOUS CONCERNS

Affected Environment

The American Indian Religious Freedom Act, established in 1978, and the Native American Graves Protection and Repatriation Act, established in 1990, protect and allow access by Native Americans to sites that Native Americans deem as sacred or of traditional cultural use and require consultation with Native American groups concerning activities that may affect archaeological resources of importance to the Native American groups. Since many of these sites are subject to desecration by vandalism and other actions, Native American groups commonly do not wish to disclose the locations of traditional use areas and sacred sites. No traditional cultural properties, sacred sites, or traditional use areas are known in the project area. Letters informing Native American groups of the project and requesting comments will be sent to representative Native American groups by the BLM WRFO.

Environmental Consequences of the Proposed Action

If traditional cultural properties, sacred sites, or traditional use areas are identified, construction of the gas plant and pipelines could reduce the value of Native American sites that may be present within or adjacent to the gas plant site and/or pipeline corridor.

Environmental Consequences of the Alternative Action

Environmental consequences would be the same as discussed for the Proposed Action.

Environmental Consequences of the No Action Alternative

None.

Mitigation

If traditional use areas or sacred sites are identified, mitigation measures would be determined in consultation with the appropriate tribe/tribes to ensure protection of any sacred sites.

THREATENED, ENDANGERED, AND SENSITIVE ANIMAL SPECIES

Affected Environment

Special status species are those 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 Endangered Species Act (ESA), species that are considered candidates by the FWS, and BLM sensitive species. Nineteen special status species (5 federally listed endangered, 3 federally listed threatened, 3 federally listed candidate, and 8 BLM sensitive species) were identified by the FWS and the BLM as potentially occurring in the project area. Species that may be present in the project area were identified from the FWS Region 6 website, informal consultations with the FWS in Salt Lake City, Utah and Grand Junction, Colorado, and consultations with the BLM, GJFO, WRFO, and VFO (FWS 2004a, 2004b and 2004c; Lambeth 2004; Klingler 2004; and Sadlier 2004a). These species, their associated habitats, and protection status are summarized in Table 4-11.

Table 4-11 Special Status Wildlife Species that May be Present in the Project Area

Common Name	Scientific Name	Protection Status1	May be Affected by Project	Habitat Preference
Bald eagle	*Haliaeetus leucocephalus*	FT	Yes	nest sites typically occur in proximity to open water and are typically found in mature heterogeneous stands of multi-storied trees; winter habitat includes areas of open water, adequate food sources, and sufficient diurnal perches and night roosts
Black-footed ferret	*Mustela nigripes*	FE	No	semi-arid grasslands and mountain basins; primarily in associations with active prairie dog colonies that contain suitable burrow densities and colonies of sufficient size

Table 4-11 Special Status Wildlife Species that May be Present in the Project Area				
Common Name	**Scientific Name**	**Protection Status1**	**May be Affected by Project**	**Habitat Preference**
Bonytail	*Gila elegans*	FE	Yes	endemic to Colorado River system; main channels of large rivers with swift currents
Boreal toad	*Bufo boreas boreas*	FC	No	marshes, wet meadows, streams, and lakes interspersed in subalpine forest
Canada lynx	*Lynx canadensis*	FT	No	Douglas fir, spruce fir, and subalpine forests above 7,800 feet elevation
Colorado pikeminnow	*Ptychocheilus lucius*	FE	Yes	known from the Colorado River system within large, swift rivers
Fringed myotis	*Myotis thysanodes*	BS	Yes	roosts in rock crevices and cliff walls; forages in coniferous forests and shrublands occurring near open water
Greater sage grouse	*Centrocercus urophasianus*	BS	Yes	sagebrush obligate species; inhabits upland sagebrush habitat in rolling hills and benches; nesting and brooding occur in meadows in proximity to water; winter habitat is sagebrush at submontane elevations
Gunnison sage grouse	*Centrocercus minimus*	FC	No	sagebrush obligate; requires a variety of habitats including large expanses of sage with a diversity of grasses and forbs and healthy riparian ecosystems
Humpback chub	*Gila cypha*	FE	Yes	endemic to Colorado River system; deep, swift running rivers with canyon shaded environment
Mexican spotted owl	*Strix occidentalis lucida*	FT	No	nests on platforms and large cavities in trees, on ledges, and in caves; found primarily in canyons with mixed-conifer forests, pine-oak woodlands, and riparian areas
Midget-faded rattlesnake	*Crotalus oreganus concolor*	BS	Yes	rock outcrops, talus slopes, and rocky streambeds, may occur in desert shrub, mountain shrub, and coniferous habitats
Northern goshawk	*Accipiter gentilis*	BS	Yes	typically nests in mature, old-growth aspen, conifer, and aspen/conifer mixes; foraging habitats include mountain shrub and open habitats
Northern leopard frog	*Rana pipiens*	BS	Yes	permanent water and associated moist upland vegetation
Razorback sucker	*Xyrauchen texanus*	FE	Yes	endemic to large rivers of the Colorado River system
Spotted bat	*Euderma maculatum*	BS	Yes	roosts in natural caves and cliffs near water; forages in grasslands, shrublands, conifers, and aspens
Townsend's big-eared bat	*Plecotus townsendsii*	BS	Yes	occupies semidesert shrublands, pinyon-juniper woodlands, and open montane forests

Table 4-11 Special Status Wildlife Species that May be Present in the Project Area				
Common Name	**Scientific Name**	**Protection Status1**	**May be Affected by Project**	**Habitat Preference**
Yellow-billed cuckoo	*Coccyzus americanus*	FC	No	riparian obligate; occurs in large tracts of cottonwood/willow habitat
Yuma myotis	*Myotis yumanensis*	BS	Yes	roosts in rock crevices, buildings, caves, mines, and in swallows' nests; forages in riparian areas; associated with semi-arid canyonlands and mesas at lower elevations

[1] FE=Federal Endangered, FT=Federal Threatened, FC=Federal Candidate, BS=BLM sensitive

In August, September, and December 2004, field surveys were conducted to evaluate and map vegetation communities associated with the proposed and alternative plants sites and proposed and alternative pipeline corridors. Vegetation community characterizations were used to identify habitats that could require clearance surveys for special status species (Greystone 2004 and 2005). The only federally listed or federal candidate species known to occur in the project area are bald eagles. Based on the absence of suitable habitat, no other federally listed or federal candidate wildlife species are expected to occur in the project area (Greystone 2005). All eight of the BLM listed species are known to occur or have suitable habitat present in the project area.

Bald eagles occur in the Piceance Basin and Evacuation Creek watershed from March to October as winter residents and migrants (BLM 1999 and Sadlier 2004b). Foraging eagles are regularly encountered during the winter months, but foraging activities appear to be widely dispersed and wholly opportunistic. Areas of concentrated use are closely associated with larger creeks. Bald eagles tend to use traditional communal roosts located in mature trees, but no winter roost sites are known in the project area.

Colorado River endangered fish (Colorado pikeminnow, humpback chub, razorback sucker, and bonytail chub) occur downstream of the project area, but the project area does not contain any potential habitat. Designated critical habitat for the Colorado squawfish and razorback sucker occurs in the Colorado River from Rifle downstream, including the confluence with Roan Creek. Designated critical habitat for the humpback chub and bonytail chub occurs further downstream in the Black Rocks area near the Colorado-Utah border (BLM 2004e). Colorado pikeminnow occur in the White River. The White River downstream from Rio Blanco Lake, including the confluence with Piceance Creek and Douglas Creek, is designated critical habitat for all Colorado River endangered fish species (BLM 1999).

Northern goshawks generally occur in mature or old growth aspen, conifer, or mixed aspen/conifer forests. Preferred nesting habitat for the goshawk in the project area consists of mature pinyon-juniper woodlands at elevations of 6,700 feet and higher, and mature, healthy, aspen woodlands. Goshawks are considered a rare to uncommon year-round resident of coniferous forests and suitable aspen stands. This species has been documented nesting in suitable habitats in Garfield and Rio Blanco Counties, Colorado and Uinta County, Utah (NDIS 2004a and UNRD 2004).

Spotted bats occur in a variety of habitats ranging from xeric-shrub grasslands to montane forests. Typical occurrence of this species is associated with the presence of natural caves and cliffs near water. Associated vegetation community types include xeric-shrub grassland including big sagebrush, greasewood, juniper, various deciduous trees associated with riparian areas, and conifers and aspen at higher elevations. Cave and cliff habitats are nearly exclusively used for roosting, while foraging is typically associated with the described vegetation communities (Schmidt 2003). This species is known to occur in several western Colorado counties including Garfield and Rio Blanco Counties, as well as much of Utah, including Uintah County (NDIS 2004b and Oliver 2000).

Fringed myotis occupy a variety of habitats including mid-elevation desert, grass and woodland habitats, and are found at higher elevations in spruce-fir habitat and in mixed timber of ponderosa pine, white spruce, and aspen. While this species most often roosts in rock crevices, caves, and cliff walls, the only studies of maternal roost sites have been associated with buildings. Although studies are limited, foraging habitats seemed to be associated with open water, including ponds, creeks, and streams (Schmidt 2003). This species is known to occur in coniferous woodlands and shrublands below 7,500 feet (Fitzgerald et al. 1994). This species is known to occur in Garfield and Rio Blanco counties, but its status is listed as rare in these counties (NDIS 2004c). This species may occur in suitable habitats in Uintah County, Utah (Oliver 2000).

Townsend's big-eared bats occur in many types of habitat, but are often found near forested areas including semidesert shrublands, pinyon-juniper woodlands, and open montane forests. Caves, mines, and buildings are used for roosting (NDIS 2005a). This species is known to occur in Garfield and Rio Blanco Counties, Colorado and Uintah County, Utah (NDIS 2005a and UNRD 2005a).

Yuma myotis are associated with semi-arid canyonlands and mesas at lower elevations and occupy pinyon-juniper woodland and riparian woodland in semi-desert valleys. This species roosts in caves, crevices or abandoned buildings and other structures, and forages over water, along streams, over springs, among riparian or shoreline vegetation. This is a species of dry shrubby country, but it appears to be tied closely to water (NDIS 2005b). This species is known to occur in several western Colorado counties, including Garfield and Rio Blanco Counties, as well as in Uintah County, Utah. (NDIS 2005b and UNDR 2005b).

Midget faded rattlesnakes occur in a variety of habitats, from desert scrub to coniferous forests, often associated with rock outcrops, talus slopes, and rocky streambeds. Suitable prey includes small mammals, birds, reptiles, and amphibians (Hammerson 1999 and Stebbins 1985). No specific information exists on the presence or absence of this species within the project area.

Northern leopard frogs occur in areas of permanent water and aquatic vegetation in streams, wetlands, ponds, and along canals, from sea level to over 11,000 feet. They may also forage in wet meadows away from water (Hammerson 1999 and Stebbins 1985). No specific information exists on the presence or absence of this species within the project area, although it may occur in suitable wetland and riparian habitats available throughout the project area.

Greater sage grouse are closely allied with the large, woody sagebrushes and depend on these for food and cover during all periods of the year. Large, woody species of sagebrush including basin big sagebrush, Wyoming big sagebrush, and mountain big sagebrush are used by sage grouse throughout the year in all seasonal habitats. Sage grouse are polygamous and exhibit consistent breeding behavior each year on ancestral strutting grounds, referred to as leks. Leks are situated in relatively open areas with less herbaceous and shrub cover than the surrounding areas. Leks are typically surrounded by potential nesting habitat, and are adjacent to relatively dense sagebrush stands. Leks may be natural openings within sagebrush communities or openings created by human disturbances, including dry stream channels, edges of stock ponds, ridges, grassy meadows, burned areas, gravel pits, sheep bedding grounds, plowed fields, and roads. Nesting habitats are characterized by sagebrush communities with well-developed horizontal and vertical diversity. Active nesting sites tend to occur in higher sagebrush density, taller live and residual grasses, more live and residual grass cover, and less bare ground (Connelly et al. 2004).

Grouse are susceptible to sagebrush community disturbance and destruction, as well as construction of fences, aboveground powerlines, and other aboveground structures. Grouse avoid areas that may provide perching or roosting opportunities for raptors, such as fenceposts and aboveground powerlines. Human activities occurring during breeding season may disrupt normal use of leks and subsequently affect local breeding success.

Grouse habitats known within the project area include production areas, winter range, and brood areas. Production areas are defined as lek sites and associated suitable nesting habitats that occur within a 2-mile buffer zone around known leks. Winter range is simply defined as suitable habitats that have been observed by field biologists to support grouse during the winter months. Brood areas are defined as wet meadows, springs, ponds, and streams that all function as important brood rearing sites. Mapped brood areas include these habitats plus a 200-meter buffer zone around the edges of these wet sites.

The Proposed Action gas plant site does not have suitable nesting habitat for bald eagle or northern goshawk, and does not have suitable roosting habitat for spotted bat, fringed myotis, Yuma myotis, or Townsend's big-eared bat. Suitable foraging habitat may occur for the bald eagle, northern goshawk, spotted bat, fringed myotis, Yuma myotis, and Townsend's big-eared bat. Suitable habitat may occur for the midget-faded rattlesnake near the proposed gas plant site. No suitable habitat occurs for Greater sage grouse or for northern leopard frog.

The Proposed Action pipeline corridor does not have suitable nesting habitat for bald eagles. Suitable roosting habitat for spotted bat, fringed myotis, Yuma myotis, and Townsend's big-eared bat may occur and suitable nesting habitat for northern goshawk does occur. Suitable foraging habitat may occur for the bald eagle, northern goshawk, spotted bat, fringed myotis, Yuma myotis, and Townsend's big-eared bat. Suitable habitat for the midget-faded rattlesnake and northern leopard frog may occur along the pipeline corridor.

Greater sage grouse habitat (489 acres) occurs in several locations along the Proposed Action pipeline corridor. Of the 489 acres of potential sage grouse habitat, 10 acres are suitable habitat, 45 acres are production areas and 67 acres are winter range. Habitat is present between Meeker-

South mileposts 6.9 and 27.3 and Meeker-West mileposts 8.3 and 18.1. Along the Meeker-South pipeline corridor, a production area is present between mileposts 6.9 and 9.4 and winter range is present between mileposts 19.4 and 23.0. Along the Meeker-West pipeline corridor, winter range is present between mileposts 17.4 and 17.9.

Potential preferred northern goshawk nesting habitat (399 acres) is located throughout the project route. The Proposed Action pipeline corridor crosses 20.5 miles (301 acres) of mature pinyon-juniper), 0.2 miles (3 acres) of mature Douglas fir community, and 5.4 miles (95 acres) of mature aspen woodland community. The Douglas fir and aspen woodlands are located adjacent to the existing corridor, 16.7 miles (245 acres) of mature pinyon-juniper are located adjacent to the existing corridor, and the remaining 3.8 miles (56 acres) of mature pinyon-juniper are bisected by the pipeline where the pipeline corridor deviates from the existing corridor. Douglas fir and aspen woodlands are located on fee-lands and pinyon-juniper woodlands are located on BLM and fee-lands.

The Alternative Action gas plant site may have suitable habitat for northern leopard frog and suitable foraging habitat for bald eagle. No suitable nesting habitat occurs for northern goshawk, no suitable roosting habitat occurs for spotted bat, fringed myotis, Townsend's big-eared bat, or Yuma myotis, and no suitable habitat occurs for midget-faded rattlesnake or Greater sage grouse.

The Alternative Action pipeline corridor does not have suitable nesting habitat for bald eagles. Suitable roosting habitat for spotted bat, fringed myotis, Yuma myotis, and Townsend's big-eared bat may occur and suitable nesting habitat for northern goshawk does occur. Suitable foraging habitat may occur for the bald eagle, northern goshawk, spotted bat, fringed myotis, Yuma myotis, and Townsend's big-eared bat. Suitable habitat for the midget-faded rattlesnake and northern leopard frog may occur along the pipeline corridor.

Greater sage grouse habitat (489 acres) occurs in several locations along the pipeline corridor, and is present between Meeker-South mileposts 6.9 and 27.3 and Meeker-West mileposts 8.3 and 18.1. Along the Meeker-South pipeline corridor, a production area is present between mileposts 6.9 and 9.4 and winter range is present between mileposts 19.4 and 23.0. Along the Meeker-West pipeline corridor, winter range is present between mileposts 18.5 and 19.0. Of the 489 acres of potential sage grouse habitat, 10 acres are suitable habitat, 45 acres are production areas, and 67 acres are winter range.

Potential preferred northern goshawk nesting habitat (436 acres) is located throughout the project route. The Alternative Action pipeline corridor crosses 22.4 miles (336 acres) of mature pinyon-juniper woodland, 0.2 miles (3 acres) of mature Douglas fir community, and 5.4 miles (95 acres) of mature aspen woodland community. The Douglas fir and aspen woodlands are located adjacent to the existing corridor, 17.4 miles (264 acres) of mature pinyon-juniper are located adjacent to the existing corridor, and the remaining 5.0 miles (72 acres) of mature pinyon-juniper woodlands are bisected by the pipeline where the pipeline corridor deviates from the existing corridor.

Environmental Consequences of the Proposed Action

Construction and operation of the gas plant would remove potential forage habitat for bald eagle, northern goshawk, spotted bat, fringed myotis, Yuma myotis, and Townsend's big-eared bat for the life of the project, but would have no measurable influence on the abundance or distribution at the scale proposed. Construction of the pipelines could result in the loss of northern leopard frog and midget-faded rattlesnake habitat, and foraging and roosting habitat for spotted bat, fringed myotis, Yuma myotis, and Townsend's big-eared bat. Impacts on these species could include direct mortality due to crushing by construction equipment, reduction of suitable habitat, and temporary disturbance and displacement. Given that suitable habitat exists outside of the right-of-way, individuals displaced by construction could relocate along or near the pipeline corridor in adjacent habitat. Impacts would be temporary to long-term until revegetation efforts were successful and native vegetation was reestablished.

Construction would result in habitat loss and displacement of nesting goshawks from areas on or adjacent to the project route and could result in the loss of two inactive goshawk nests (Hollowed 2005). Given that abundant suitable habitat exists outside of the right-of-way, individuals displaced by construction could relocate to adjacent suitable habitat. Habitat impacts would be long-term until successful aspen and pinyon-juniper woodland regeneration occurs (100 to 300 years).

The project would not affect Greater sage grouse lek sites, but would affect the nesting habitat that occurs on the outer edge of the two-mile buffer zone. Construction impacts on sage grouse would include the loss of habitat, disruption and displacement, and could include possible disruption of breeding activities and direct mortality. Individuals flushed, or otherwise relocated from construction activities may be required to occupy lower quality habitat, or may be more susceptible to predation while in lower quality habitat or during relocation to the habitat. These impacts would not result in high levels of mortality as disturbance and movements would be temporary. Additionally, although the construction of the pipelines would not result in a permanent loss of habitat, the regeneration of sagebrush would take several decades. Given the abundant habitat in the general area adjacent to the construction right-of-way, it is not likely that the long-term loss of habitat along the pipeline rights-of-way would affect sage grouse populations near the project area. Impacts would be long-term until successful sagebrush regeneration occurs (up to 50 years).

Construction of the gas plant would not directly affect Colorado River endangered fish. The Colorado River endangered fishes could be indirectly affected by hydrostatic test water withdrawals from the Upper Colorado River Basin (UCRB) that deplete or degrade the flow of downstream waters into the Colorado River. Approximately 7 million gallons of water (21.8-acre feet) over the life of the project would be used to test the integrity of the pipelines. EnCana would use approximately 1.8 million gallons (5.6 acre-feet) in 2005, 3.7 million gallons (11.5 acre-feet) in 2006, and 1.5 million gallons (4.7 acre-feet) between 2007 and 2010. Since no habitat occurs in the project area, direct water quality impacts (i.e., erosion, sediment yield, and potential spills as discussed in the Water Quality, Surface and Ground section) are not likely to occur.

Construction of the pipelines would not involve any direct modifications to habitat, but would have indirect impacts through depletion activities. Water depletion impacts resulting from the withdrawal of hydrostatic test water could include a slight temporary reduction of potential spawning and rearing habitat in the UCRB due to a minimal reduction in downstream water flow. Changes in water temperature or dissolved oxygen would not be anticipated due to the small volume of water involved. Impacts would be temporary (several days) until hydrostatic test water appropriation is complete. Consultation with the FWS would be completed prior to any hydrostatic test water appropriation from the UCRB.

Environmental Consequences of the Alternative Action

Construction of the gas plant could result in the removal of northern leopard frog habitat and bald eagle forage habitat. Approximately 5.9 million gallons of water (18.4-acre feet) over the life of the project would be used to test the integrity of the pipelines. Construction of the pipelines would have the same environmental consequences as discussed for the Proposed Action.

Environmental Consequences of the No Action Alternative

None.

Mitigation

Impacts to special status species would be minimized by implementing the following BLM mitigation measures. Measures would be incorporated into EnCana's Biological Resources Protection Plan (EnCana 2005b), included in the Plan of Development (EnCana 2005a). EnCana would:

- Avoid construction activities in Utah between November 1st and March 31st to protect wintering bald eagles.

- Conduct pre-construction surveys, each spring prior to construction, to identify active goshawk nests present near or adjacent to the construction right-of-way. BLM-approved biologists would be required to meet with BLM biologists prior to initiating surveys, and would conduct the surveys using BLM survey protocols. Construction activities would not occur within 0.5-miles of active goshawk nests between February 1st and August 15th in Colorado or between April 15th and August 15th in Utah, or until fledgling and dispersal of the young.

- Implement the following measures to mitigate potential impacts on Greater sage grouse:

  - Complete sage grouse presence surveys, habitat assessment, and review of historical lek sites each spring prior to construction. BLM-approved biologists would be required to meet with BLM biologists prior to initiating surveys, and would conduct the surveys using BLM survey protocols.

  - Impose timing restrictions (seasonal and daily) in areas of known sage grouse activity or suitable habitat. Surface disturbing activities would not be allowed between March 15th

and July 15th in sage grouse production areas, including between Meeker-South mileposts 6.9 and 9.4. Additional timing restrictions could be imposed based on results of pre-construction surveys.

- Restrict broadcast spraying of herbicides for noxious weed control in sage grouse habitat unless approved by the BLM Authorized Officer or field representative. All weed control programs in sage grouse habitat would use integrated weed management techniques to reduce the area of treatment and minimize adverse side effects.

- Seed disturbed areas with a seed mix designed to reestablish sagebrush and forb species. Sagebrush used for reseeding would be collected from local species. Distribution of sagebrush would be dependent upon range site (i.e., *Artemesia tridentata* spp. *vaseyana* and spp. *wyomingensis*). Reclamation on these sites should use seed mixes and seeding methods that include and promote successful establishment of full complement of grasses and favored native forbs. The following forbs would be included in reclamation seed mixes as appropriate throughout sage grouse range on lands administered by the BLM WRFO and it is recommended that these components would be applied to fee-lands under EnCana's control or lease: 1) scarlet globemallow, 2) Utah sweetvetch, 3) arrowleaf balsamroot, 4) Lewis flax, and 5) Rocky Mountain penstemon. See sage grouse seed mixes in the Vegetation section.

- Additional vegetation clearing to enhance sage grouse habitat would be negotiated between the BLM and the CDOW. If habitat along the existing right-of-way and the surrounding area is determined to be unsuitable due to advanced vegetation succession (e.g., pinyon-juniper regeneration, encroaching serviceberry, etc.), expansion of vegetation removal will be applied along the right-of-way to reclaim a larger area of suitable cover for sage grouse. Where possible, the proposed right-of-way would be shifted to maximize clearing of encroaching vegetation. These areas would be identified during pre-construction sage grouse habitat surveys.

- Implement measures determined by the FWS to mitigate proposed depletions and impacts to Colorado River endangered fishes.

Finding on the Public Land Health Standard for Threatened and Endangered Species

The proposed and alternative projects would not jeopardize the viability of any animal population. The projects would have no significant consequence on habitat condition, utility, or function, nor have any discernible effect on species abundance or distribution at any landscape scale. The public land health standard would continue to be met.

THREATENED, ENDANGERED, AND SENSITIVE PLANT SPECIES

Affected Environment

Twenty-five special status species (1 federally listed endangered, 5 federally listed threatened, 5 federally listed candidate, 11 BLM sensitive, and 3 Colorado rare species) were identified by the FWS and the BLM as potentially occurring in the project area. Species that may be present in the

project area were identified from the FWS Region 6 website, informal consultations with the FWS in Salt Lake City, Utah and Grand Junction, Colorado, and consultations with the BLM GJFO, WRFO, and VFO (FWS 2004a, 2004b and 2004c; Meagley 2004; Smith 2004; and Specht 2004). These species, their associated habitats, and protection status are summarized in Table 4-12.

Table 4-12 Special Status Plant Species that May be Present in the Project Area

Common Name	Scientific Name	Protection Status[1]	Habitat Preference
Barneby columbine	*Aquilegia barnebyi*	SR	cliff walls and talus slopes, usually on shale; endemic to the Green River drainage; elevation 4,900 to 8,600 feet
Debeque milkvetch	*Astragalus debequaeus*	BS	varicolored, fine textured, seleniferous, saline soils of the Wasatch formation-Atwell Gulch member; elevation 5,100 to 6,400 feet
Debris milkvetch	*Astragalus detritalis*	BS	pinyon-juniper and mixed desert shrub communities; often rocky soils ranging from sandy clays to sandy loams; alluvial terraces with cobbles; elevation 5,400 to 7,200 feet
Horseshoe milk-vetch	*Astragalus equisolensis*	FC	sagebrush, shadscale, horsebrush, and other mixed desert shrub communities on the Duchesne River formation; elevation 4,800 to 5,200 feet
Dragon milkvetch	*Astragalus lutosus*	SR	restricted to the barren shale knolls and bluffs of the Green River Formation, around the Uinta Basin and the White River of eastern Utah and of western Colorado; known from the Piceance Basin
Naturita milkvetch	*Astragalus naturitensis*	BS	sandstone mesas, ledges, crevices and slopes in pinyon-juniper woodlands; elevation 5,000 to 7,000 feet
Adobe thistle	*Cirsium perplexans*	BS	almost exclusively on barren clay outcrops derived from shales of the Mancos or Wasatch formations
Ephedra buckwheat	*Eriogonum ephedroides*	BS	white shales of the Green River Formation and soils derived from them; sparsely vegetated white shale slopes; elevation 5,600 to 6,030 feet
Sedge fescue	*Festuca dasyclada*	SR	native, alpine, or rangeland, prairie, dry habitats; rocky slopes; endemic to central Utah; grows chiefly in sagebrush, mountain brush and juniper communities; elevation 8,200 to 10,200 feet
Utah genetian	*Gentianella tortuosa*	BS	Green River Formation; barren shale knolls and slopes; elevation 8,500 to 10,800 feet
Narrow-stem gilia	*Gilia stenothyrsa*	BS	silty to gravelly loam soils derived from the Green River or Uinta Formations; grassland, sagebrush, mountain-mahogany, or pinyon-juniper communities; elevation 5,000 to 6,000 feet
Piceance bladderpod	*Lesquerella parviflora*	BS	shale outcrops of the Green River formation; on ledges and slopes of canyons in open areas; elevation 6,200 to 8,600 feet
Dudley bluffs bladderpod	*Lesquerella congesta*	FT	endemic to the Piceance Basin; barren, white shale outcrops of the Green River and Uinta formations; elevation 6,000 to 6,700 feet

Table 4-12 Special Status Plant Species that May be Present in the Project Area

Common Name	Scientific Name	Protection Status[1]	Habitat Preference
Sevier blazing star	*Nuttallia argillosa/ Menzelia argillosa*	BS	steep eroding talus slopes of shale, Green River formation; elevation 5,800 to 9,000 feet
Rollins cryptanth	*Oreocarya rollinsii*	BS	white shale slopes of the Green River Formation; in pinyon-juniper or cold desert shrubland communities; elevation 5,300 to 5,800 feet
Stemless penstemon	*Penstemon acaulis var. yampaensis*	BS	sparse sagebrush habitats; Browns Park and Green River shale formations; alluviums of silt, sand, and gravel; thin veneers of terrace gravel; known only from Moffat County, Colorado
Parachute beardtongue	*Penstemon debilis*	FC	sparsely vegetated, south facing, steep, white shale talus of the Parachute Creek Member of the Green River formation; soils are a mixture of thin shale fragments and clay; rocky clay loam soils of sagebrush hills and flats; elevation 7,000 to 8,500 feet
Graham beardtongue	*Penstemon grahamii*	FC	talus slopes and knolls of Green River formation shales in sparsely vegetated desert shrub and pinyon-juniper communities; elevation 5,800 to 6,000 feet
White River beardtongue	*Penstemon scariousus var. albifluvis*	FC	mixed desert shrub and pinyon-juniper communities, on sparsely vegetated shale slopes of the Green River formation; elevation 5,000 to 7,200 feet
DeBeque phacelia	*Phacelia submutica*	FC	sparsely vegetated, steep slopes; in chocolate-brown or gray clay; on Atwell Gulch and Shire members of the Wasatch Formation; elevation 4,700 to 6,200 feet
Dudley bluffs twinpod	*Physaria obcordata*	FT	Piceance Basin; barren white outcrops and steep slopes exposed by creek downcutting; restricted to the Parachute Creek member of the Green River formation; elevation 5,900 to 7,500 feet
Clay reed mustard	*Schoenocrambe argillacea*	FT	endemic to the Book Cliffs; mixed desert shrub communities of shadscale, Indian ricegrass and pygmy sagebrush on the lower Uinta and Upper Green River shale formations; elevation 4,800 to 5,600 feet
Shrubby reed mustard	*Schoenocrambe suffretescens/ Glaucocarpum suffretescens*	FE	shadscale, pygmy sagebrush, mountain mahogany, juniper, and other mixed desert shrub communities in calcareous shale of the Green River formation; elevation 5,400 to 6,000 feet
Uinta basin hookless cactus	*Sclerocactus glaucus*	FT	rocky hills, mesa slopes, and alluvial benches; in desert shrub communities; elevation 4, 500 to 6,000 feet
Ute ladies'-tresses orchid	*Spiranthes diluvialis*	FT	sub-irrigated alluvial soils along streams, and in open meadows in floodplains; elevation 4,500 to 6,800 feet

[1] FE=Federal Endangered, FT=Federal Threatened, FC=Federal Candidate, BS=BLM sensitive, SR=Colorado Rare

Botanical surveys of the American Soda site and northern portion of the pipeline corridor were conducted in 1998 and 2004 (Young and Young 1998 and WestWater 2004) for federally listed,

federal candidate, and BLM sensitive species. The Proposed Action gas plant and the Meeker-South Proposed Action pipeline corridor between mileposts 42.6 and 44.5 are located on lands inventoried during those surveys. No federally listed or federal candidate species were identified at the proposed gas plant site or along the Meeker-South proposed pipeline corridor between mileposts 42.6 and 44.5, and BLM sensitive species were not identified during those surveys.

Field surveys will be conducted along the pipeline corridor during the appropriate survey windows each spring prior to construction to determine the presence or absence of special status plant species. The FWS has recommended avoidance of all potential habitat for Dudley Bluffs bladderpod, Piceance twinpod, Debeque phalacia, and Debeque milkvetch, and has requested surveys for the presence of plants while they are in bloom during a year when known populations have identifiable blooming plants (FWS 2004b). The WRFO RMP No Surface Occupancy (NSO) NSO-8 stipulates that surface occupancy will not be allowed on known and potential habitat of listed and candidate species unless an exception is granted if inventories and subsequent environmental analysis indicate the nature or conduct of the action, as proposed or conditioned, will not directly or indirectly affect plant populations. WRFO RMP NSO-9 stipulates that surface occupancy will not be allowed within known populations of BLM sensitive plants unless an exception is granted if inventories and subsequent environmental analysis indicate the nature or conduct of the action, as proposed or conditioned, will not directly or indirectly affect plant populations. EnCana will identify areas of potential habitat for listed and candidate species and identify special status populations during spring surveys. If habitat or populations are found, EnCana will consult with the BLM and/or FWS and conduct an appropriate environmental analysis of the impacts.

Environmental Consequences of the Proposed Action

Construction of the gas plant would not affect any special status plant species. If special status plant species are found along the pipeline corridor, construction impacts could include injury to, or destruction of, the plants and/or seed displacement during clearing, trenching, or general vehicle and equipment movement along the right-of-way. Populations located adjacent to the right-of-way could be impacted from erosion, accidental deposition of materials during grading and trenching, off-road vehicle use, and changes in surface runoff patterns. Existing plants could be killed or injured, new plants could be prevented from germinating, and the soil seed bank could be removed. Noxious weed infestations could occur and out-compete native plant populations. Impacts would be long-term and would be minimized by implementing appropriate mitigation measures.

Environmental Consequences of the Alternative Action

Construction of the gas plant would not affect any special status plant species. If special status plant species are found along the pipeline corridor, environmental consequences would be the same as discussed for the Proposed Action.

Environmental Consequences of the No Action Alternative

None.

Mitigation

If threatened, endangered, or sensitive plant species or habitat were identified during spring surveys, impacts to those species would be minimized or avoided. Measures would be species-specific and would apply on a site-by-site basis, depending on the results of field surveys. EnCana would consult the BLM to determine measures for BLM sensitive species and would consult with the FWS to determine measures for federal listed threatened, endangered, or candidate species. Mitigation measures would be incorporated into EnCana's Biological Resources Protection Plan (EnCana 2005b), included in the Plan of Development (EnCana 2005a). EnCana would:

- Install temporary and permanent erosion control measures, as discussed in the Soils section, to control erosion and transport of sediment.
- Control noxious weeds as discussed in the Invasive, Non-Native Species section.
- Seed disturbed areas as discussed in the Vegetation section.

EnCana would also implement the following BLM mitigation measures, which would be incorporated into the Plan of Development:

- Avoid plants that occur along the outside edge of the right-of-way and install exclusion fencing to prevent disturbance from construction activities.
- Conduct source population surveys in areas where plants could not be avoided (i.e., within or across the right-of-way) to determine the magnitude of impact on the entire population.
- Consider the effectiveness of relocating or transplanting individual plants or collecting seed from mature plants to be replanted following construction.
- Evaluate the potential for route realignment in areas where plants occur within or across the right-of-way. The potential for a reroute would depend on constructability and site-specific conditions such as rugged terrain and slope steepness.

Finding on the Public Land Health Standard for Threatened and Endangered Species

The proposed and alternative projects would not jeopardize the viability of any plant population. With the implementation of mitigation measures, the projects would have no significant consequence on habitat condition, utility, or function, nor have any discernible effect on species abundance or distribution at any landscape scale. The public land health standard would continue to be met.

WASTES, SOLID OR HAZARDOUS

Affected Environment

Hazardous materials are defined by the BLM as any substance, pollutant, or contaminant that is listed as hazardous under the Comprehensive Environmental Response, Compensation, and

Liability Act (CERCLA) of 1980, as amended, 42 USC 9601 et seq., and its regulations. The definition of hazardous substances under CERCLA includes any "hazardous waste" as defined in the Resource Conservation and Recovery Act (RCRA) of 1976, as amended 42 USC 9601 et seq., and its regulations. The term does not include petroleum, including crude oil or any fraction thereof that is not otherwise specifically listed or designated as a hazardous substance under CERCLA Section 101(14), 42 USC 9601(14), nor does the term include natural gas.

The affected environment for hazardous materials includes air, water, soil, and biological resources that may potentially be affected by an accidental release of hazardous materials during transportation to and from the project area, storage, and use in construction and operations. Sensitive areas for hazardous materials release includes areas adjacent to waterbodies, above aquifers, and areas where humans or wildlife would be directly impacted.

The project area does not contain any hazardous or solid waste sites and no hazardous substances are known to have been stored or disposed of within the project area.

A variety of materials, including lubricants, treatment chemicals, and paints would be used to construct and operate the Meeker Gas Plant. Potentially harmful substances used in the construction or operation of the proposed gas plant would be kept on site in limited quantities for short periods.

Most waste generated would be exempt from hazardous waste regulations under the exploration and production exemption of the RCRA. Exempt wastes would include those produced through the inlet of the gas plant. Examples of exempt wastes include process water and hydrocarbon impacted soils.

None of the chemicals that would be used meet the criteria for an acutely hazardous material/substance, or meet the quantities criteria per BLM Instruction Memorandum No. 93-344. With the exception of produced hydrocarbons, ethylene glycol (antifreeze), lubricants, and amine compounds, chemicals subject to reporting under Title III of the Superfund Amendments and Reauthorization Act (SARA) in quantities of 10,000 pounds or more would not be used, produced, stored, transported, or disposed of during the construction or operation of the plant. In addition, no extremely hazardous substance, as defined in 40 CFR 355, in amounts above the threshold planning quantities, would be used, produced, stored, transported, or disposed of.

No listed or extremely hazardous wastes, in excess of threshold quantities, would be used or produced by construction or operation of the pipelines. Substances used during construction may include solvents, explosives, gasoline, diesel fuel, lubricating oils, and hydraulic fluid. Explosives may be used for blasting rock on portions of the pipeline corridor. Smaller quantities of other materials such as herbicides, paints, and other chemicals would be used during pipeline operation and maintenance. These materials would be used to control noxious weeds, facilitate revegetation on the right-of-way, and to operate and maintain meter stations during the life of the project.

Solid waste (human waste, garbage, etc.) would be generated during construction activities and during operation of the gas plant.

Environmental Consequences of the Proposed Action

Accidental spills or leaks associated with equipment failures, refueling and maintenance of equipment, and storage of fuel, oil, or other fluids could cause soil, surface water, and/or groundwater contamination during construction and operation of the gas plant and during construction of the pipelines. The project would increase contributions to solid waste landfills. Solid waste construction impacts would be temporary and gas plant operation impacts would occur for the life of the project. The severity of potential impacts from an accidental hazardous material spill would depend upon the chemical released, the quantity released, and the proximity of the release to a waterbody or aquifer.

Environmental Consequences of the Alternative Action

Environmental consequences would be the same as discussed for the Proposed Action.

Environmental Consequences of the No Action Alternative

None.

Mitigation

Solid and hazardous waste impacts would be minimized by implementing measures proposed in EnCana's Plan of Development and Spill Prevention, Containment, and Countermeasure Plan (EnCana 2005m), included in the Plan of Development (EnCana 2005a). EnCana would:

- Maintain the project area in a sanitary condition at all times.
- Provide an adequate number of trash containers on-site.
- Dispose trash and nonflammable wastes at an appropriate waste disposal site.
- Provide portable toilets on-site. Contents would be removed and disposed of in accordance with applicable laws and regulations.
- Use, store, transport, and/or dispose of hazardous materials in accordance with applicable federal and state laws.
- Implement spill prevention measures, inspection and training requirements, and spill response and notification procedures to minimize the potential for accidental spills or leaks.

WATER QUALITY, SURFACE AND GROUND

Affected Environment

Perennial and intermittent drainages along the project route include Conn Creek, Parachute Creek, Roan Creek, Piceance Creek, East and West Douglas Creeks, Texas Creek, and Evacuation Creek. The Proposed Action gas plant site is located within the Yellow Creek watershed and the nearest perennial stream or intermittent drainage is an unnamed tributary to Yellow Creek located 0.3 miles to the west. The Alternative Action gas plant site is located

within the Piceance Creek watershed and the nearest perennial stream is Piceance Creek located 0.1 miles to the west. The Proposed Action pipeline corridor would cross 9 perennial streams and 90 intermittent drainages and the Alternative Action pipeline corridor would cross 9 perennial streams and 95 intermittent drainages.

Peak runoff is a result of spring (April through May) snowmelt and extreme late summer thunderstorms. Tributaries to these drainages are ephemeral and flow only in direct response to snowmelt and intense summer storms (BLM 1994c). Channels are often deeply incised with steep banks that slough and develop new head cuts perpendicular to the main stem. Sediment yield in local streams can be high due to runoff from localized thunderstorms in the summer and fall, which could affect water quality by increasing sediment and salt yields and accelerating erosion (BLM 1994c).

Surface water in the project area is described as mixed bicarbonate in the upper drainages and as sodium bicarbonate in the lower drainages (BLM 2003a). Chemical components found in surface waters are attributed to the weathering of surficial materials in the area. The principal ionic constituents include sodium, calcium, magnesium, bicarbonate, sulfate, chloride, potassium, and fluoride (Tobin 1987). Sodium, bicarbonate, and sulfate levels generally decrease during the spring snowmelt runoff because of the increased amount of water, while chloride and fluoride remain essentially constant. Calcium and magnesium concentrations show small decreases, and potassium increases during the snowmelt. During the irrigation season, sodium becomes concentrated, and calcium and magnesium concentrations increase. In late summer and fall, base flows are primarily a result of ground water discharge. Typically, groundwater contributes 80 percent of base flows to the drainages of Piceance Basin (Tobin 1987).

Piceance Creek, East and West Douglas Creeks, and Evacuation Creek are tributaries of the White River, which ultimately flows into the Colorado River. Roan Creek and Parachute Creek are tributaries to the Colorado River. Water quality standards and guidance for drainages within the Lower Colorado River Basin are included in the CDPHE Water Quality Control Commission (WQCC) Regulation No. 37, which are the Classifications and Numeric Standards for the Lower Colorado River Basin (CDPHE 2004b). Although much of Evacuation Creek is in Colorado, it joins the White River in Utah, where the Utah Water Quality Assessment Report to Congress 2002 (UDEQ 2002a) applies. In addition, the Status of Water Quality in Colorado – 2004 (CDPHE 2004c), Colorado Monitoring and Evaluation List (CDPHE 2004d), Colorado 303(d) List of Impaired Waters (CDPHE 2004e) and Utah 303(d) Lists of Impaired Waters (UDEQ 2004) were reviewed for information related to the project area.

The States of Colorado and Utah have adopted basic standards and antidegradation rules for surface waters. These standards define waterbodies with four different categories of classified uses: aquatic life, water supply, recreation, and agriculture; designate uses for each waterbody; and adopt numeric or narrative water quality standards to protect those classified uses. In Colorado, the classified uses for surface water are Aquatic Life Cold, Class 1 or 2; Aquatic Life Warm, Class 1 or 2; Recreation Class 1 (1a or 1b) or 2; Domestic Water Supply; Agriculture; and Wetland (CDPHE 2004f). In Utah, the classified uses for surface water are Domestic, Class 1 or 1C; Recreation and Aesthetics, Class 2A or 2B; Aquatic Life Use Support, Class 3A, 3B, 3C, 3D, or 3E; Agricultural, Class 4; and Great Salt Lake (UDEQ 2002b).

The project area contains stream or watershed segments with 12 of the classified/protected uses.

Aquatic Life Cold Class 1 waters are capable or could be capable of sustaining a wide variety of cold-water biota. *Aquatic Life Cold Class 2* waters are not capable of sustaining a wide variety of cold-water biota due to physical habitat, water flows, or uncorrectable water quality conditions. *Aquatic Life Warm Class 1* waters are capable or could be capable of sustaining a wide variety of warm water biota. *Aquatic Life Warm Class 2* waters are not capable of sustaining a wide variety of warm water biota due to physical habitat, water flows, or uncorrectable water quality conditions. *Recreation Class 1a* waters are suitable or intended to become suitable for recreational activities in or on the water in which primary contact uses have been documented or are presumed to be present. *Recreation Class 1b* waters are assumed to be suitable or intended to become suitable for recreational activities in or on the water in which no use attainability analysis has been performed. *Recreation Class 2* waters are suitable or intended to become suitable for recreational uses on or about the water, including fishing and other streamside recreation. *Domestic Water Supply* waters are suitable or intended to become suitable water supplies. *Agriculture* waters are suitable or intended to become suitable for irrigation of crops and that are not hazardous as drinking water for livestock. *Recreation and Aesthetics Class 2B* waters are protected for secondary contact such as boating, wading or similar uses. *Aquatic Life Use Support 3B* waters are protected for warm water species of game fish and other warm water aquatic life, including the necessary organisms in their food chain. *Agriculture Class 4* waters are protected for agricultural uses including irrigation of crops and stock watering.

Stream segments and classifications relative to the project area are provided in Table 4-12. Stream segments are identified according to river basin and specific water segments. Segments listed on Table 4-13 are either crossed by the project or the project crosses tributaries to those segments and reflect the first segment downstream of the project (i.e., Parachute Creek consists of segments 11a through 11h, but the first segment downstream of the project is Segment 11a). If a downstream segment directly enters the Colorado or White Rivers, that segment is also included. A complete listing of numeric standards for physical, biological, inorganic and metal parameters for each segment can be found in Classifications and Numeric Standards for Lower Colorado River Basin (CDPHE 2004b) and Standards of Quality for Waters of the State (UDEQ 2002b).

Table 4-13 Stream Classifications and Water Quality Standards

Stream Segment Description	Classification
Lower Colorado River Basin--Colorado	
Segment 14b—Mainstem of Roan Creek, including all tributaries from a point immediately below the confluence with Clear Creek to the confluence with the Colorado River (Segment 2)	Aquatic Life Warm 1 Recreation 1b Water Supply Agriculture
Segment 11a—Mainstem of the West Fork of Parachute Creek, including all tributaries from its source to West Fork Falls.	Aquatic Life Cold 1 Recreation 2 Water Supply Agriculture
Segment 2—Mainstem of Colorado River from a point immediately below the confluence with Parachute Creek to the Gunnison River.	Aquatic Life Warm 1 Recreation 1a

Table 4-13 Stream Classifications and Water Quality Standards

Stream Segment Description	Classification
	Water Supply Agriculture
White River Basin--Colorado	
Segment 2—Piceance Creek, including the mainstems of Black Sulphur Creek and Hunter Creek to the confluence with Piceance Creek.	Cold Aquatic Life 1 Recreation 2 Agriculture
Segment 17—Stewart Gulch from the sources of East, Middle, and West Forks to confluence with Piceance Creek. Mainstem of Willow Creek to the confluence of Piceance Creek and the mainstem of Fawn Creek to the confluence with Piceance Creek.	Cold Aquatic Life 2 Recreation 2 Agriculture
Segment 16—All tributaries to Piceance Creek, except as listed in segments 17 and 20.	Warm Aquatic Life 2 Recreation 2 Agriculture
Segment 15—Mainstem of Piceance Creek from the Emily Oldland diversion dam to the confluence with the White River (Segment 12).	Aquatic Life Warm 2 Recreation 1b Agricultural
Segment 12—Mainstem of White River from a point immediately above the confluence of Piceance Creek to a point immediately above the confluence with Douglas Creek.	Aquatic Life Warm 1 Recreation 1a Water Supply Agricultural
Segment 13b—Mainstem of Yellow Creek, including tributaries from the source to the confluence with the White River (Segment 12).	Aquatic Life Warm 2 Recreation 2 Agriculture
Segment 23—Mainstems of East and West Douglas Creeks from their sources to their confluence.	Aquatic Life Cold 1 Recreation 1a Water Supply Agriculture
Segment 21—Mainstem of the White River from a point immediately above Douglas Creek to the Colorado/Utah border.	Aquatic Life Warm 1 Recreation 1a Water Supply Agriculture
Green River Drainage--Utah	
White River and its tributaries from the Utah/Colorado border to the confluence with the Green River	Recreation and Aesthetics 2B Aquatic Life Use 3B Agriculture 4

White River segments 15 and 17 are designated in the Classifications and Numeric Standards for Colorado River Basin regulations (CDPHE 2004b) as use-protected and are classified as fully supporting of all beneficial use classifications. White River segments 13b, 16, and 17 are designated in the Status of Water Quality in Colorado—2004 report as Colorado integrated reporting (IR) category 1 as fully supporting all designated uses. White River segment 20 is designated as IR category 2 as all assessed uses are fully supporting, but not all uses have been assessed. Lower Colorado River segments 2 and White River segments 12, 21, and 22 are designated as IR category 1/3* as fully supporting all uses but are listed on the Colorado Monitoring and Evaluation List for impairment due to sediment. The White River segment in Utah is classified as fully supporting all beneficial use classifications. No segment is listed as

requiring total daily maximum loads (TMDLs). Lower Colorado River segment 2 and White River segments 12, 21, and 22 are listed on the Colorado Monitoring and Evaluation List as waterbodies where there is reason to suspect water quality problems and are identified for monitoring and evaluation to assess water quality and determine if a need for a TMDL exists. The impairment for these segments is sediment.

The U.S. Geological Survey (USGS) has collected surface water quantity and quality data at nine gaging stations periodically since 1964. The drainage area, average discharge, average annual peak discharge, and period of record for each station are presented in the Table 4-14 (USGS 2005a and 2005b).

Table 4-14 Surface Water Quantity Data

USGS Gaging Station and ID Number	Drainage Area (square miles)	Average Discharge (cfs)	Average Annual Peak Discharge (cfs)	Period of Record
Roan Creek near Debeque, Colorado 09095000	321	45.4	718.5	1975 to 1980
Piceance Creek below Rio Blanco, Colorado 09306007	177	19.8	122	1974 to 1998
Piceance Creek below Ryan Gulch, Colorado 09306200	506	30.8	187	1965 to present
Piceance Creek at White River City, Colorado 09306222	652	38	265	1964 to present
Yellow Creek near Rangely Colorado 09306255	262	3.12	8.93	1974 to 1982 1988 to present
Douglas Creek above Rangely, Colorado 09306380	425	12.4	22.8	1977 to 1978 1995
Evacuation Creek at Missouri Creek near Dragon, Utah 09306410	100	1.4	484.4	1973 to 1983

USGS gaging stations were reviewed for water quality data. Table 4-15 provides a statistical summary of water quality records for streams in the project area from 1999 to 2003 (USGS 2005c). General water quality indicators are provided. Statistical summaries of trace metals and major cations and anions for gaging stations in Table 4-14 are available from any USGS Water Resources Division office. Statistical summaries from 1999 to 2003 for gaging stations 09095000, 09306007, 09306380, and 09306410 are not presented because the period of record ends prior to 1999.

Table 4-15 Summary of USGS General Water Quality Parameters

Parameter	Number of Samples	Range	Mean
Piceance Creek below Ryan Gulch, Colorado, USGS gaging station 09306200			
specific conductance (µS/cm/cm at 25°C)	36	1350 to 2090	1711.1
pH (standard units)	15	8.2 to 8.6	8.4
temperature (°C)	36	0.0 to 26.3	12.0
dissolved oxygen (mg/l)	16	8.3 to 12.1	10.3
total hardness (mg/l as $CaCO_3$)	17	480 to 690	578.2
suspended solids (mg/l)	16	9 to 206	63.6
Piceance Creek at White River, Colorado, USGS gaging station 09306222			
specific conductance (µS/cm/cm at 25°C)	399	516 to 7,240	2,325
pH (standard units)	251	7.4 to 8.9	8.4
temperature (°C)	645	0.01 to 30	10.8
dissolved oxygen (mg/l)	222	3.6 to 16.2	9.6
total hardness (mg/l as $CaCO_3$)	139	160 to 640	492
suspended solids (mg/l)	139	378 to 5,280	1,720
Yellow Creek near Rangely Colorado, USGS gaging station 09306255			
specific conductance (µS/cm at 25°C)	32	1,220 to 3,850	3310.3
pH (standard units)	16	8.4 to 8.8	8.6
temperature (°C)	32	0 to 25	10.9
dissolved oxygen (mg/l)	16	8.4 to 12.9	10.5
total hardness (mg/l as $CaCO_3$)	16	670 to 920	818
suspended solids (mg/l)	16	2 to 2,400	252.3

Table 4-16 presents a summary of sediment yield from streams in the project area (USGS 2005d).

Table 4-16 Sediment Yield Data

USGS Gaging Station and ID Number	Maximum (tons/day)	Minimum (tons/day)	Mean (tons/day)	Period of Record
Roan Creek near Debeque, Colorado 09095000	14,400	0.12	4,358	1980 to 1981
Piceance Creek below Rio Blanco, Colorado 09306007	2,670	0.04	60.2	1974 to 1982
Piceance Creek below Ryan Gulch, Colorado 09306200	2,520	0.18	62.8	1974 to 1982
Piceance Creek at White River City, Colorado 09306222	2,470	0.01	107.4	1972 to 2002
Yellow Creek near Rangely Colorado 09306255	28,600	0	173.5	1974-1995

Table 4-16 Sediment Yield Data

USGS Gaging Station and ID Number	Maximum (tons/day)	Minimum (tons/day)	Mean (tons/day)	Period of Record
Douglas Creek above Rangely, Colorado 09306380	794	9.6	257.4	1994
Evacuation Creek at Missouri Creek near Dragon, Utah 09306410	133	0.01	10.8	1975-1978

Water will be used to verify the integrity of the pipe prior to filling with natural gas or NGL. These tests involve filling the pipeline with water, pressurizing it, and then checking for pressure losses due to leakage. The project would use an estimated 7 million gallons (21.8-acre feet) for the Proposed Action or 5.9 million gallons of water (18.4-acre feet) for the Alternative Action. EnCana presently owns water rights on the Colorado River and Piceance Creek and a nearby spring, and would use water from these sources as a first choice. During low flow periods in Piceance Creek, when water is only available to a senior water right holder, EnCana would likely purchase water from another source in the Piceance Creek drainage with senior water rights. For the Proposed Action, EnCana would use approximately 1.8 million gallons (5.6 acre-feet) in 2005, 3.7 million gallons (11.5 acre-feet) in 2006, and 1.5 million gallons (4.7 acre-feet) between 2007 and 2010. For the Alternative Action, EnCana would use 0.7 million gallons in 2005 and 3.0 million gallons in 2006; 2007 to 2010 volumes would be the same as the Proposed Action. EnCana would be testing only new pipe and would not add any chemicals to the water during hydrostatic testing. Upon completion of each hydrostatic test section, EnCana would either pump the water into the next pipeline segment ready to be tested, discharge the water on land within the construction workspace, or discharge into surface waters. Potential hydrostatic discharge sites have been identified at Logan Wash, Piceance Creek, West Douglas Creek or unnamed tributary to Little Horse Draw, and Evacuation Creek.

Groundwater occurs in both alluvial and bedrock aquifer systems along the project route. Alluvial aquifers are associated with streams, are often good sources of water, are recharged chiefly by streamflow, and often serve to recharge underlying bedrock aquifers (BLM 1985a). The alluvial aquifers range from 0 to 140 feet in depth (BLM 1994c). Depth to groundwater at the Proposed Action plant site is expected to be 350 to 450 feet below ground surface (bgs) (BLM 1999). Depth to groundwater at the Alternative Action plant site is 6.6 feet bgs (Cordilleran 2004a). Groundwater is likely to be present along the pipeline corridor in alluvial sediments along stream bottoms, especially Piceance Creek.

The Uinta-Animas and the Mesaverde aquifers are the principal bedrock aquifers in the project area (Robson and Banta 1995). The Uinta-Animas aquifer is primarily composed of Lower Tertiary rocks and overlies the Mesaverde aquifer, which is comprised of the Upper Cretaceous Mesaverde Group, and some adjacent Tertiary and Upper Cretaceous formations. In the Piceance Basin, the Uinta-Animas aquifer consists of the upper and lower aquifer systems. These consolidated rock aquifers are lower Tertiary Eocene in age, are separated by the Mahogany Zone of the Parachute Creek Member, and overlie the older Cretaceous Mesaverde Group. The

upper aquifer system is about 700 feet thick and consists of several permeable zones in the Uinta Formation and the upper part of the Parachute Creek Member of the Green River Formation. Sub-aquifers of the Uinta Formations are silty sandstone and siltstone, while those of the Parachute Creek Member are fractured dolomite sandstone (EPA 2004). The lower aquifer is about 900 feet thick and consists of a fractured dolomitic marlstone of part of the lower Parachute Creek Member.

In the Uinta Basin, the Uinta-Animas aquifer is present in water yielding beds of the Duchesne River and Uinta Formations, the Renegade Tongue of the Wasatch Formation, and the Douglas Creek Member of the Green River Formation. The thickness of the Uinta-Animas aquifer is as much as 2,000 feet thick in the central part of the Piceance Basin and 500 feet thick along the eastern margin of the Uinta Basin (Robson and Banta 1995).

The Mesaverde aquifer is present in rocks of the Mesaverde Group. The thickness of the Mesaverde aquifer is generally between 2,000 and 4,000 feet, but exceeds 7,000 feet locally in the eastern part of the Piceance Basin and is less than 1,000 feet near the margins of the basins (Robson and Banta 1995).

Groundwater recharge in the Piceance Basin is primarily from snowmelt on high ground, which travels down through the upper aquifer system, the Mahogony Zone, and into the lower aquifer system. The groundwater then moves laterally and/or upward, discharging from both the upper and lower aquifer systems. Where the Parachute Creek Member of the Green River Formation crops out in the Yellow and Piceance Creek watersheds, the groundwater discharges into alluvial aquifers, springs, or streams. In the Parachute and Roan Creek watersheds, the groundwater discharges to springs that discharge hundreds of feet above the streams in the deep canyons (Weeks 1974 and Taylor 1987). Groundwater recharge in the Uinta Basin occurs near the southern margin of the aquifer (Roan Plateau) and discharge occurs near the White and Green Rivers.

The chemical quality of groundwater is dependent on the mineral composition and hydrologic properties of the aquifer. Factors such as surface contact, porosity, and rate of water movement all influence water quality. Some sedimentary rocks contain large amounts of readily soluble minerals, and combined with low permeability, result in higher concentrations of dissolved minerals in groundwater (BLM 2003a). Alluvial aquifers typically contain high sulfate concentrations, the Uinta-Animas aquifer contains high sodium bicarbonate concentrations, and the Mesaverde aquifer contains high chloride concentrations (Taylor 1987).

Dissolved solid concentrations in the Uinta-Animas aquifer in the Piceance Basin range from 500 to more than 1,000 milligrams per liter (mg/l) in the upper part of the aquifer and can exceed 10,000 mg/l in the lower part of the aquifer. Dissolved solids typically range from 500 to 3,000 mg/l in the Uinta Basin. Water quality in the Mesaverde aquifer is extremely variable, and varies from less than 1,000 mg/l at the margins of the basins to more than 10,000 mg/l in the central part of the Piceance Basin to more than 35,000 mg/l in the central part of the Uinta Basin (Robson and Banta 1995).

Environmental Consequences of the Proposed Action

Construction of pipelines could have temporary to short-term impacts on water quality. Clearing and grading of streambanks, in-stream trenching, trench dewatering, and backfilling could affect surface waters through modification of aquatic habitat, increased sedimentation, increased turbidity, decreased dissolved oxygen concentrations, and releases of chemical and nutrient pollutants from sediments. A reduction in streambank integrity could increase streambank erosion and result in redirection of streamflow. Suspended sediment would temporarily increase for the time required to install the pipe in the streambed (typically less than 24 hours). The greatest sediment load would occur immediately downstream of the crossing, and suspended sediment concentration would progressively decrease downstream as the large sediment particles deposit on the channel bed. Impacts on intermittent streams would be limited to temporary alteration of beds and banks and possibly increased sediment load during initial storm events following construction. Pipeline installation at waterbody crossings would not permanently alter stream morphology or hydraulic capacity.

Clearing, grading, trenching, and soil stockpiling activities could temporarily alter overland flow and groundwater recharge patterns. Near-surface soil compaction caused by construction equipment and vehicles could reduce the soil's ability to absorb water and could increase surface runoff and the potential for ponding. The magnitude and duration of potential impacts to surface runoff and groundwater recharge would depend on soil depth, susceptibility of a particular soil type to erosion, vegetative cover, slope aspect and gradient, erosive force of rainfall or surface runoff, and duration and extent of construction activities. Impacts would be greatest immediately following commencement of construction activities and would naturally decrease thereafter due to soil stabilization and revegetation.

Impacts resulting from discharge of hydrostatic test waters on land could include soil erosion and subsequent degradation of water quality, including increased turbidity and sedimentation from hydrostatic test water runoff. If CDPHE and/or UDEQ permits authorize discharges directly into surface waters, high velocity flows could also cause erosion of the streambanks and streambeds, resulting in a temporary increase in sediment load. These impacts would be temporary until discharge activities are completed (up to several days). Impacts on aquatic wildlife are addressed in the Wildlife, Aquatic section.

Construction of the pipeline would cross perennial streams that may contain groundwater in the streambed alluvium. Activities such as trenching and backfilling could cause minor fluctuations in shallow groundwater levels and/or increased turbidity within the aquifer adjacent to the activity. Turbidity would be a temporary impact and would subside after trench and backfilling activities are completed. Dewatering (removal of groundwater) could be required where groundwater accumulates in the pipeline trench. Dewatering would be required to ensure that the pipe is properly fitted and installed into the ditch, minimum cover is provided, and the trench bottom is free of rocks and other debris that could damage the external pipe coating. Impacts from groundwater removal would cease as soon as the pipe segment is lowered into the trench. Improper discharge of groundwater could result in erosion and sedimentation to upland areas or surface waters in the discharge vicinity. Erosion and sedimentation impacts would be temporary, and would be reduced with mitigation.

Accidental spills or leaks associated with equipment failures, refueling, or maintenance of equipment, and storage of fuel, oil, or other fluids during construction and operation of the gas plant pose the greatest risk to surface and groundwater resources. Spills or leaks of hazardous fluids could contaminate groundwater and affect aquifers. The severity of potential impacts would depend upon the chemical released, the quantity released, and the proximity of the release to a waterbody or aquifer. Removal of vegetation and near-surface soil compaction could increase overland flow and alter groundwater recharge patterns for the life of the gas plant.

Environmental Consequences of the Alternative Action

An estimated 138,000 cubic yards of rock fill would be required to construct the gas plant at the alternative site (Cordilleran 2004b). Removal of vegetation and deposition of fill at the alternative gas plant site could permanently alter overland flow and groundwater recharge patterns. Environmental consequences for construction and operation of the gas plant would be the same as for the Proposed Action, with the exception of the likelihood of surface and groundwater contamination from accidental spills or leaks. Surface water and groundwater contamination from accidental spills and leaks would be more likely due to the proximity to surface water and alluvial aquifers.

Environmental Consequences of the No Action Alternative

None.

Mitigation

EnCana would obtain necessary federal and state permits, and would comply with the Corps of Engineers (COE) Nationwide Permit 12 conditions, CDPHE Water Quality Control Division (WQCD) Minimal Industry Discharge Permit conditions, Utah Department of Environmental Quality (UDEQ) Department of Water Quality (DWQ) Construction Dewatering/Hydrostatic Testing Permit conditions. Impacts to water quality would be minimized by implementing measures proposed in EnCana's Waterbody Crossing and Wetland Protection Plan (EnCana 2005q) and Strength Testing Plan (EnCana 2005o), included in the Plan of Development (EnCana 2005a). EnCana would:

- Install temporary equipment bridges across flowing waterbodies.
- Place topsoil and spoil at least 10 feet away from the waters edge.
- Bury the pipeline at least 5 feet below the bottom of each drainage.
- Cross streams during periods of low flow and complete the crossing within 24 hours, as feasible.
- Install erosion and sediment control measures, as discussed in the Soils section, to prevent the flow of spoil into any waterbodies.
- Maintain erosion and sediment control measures until streambanks and adjacent upland areas are stabilized.

- Reestablish pre-construction bed and bank contours, revegetate streambanks, and install erosion control fabric to stabilize the streambanks.

- Direct trench-dewatering discharges onto a well-vegetated, stable surface and utilize a section of geotextile fabric or plywood to prevent scouring during discharge.

- Locate trench-dewatering discharges as far as practicable from waterbodies and wetlands (considering local topography, vegetation, and soils).

- Minimize duration of trench dewatering discharges by scheduling dewatering operations immediately prior to lowering in, tie-ins, or backfilling. Minimize trench disturbance (i.e., additional digging) to the extent practicable until the majority of the water is pumped out.

- Prohibit storage of hazardous materials, chemicals, fuels, lubricating oils, and concrete coating and refueling activities within 200 feet of any waterbody or wetland.

- Minimize erosion from upland areas by restoring and seeding the project area as discussed in the Vegetation and Soils sections.

- Withdraw and discharge hydrostatic test water in accordance with all applicable permits.

- Test water quality during withdrawal and discharge in accordance with permit stipulations and conditions.

- Utilize screens on the intake hoses at surface water sources to prevent the entrapment of fish or other aquatic species and monitor the appropriation rate to ensure that adequate downstream flow is maintained to support aquatic life.

- Install energy-dissipating devices and/or filter bags to prevent scour, erosion, suspension of sediment, and damage to vegetation. Monitor discharge rates to ensure effectiveness of the energy-dissipating device.

Finding on the Public Land Health Standard for Water Quality

Reestablishment of pre-construction contours and vegetation would allow surface waters to infiltrate back into groundwater recharge areas and would not affect the land health status. The surface water quality is within the criteria set by the state, thus meeting the land health standard. With proper waterbody crossing and streambank restoration techniques, sediment and erosion control measures, spill prevention practices, and successful revegetation of disturbed areas, the project would not change the land health status.

WETLANDS AND RIPARIAN ZONES

Affected Environment

Wetlands are areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances, do support, a prevalence of

wetland vegetation typically adapted for life in saturated soil conditions. Wetlands in the project area are typically located along perennial streams on fee-lands. Riparian areas occur as narrow zones between stream and wetland areas and adjacent uplands. Wetlands and riparian areas are a source of substantial biodiversity and serve a variety of functions, including providing wildlife habitat, naturally improving water quality, and flood control. Wetland and riparian areas support higher population densities and greater diversity of species of both plants and animals than any other vegetation community in the project area.

Missouri Creek and Evacuation Creek are in a BLM VFO designated riparian zone. The preponderance of vegetation along these creeks is greasewood and tamarisk, but remnants of riparian vegetation are found along the streambanks of Missouri Creek (BLM 1994b).

No wetlands or riparian areas are located within 2.1 miles of the Proposed Action gas plant site or 0.1 miles of Alternative Action gas plant site. The COE conducted a visit to the alternative gas plant site in August 2004 and determined that no wetlands were present within the site boundaries (COE 2004). The Proposed Action pipeline corridor would cross 0.4 miles (7.0 acres) of wetland and riparian vegetation. Wetland and riparian areas are located along the Meeker-South pipeline corridor at mileposts 3.8, 13.9, 14.8, 31.3, 39.9, 40.5, 41.7 to 41.8, and 42.4 and along the Meeker-West corridor at milepost 24.5, 27.5, 45.6, 47.1, and 47.6. The Alternative Action pipeline corridor would cross 0.2 miles (3 acres) of wetland and riparian vegetation. Wetland and riparian areas are located along the Meeker-South pipeline corridor at mileposts 3.8, 13.9, 14.8, 31.3, and 39.9 and along the Meeker-West corridor at milepost 24.4, 28.3, 46.2, 47.9, and 48.4.

Environmental Consequences of the Proposed Action

Construction of the gas plant would not disturb any wetland or riparian vegetation. Wetlands would not be permanently filled or drained as a result of pipeline construction. Accidental spills or leaks of hazardous fluids and/or petroleum products could contaminate surface waters and degrade water quality. Construction of pipelines would result in short-term alteration of wetland and riparian vegetation, and a loss of high quality wildlife habitat. This effect would be greatest during and immediately after construction, but would be brief because the vegetation would quickly regenerate, with herbaceous vegetation recovering within 1 to 3 years and willows likely recovering within 5 years. Failure to segregate topsoil over the trenchline in wetland and riparian areas could result in the mixing of topsoil with subsoil, which could lower biological recruitment of native vegetation after restoration. Inadvertent compaction and furrowing of soils during construction could result from the temporary stockpiling of soil and the movement of heavy equipment, which could in turn alter the natural hydrologic patterns of the wetland and riparian area, inhibit seed germination, or increase the potential for siltation. Impacts would be temporary to long-term.

Environmental Consequences of the Alternative Action

Environmental consequences would be the same as discussed for the Proposed Action.

Environmental Consequences of the No Action Alternative

None.

Mitigation

Impacts on wetlands and riparian areas would be minimized by obtaining and complying with the COE Nationwide Permit 12 conditions and by implementing measures to lessen the duration of disturbance, reduce the soil disturbance, and enhance restoration as proposed in EnCana's Waterbody Crossing and Wetland Protection Plan (EnCana 2005q), included in the Plan of Development (EnCana 2005a). EnCana would:

- Limit construction equipment working in wetlands to that essential for clearing, trench excavation, pipe fabrication and installation, backfilling, and restoration.
- Cut shrubs flush with the surface of the ground.
- Limit stump removal, grading, topsoil segregation, and excavation to the area immediately over the trenchline to avoid excessive disruption of soils and the native seed and rootstock within the soils.
- Install and maintain sediment barriers, as discussed in the Soils section, to minimize the potential for sediment runoff into surface waters.
- Prohibit storage of hazardous materials, chemicals, fuels, lubricating oils, concrete coating, and refueling activities within 200 feet of any wetland or riparian area.

EnCana would also implement the following BLM mitigation measure, which would be incorporated into the Plan of Development.

- Fence the riparian areas on BLM-administered lands at Meeker-West milepost 24.5 (East Douglas Creek) and Meeker-West milepost 27.2 (West Douglas Creek). Fence will be installed around the incised banks and channel with a sufficient gap to allow passage of wildlife or livestock up or down the channel.

Finding on the Public Land Health Standard for Riparian Systems

The project would have no effect on the land health standard with implementation of mitigation measures and successful revegetation.

WILDERNESS AREAS

The project area is located adjacent to the Oil Springs Mountain Wilderness Study Area WSA). The 18,263-acre Oil Springs Mountain WSA was established to protect spruce-fir and other biologically diverse plant communities. The western portion of the Meeker-West pipeline corridor is 0.02 miles north of the Oil Springs WSA boundary and Rio Blanco County Road 109 serves as a divider between the pipeline corridor and the WSA boundary.

Environmental Consequences of the Proposed Action

None.

Environmental Consequences of the Alternative Action

None.

Environmental Consequences of the No Action Alternative

None.

Mitigation

None.

CRITICAL ELEMENTS NOT AFFECTED OR NOT PRESENT

No Wild and Scenic Rivers exist along the Proposed or Alternative Action routes, and no Environmental Justice concerns are associated with the Proposed or Alternative Actions.

NON-CRITICAL ELEMENTS

The following elements (Soils, Vegetation, Wildlife, Aquatic and Wildlife, Terrestrial) are addressed due to the involvement of Standards for Public Land Health.

SOILS

Affected Environment

Soils in the region are predominantly formed from weathered sandstone, siltstone, and shale on side slopes and ridges. Unconsolidated water-deposited soils are located along valley floors. Lack of moisture, cool nights, and infrequent high temperatures associated with the semi-arid climate of the region have suppressed vegetation growth and slowed the chemical and biological processes needed for good soil development (BLM 1994c). Soils within the region can be high in sodium and susceptible to wind and water erosion. Saline soils accumulate salts at the soil surface, which makes revegetation difficult, especially in non-irrigated lands. Saline soils in the project area are derived mainly from marine shales of the Wasatch Formation and the Mancos shale. The erosion potential of a soil is determined by several characteristics, including soil texture, surface roughness, vegetative cover, slope length, percent slope, management practices, and precipitation. Water erosion occurs primarily on loose, bare soils located on moderate to steep slopes when subjected to storm events. Wind erosion often occurs on dry, fine-textured soil where vegetative cover is sparse and strong winds are prevalent. Soils are considered susceptible to water or wind erosion if rated by the Natural Resource Conservation Service (NRCS) as highly or severely erodible by wind or water (BLM 1994c). Soils on steep slopes are particularly susceptible to accelerated erosion and current erosion rates range from 0.2 to 10 tons per acre per year (BLM 1985a), depending upon soil type, steepness of slope, and vegetative cover. NRCS publications state that slopes of 20 to 35 percent contribute to severe erosion hazard.

The WRFO considers soils fragile if they are highly or severely erodible by wind or water, on slopes steeper than 35 percent, and exhibit one of the following characteristics: (a) a surface texture that is sand, loamy sand, very fine loamy sand, fine sandy loam, silty clay or clay, (b) a depth to bedrock that is less than 20 inches, (c) an erosion condition that is rated poor, or (d) a K

(erosion factor) greater than 0.32. Approximately 830,100 acres of soils administered by the WRFO are considered fragile. Absher loam, Blazon moist-Rentsac complex, Castner channery loam, Glendive fine sandy loam, Irigul channery loam, Irigul-Parachute complex, Irigul-Starman channery loam, Redcreek-Rentsac complex, Rentsac channery loam, Rentsac-Moyerson-Rock outcrop, Starman-Vandamore complex, and Torriorthents-Rock outcrop are fragile soils crossed by the project.

Most of the soils along the pipeline route support livestock grazing and wildlife habitat. Soils along creek bottoms are more fertile and are used for irrigated and dryland crops on fee-lands.

The project route crosses 37 soil mapping units, which are described below.

Absher loam, 0 to 3 percent slopes: deep, well-drained soil on alluvial valley floors, fans, and terraces; formed in alluvium derived mainly from shale; surface texture is loam and subsurface textures are moderately alkaline silty clay and strongly alkaline clay loam.

Barx loam, 3 to 12 percent slopes: deep, well-drained soil on structural benches; formed in eolian deposits derived dominantly from mixed materials; surface texture is loam and subsurface textures are clay loam and loam.

Biedsaw-Sunup gravelly loams, 10 to 40 percent slopes: shallow and deep, well-drained soils on side slopes of mountains and ridges. Biesdaw soils are formed in colluvium over residuum derived dominantly from the Wasatch shale formation; surface texture is gravelly loam and subsurface textures are loam, clay loam, and silty clay loam. Sunup soils are formed in residuum and colluvium derived dominantly from the Wasatch shale formation; surface texture is gravelly loam and subsurface texture is very gravelly loam; depth to sandstone is at 11 inches.

Blazon moist-Rentsac complex, 8 to 65 percent slopes: shallow, well-drained soils on foothills and ridges. Blazon soils are formed in residuum derived dominantly from shale; surface texture is channery loam and subsurface textures are channery clay loam and shaley clay loam; depth to soft shale ranges from 10 to 20 inches. Rentsac soils are formed in residuum derived dominantly from sandstone; surface texture is channery loam with subsurface textures of channery loam and extremely flaggy loam; depth to hard sandstone ranges from 10 to 20 inches.

Barcus channery loamy sand, 2 to 8 percent slopes: deep, somewhat excessively drained soil on alluvial fans and narrow valleys; formed in alluvium derived from calcareous sandstone and shale; surface texture is loamy sand and subsurface textures are channery sand, very channery sand, and very channery loamy fine sand.

Castner channery loam, 5 to 50 percent slopes: shallow, well-drained soil on mountainsides, ridgetops, and uplands; formed in residuum derived from sandstone; surface texture is channery loam and subsurface texture is very channery loam; depth to sandstone is 10 to 20 inches.

Forelle loam, 3 to 8 percent slopes: deep, well-drained soil on terraces and uplands; formed in eolian and alluvial material derived dominantly from sedimentary rock; surface texture is loam and subsurface textures are clay loam and loam.

Glendive fine sandy loam: deep, well-drained soil along drainages on alluvial valley floors; formed in alluvium; surface texture is fine sandy loam and subsurface texture is fine sandy loam with lenses of loamy fine sand to sandy clay loam.

Hagga loam: deep, poorly-drained soil along flood plains and alluvial valley floors; formed in alluvium derived dominantly from sandstone and shale; surface texture is loam and subsurface textures are silty clay loam and loamy fine sand.

Happle very channery sandy loam, 3 to 12 percent slopes: deep, well-drained soils on alluvial-colluvial fans and toe slopes; formed in colluvium and alluvium derived dominantly from the Green River shale formation; surface texture is very channery sandy loam and subsurface textures are very channery sandy loam, very channery sandy clay loam, and extremely channery coarse sandy loam.

Happle-Rock outcrop association, 25 to 65 percent slopes: deep, well-drained soils on side slopes and canyon rims. Happle soils are formed in colluvium derived dominantly from the Green River shale formation; surface texture is very channery sandy loam and subsurface textures are very channery sandy loam, very channery sandy clay loam, and extremely channery coarse sandy loam. Rock outcrop occurs as horizontal bands along canyon rims and as buttresses extending into areas of Happle soil.

Havre loam, 0 to 4 percent slopes: deep, well-drained soil on floodplains and low stream terraces; formed in calcareous alluvium; surface texture is loam and subsurface textures are loam, silty clay loam, stratified loam, and sandy loam.

Irigul channery loam, 5 to 50 percent slopes: shallow, well-drained soils on ridges and mountainsides; formed in residuum derived from sandstone and hard shale; surface texture is channery loam, and subsurface texture is extremely channery loam; depth to hard sandstone or shale ranges from 10 to 20 inches.

Irigul-Parachute complex, 5 to 30 percent slopes: shallow (convex areas) to deep (concave areas), well-drained soils on ridges and mountainsides. Irigul soils are formed in residuum derived from sandstone and hard shale; surface texture is channery loam and subsurface texture is extremely channery loam; depth to hard sandstone or shale ranges from 10 to 20 inches. Parachute soils are formed in residuum derived dominantly from sandstone; surface texture is loam and subsurface textures are loam, channery loam, very channery loam, and extremely channery sandy loam; depth to hard sandstone or shale ranges from 20 to 40 inches.

Irigul-Starman channery loams, 5 to 35 percent slopes: shallow, well-drained soils on mountain ridges and on the crests and sides of hills. Irigul soils are formed in residuum derived from sandstone and hard shale; surface texture is channery loam and subsurface texture is very channery loam; depth to bedrock is 13 inches. Starman soils are formed in residuum derived from sandstone and hard shale; surface texture is channery loam and subsurface texture is extremely channery loam; depth to bedrock is 11 inches.

Mikim silty loam, sodic, 1 to 4 percent slopes: fine-loamy, mixed, superactive, mesic Ustic Haplocambid. Refer to Absher loam, 0 to 3 percent slopes, for related soil description.

Northwater-Adel complex, 5 to 50 percent slopes: deep, well-drained soils on mountainsides, foot slopes, and swales. Northwater soils are formed in residuum and colluvium derived dominantly from sedimentary rock; surface texture is loam and subsurface textures are very channery loam and extremely channery loam. Adel soils are formed in colluvium derived dominantly from sedimentary rock; surface and subsurface textures are clay loam.

Panitchen loam, 1 to 6 percent slopes: deep, well-drained soils on low terraces and floodplains; surface texture is loam and subsurface textures are stratified gravelly loam, gravelly clay loam, and stratified loam.

Parachute loam, 25 to 75 percent slopes: moderately deep, well-drained soils on ridges and mountainsides; formed in residuum derived dominantly from sandstone; surface texture is loam and subsurface textures are loam, channery loam, very channery loam, and extremely channery loam; depth to sandstone ranges from 20 to 40 inches.

Parachute-Irigul complex, 5 to 30 percent slopes: Shallow and moderately deep and well-drained soils on mountain ridges, and on the crests and sides of hills. Parachute soils are formed in residuum derived dominantly from sandstone, siltstone, or hard shale; surface texture is loam and subsurface texture is very channery loam; depth to rippable, fractured siltstone is about 25 inches. Irigul soils are formed in residuum derived dominantly from sandstone or hard shale; surface texture is channery loam and subsurface texture is very channery loam; depth to hard siltstone is about 13 inches.

Parachute-Irigul-Rhone association, 25 to 50 percent slopes: shallow, moderately deep, and deep, well-drained soils on tops of mountains and ridges and on the crests and sides of hills. Parachute soils are formed in colluvium and residuum derived dominantly from sandstone, siltstone, or hard shale; surface texture is loam and subsurface texture is very channery loam; depth to rippable, fractured siltstone is about 25 inches. Irigul soils are formed in residuum derived dominantly from sandstone or hard shale; surface texture is channery loam and subsurface texture is very channery loam; depth to hard siltstone is about 13 inches. Rhone soils are formed in colluvium and residuum derived dominantly from sandstone, siltstone, or hard shale; surface texture is loam and subsurface textures are channery loam and very channery loam; depth to rippable, fractured siltstone is about 55 inches.

Parachute-Rhone loams, 5 to 30 percent slopes: moderately deep to deep, well-drained soils on mountainsides and upland ridges. Parachute soils are formed in residuum derived dominantly from sandstone; surface texture is loam and subsurface textures are loam, channery loam, very channery loam, and extremely channery sandy loam; depth to hard sandstone or shale ranges from 20 to 40 inches. Rhone soils are formed in residuum and colluvium derived dominantly from sandstone; surface texture is loam and subsurface texture is very channery loam; depth to sandstone ranges from 40 to 60 inches.

Patent loam, 0 to 3 percent slopes: deep, well-drained soil on fans and terraces; formed in alluvium and colluvium derived dominantly from sandstone; surface texture is loam and subsurface textures are loam and very fine sandy loam; soil is calcareous throughout with varying amounts of gypsum.

Patent loam, 3 to 8 percent slopes: deep, well-drained soil on fans and toe slopes; formed in alluvium, colluvium, and a thin mantle of eolian material; surface texture is loam and subsurface textures are loam and very fine sandy loam; soil is calcareous throughout with varying amounts of gypsum.

Piceance fine sandy loam, 5 to 15 percent slopes: moderately deep, well-drained soil on uplands and broad ridgetops; formed in eolian material and colluvium derived dominantly from sandstone; surface texture is fine sandy loam and subsurface textures are loam and channery loam; depth to sandstone ranges from 20 to 40 inches.

Redcreek-Rentsac complex, 5 to 30 percent slopes: shallow, well-drained soils on mountainsides and ridges. Redcreek soils are formed in residual and eolian material derived dominantly from sandstone; surface texture is sandy loam and subsurface textures are calcareous sandy loam and calcareous loam; depth to hard sandstone or hard shale ranges from 10 to 20 inches. Rentsac soils are formed in residuum derived dominantly from sandstone; surface texture is channery loam and subsurface textures are very channery loam and extremely flaggy loam; depth to hard sandstone or hard shale ranges from 10 to 20 inches.

Rentsac channery loam, 5 to 50 percent slopes: shallow, well-drained soils on ridges, foothills, and side slopes; formed in residuum derived dominantly from calcareous sandstone; surface texture is channery loam and subsurface textures are channery loam and extremely flaggy light loam; depth to sandstone ranges from 10 to 20 inches.

Rentsac-Moyerson-Rock outcrop, 5 to 65 percent slopes: shallow and well-drained soils formed on foothills and ridges. Rentsac soils are formed in residuum derived dominantly from sandstone; surface texture is channery loam and subsurface textures are very channery loam and extremely flaggy loam; depth to sandstone ranges from 10 to 20 inches. Moyerson soils are formed in residuum derived dominantly from shale; surface texture is stony clay loam and subsurface textures are clay loam and clay; depth to shale ranges from 10 to 20 inches. Rock outcrops consist of ridge caps, ridge points, and long vertical bluffs.

Rentsac-Piceance complex, 2 to 30 percent slopes: shallow and moderately deep, well-drained soils on uplands, broad ridges, and foothills. Rentsac soils are formed in residuum derived dominantly from calcareous sandstone; surface texture is channery loam and subsurface textures are strongly calcareous very channery loam and extremely flaggy light loam; depth to sandstone ranges from 10 to 20 inches. Piceance soils are formed in eolian material and colluvium derived dominantly from sandstone; surface texture is fine sandy loam and subsurface textures are loam and channery loam; depth to sandstone or hard shale ranges from 20 to 40 inches.

Silas loam, 1 to 12 percent slopes: deep, moderately well-drained soils on alluvial valley floors; formed in alluvium derived dominantly from mixed sedimentary rocks; surface texture is loam and subsurface texture is clay loam.

Starman-Vandamore complex, 5 to 40 percent slopes: shallow and moderately deep, well-drained soils on rolling ridges and windswept ridgetops. Starman soils are formed in residuum derived dominantly from hard shale; surface texture is channery loam and subsurface texture is extremely channery loam; depth to hard shale ranges from 10 to 20 inches. Vandamore soils are formed in residuum derived dominantly from sandstone; surface texture is channery loam and subsurface textures are very channery loam and extremely channery loam; depth to sandstone ranges from 20 to 40 inches.

Tisworth fine sandy loam, 0 to 5 percent slopes: deep, well-drained soil on valley floors and broad fans; formed in alluvium derived dominantly from sedimentary rock with a high content of gypsum and alkaline salt; surface texture is fine sandy loam and subsurface textures are clay loam and fine sandy loam with fine crystals and seams of gypsum and calcium carbonate.

Torrifluvents, gullied: moderately deep and deep, well-drained and excessively well-drained soils on narrow valley bottoms, in swales, and on eroded fans; formed in highly calcareous and gypsiferous, stratified sandy, loamy, and clayey alluvium derived dominantly from sandstone and shale.

Torriorthents-Rock outcrop complex, 15 to 90 percent slopes: very shallow to moderately deep, well-drained to excessively drained soil on extremely rough and eroded areas on mountains, hills, ridges, and canyonsides; formed in residuum and colluvium derived dominantly from sandstone, shale, limestone, and siltstone; surface texture is loam, and subsurface textures vary from channery loam, very channery loam and fine sandy loam; depth to shale or sandstone is 16 inches. Rock outcrops consist of barren escarpments, ridge caps, and points of sandstone, shale, limestone, or siltstone.

Tosca channery loam, 25 to 80 percent slopes: deep, well-drained soils on mountainside slopes and foot slopes; formed in colluvium derived dominantly from Green River shale; surface texture is channery loam and subsurface texture is very channery loam.

Utso-Rock outcrop complex, 40 to 90 percent slopes: deep, well-drained soils on side slopes. Utso soils are formed in colluvium derived from the Green River shale formation; surface texture is channery loam and subsurface texture is very channery loam. Rock outcrop occurs as horizontal bands along canyon rims and as buttresses extending into areas of Utso soil.

Yamac loam, 2 to 15 percent slopes: deep, well-drained soils on rolling uplands, terraces and fans; formed in eolian and alluvial material; surface and subsurface textures are loam.

For each soil mapping unit, permeability, available water capacity, surface runoff potential, erosion hazard, and ecological site type are provided in Table 4-17.

Table 4-17 Soil Mapping Units and Parameters in the Project Area

Soil Mapping Unit	Slope (%)	Permeability	Available Water Capacity	Surface Runoff	Erosion Hazard	Ecological Site
3—Absher loam	0 to 3	very slow	moderate	medium	moderate to high	Alkaline Slopes
6—Barcus channery loamy sand	2 to 8	rapid	low	slow	moderate	Foothill Swale
3—Barx loam	3 to12	moderately slow	high	medium	very high	Rolling Loam
7—Biedsaw-Sunup gravelly loams	10 to 40	Biedsaw—slow Sunup—moderate	Biedsaw—high Sunup—very low	rapid	very high	Foothill Juniper
10—Blazon moist-Rentsac complex	8 to 65	Blazon—moderately slow Rentsac—moderately rapid	low	rapid	moderate to very high	Pinyon-Juniper
15—Castner channery loam	5 to 50	moderate	very low	medium to rapid	moderate to very high	Pinyon-Juniper
33—Forelle loam	3 to 8	moderate	high	medium	moderate to high	Rolling Loam
36—Glendive fine sandy loam	---	moderately rapid	moderate	slow	slight	Foothill Swale
40—Hagga loam	---	moderately slow	high	slow	slight	Swale Meadow
44—Happle very channery sandy loam	3 to 12	moderate	low	medium	high	Rolling Loam
46—Happle-Rock outcrop association	25 to 65	moderate	low	rapid	high	Steep Colluvial Slopes
41—Havre loam	0 to 4	moderate	high	medium	slight	Foothill Swale
42—Irigul channery loam	5 to 50	moderate	very low	medium to rapid	very high	Loamy Slopes
43—Irigul-Parachute complex	5 to 30	moderate	Irigul—very low Parachute—low	Irigul—medium to rapid Parachute—medium	Irigul—slight to high Parachute—moderate to very high	Irigul—Loamy Slopes Parachute—Mountain Loam
50—Irigul-Starman channery loams	5 to 35	moderate	very low	medium to rapid	moderate to very high	Irigul—Loamy Slopes Starman—Dry Exposure
139—Mikim silty loam, sodic	1 to 4	very slow	moderate	medium	moderate to high	Alkali Flat

Table 4-17 Soil Mapping Units and Parameters in the Project Area

Soil Mapping Unit	Slope (%)	Permeability	Available Water Capacity	Surface Runoff	Erosion Hazard	Ecological Site
52—Northwater-Adel complex	5 to 50	moderate	Northwater—moderate Adel—high	Northwater—medium to rapid Adel—medium	high to very high	Northwater—Quaking Aspen Adel—Engelmann Spruce-Subalpine Fir
54—Panitchen loam	1 to 6	moderately slow	moderate	slow	slight to moderate	Foothill Swale
58—Parachute loam	25 to 75	moderate	low	medium	moderate to very high	Brushy Loam
55—Parachute-Irigul complex	5 to 30	moderate	very low	medium to rapid	moderate to very high	Parachute—Mountain Loam Irigul—Loamy Slopes
56—Parachute-Irigul-Rhone association	25 to 50	moderate	Parachute—very low Irigul—very low Rhone—moderate	rapid	very high	Parachute—Brushy Loam Irigul—Loamy Slopes Rhone—Brushy Loam
59—Parachute-Rhone loams	5 to 30	moderate	Parachute—low Rhone—high	medium	Parachute—moderate to very high Rhone—moderate to high	Mountain Loam
60—Patent loam	0 to 3	moderate	high	medium	moderate	Rolling Loam
61—Patent loam	3 to 8	moderate	high	medium	moderate	Rolling Loam
64—Piceance fine sandy loam	5 to 15	moderate	low	slow to medium	moderate to high	Rolling Loam
70—Redcreek-Rentsac complex	5 to 30	moderately rapid	very low	medium	moderate to high	Pinyon-Juniper
73—Rentsac channery loam	5 to 50	moderately rapid	very low	rapid	moderate to very high	Pinyon-Juniper
74—Rentsac-Moyerson-Rock outcrop	5 to 65	Rentsac—moderately rapid Moyerson—slow	Rentsac—very low Moyerson—low	Rentsac—medium Moyerson—medium to rapid	Rentsac—moderate to high Moyerson—very high	Rentsac—Pinyon-Juniper Moyerson—Clay Loam

Table 4-17 Soil Mapping Units and Parameters in the Project Area

Soil Mapping Unit	Slope (%)	Permeability	Available Water Capacity	Surface Runoff	Erosion Hazard	Ecological Site
75—Rentsac-Piceance complex	2 to 30	Rentsac—moderately rapid Piceance—moderate	Rentsac—very low Piceance—low	Rentsac—medium Piceance—slow to medium	Rentsac—moderate to high Piceance—slight to moderate	Rentsac—Pinyon-Juniper Piceance—Rolling Loam
63—Silas loam	1 to 12	moderate	high	slow	slight to very high	Mountain Swale
87—Starman-Vandamore complex	5 to 40	moderate	very low	medium	moderate to very high	Dry Exposure
89—Tisworth fine sandy loam	0 to 5	slow	moderate	rapid	moderate	Alkaline Slopes
90—Torrifluvents	gullied	moderately rapid to slow	moderate to high	rapid	very high	---
91—Torriorthents-Rock outcrop complex	15 to 90	moderate	very low	very rapid	very high	Stony Foothills
67—Tosca channery loam	25 to 80	moderate	low	rapid	very high	Brushy Swale
71—Utso-Rock outcrop complex	40 to 90	moderate	low	rapid	very high	Rocky Mountain Douglas fir
104—Yamac loam	2 to15	moderate	moderate	medium	slight	Rolling Loam

Yamac loam and Rentsac channery loam soils are present at the Proposed Action gas plant site, and Yamac loam is the predominant soil type. The Proposed Action pipeline corridor crosses 37 soil mapping units as discussed above. Rentsac channery loam, Parachute-Irigul-Rhone association, Renstac-Moyerson-Rock outcrop, and Redcreek-Rentsac complex are the predominant soil types along the pipeline corridor. The pipeline corridor would cross 29.6 miles (435 acres) of fragile soils on lands administered by the BLM WRFO. Table 4-18 presents total acres of disturbance and total miles crossed for each soil type crossed by the Proposed Action.

Table 4-18 Proposed Action Soil Disturbance

Soil Mapping Unit	Slope (%)	Ecological Site	Disturbance	
			Miles	Acres
3—Absher loam	0 to 3	Alkaline Slopes	3.0	34.8
6—Barcus channery loamy sand	2 to 8	Foothill Swale	0.8	12.2
3—Barx loam	3 to12	Rolling Loam	0.8	11.8

Table 4-18 Proposed Action Soil Disturbance

Soil Mapping Unit	Slope (%)	Ecological Site	Disturbance	
			Miles	Acres
7—Biedsaw-Sunup gravelly loams	10 to 40	Foothill Juniper	0.8	11.8
10—Blazon moist-Rentsac complex	8 to 65	Pinyon-Juniper	2.9	39.8
15—Castner channery loam	5 to 50	Pinyon-Juniper	2.9	53.9
33—Forelle loam	3 to 8	Rolling Loam	1.3	19.7
36—Glendive fine sandy loam	---	Foothill Swale	2.4	34.5
40—Hagga loam	---	Swale Meadow	3.6	59.6
44—Happle very channery sandy loam	3 to 12	Rolling Loam	2.3	39.8
46—Happle-Rock outcrop association	25 to 65	Steep Colluvial Slopes	0.5	10.5
41—Havre loam	0 to 4	Foothill Swale	5.8	78.3
42—Irigul channery loam	5 to 50	Loamy Slopes	1.6	22.9
43—Irigul-Parachute complex	5 to 30	Irigul—Loamy Slopes Parachute—Mountain Loam	1.0	17.4
50—Irigul-Starman channery loams	5 to 35	Irigul—Loamy Slopes Starman—Dry Exposure	1.6	26.6
139—Mikim silty loam, sodic	1 to 4	Alkali Flat	1.6	18.5
52—Northwater-Adel complex	5 to 50	Northwater—Quaking Aspen Adel—Engelmann Spruce-Subalpine Fir	1.4	25.4
54—Panitchen loam	1 to 6	Foothill Swale	1.8	26.7
58—Parachute loam	25 to 75	Brushy Loam	0.7	10.6
55—Parachute-Irigul complex	5 to 30	Parachute—Mountain Loam Irigul—Loamy Slopes	6.0	92.6
56—Parachute-Irigul-Rhone association	25 to 50	Parachute—Brushy Loam Irigul—Loamy Slopes Rhone—Brushy Loam	7.6	131.4
59—Parachute-Rhone loams	5 to 30	Mountain Loam	0.2	2.7
60—Patent loam	0 to 3	Rolling Loam	0.2	2.1
61—Patent loam	3 to 8	Rolling Loam	2.2	25.0
64—Piceance fine sandy loam	5 to 15	Rolling Loam	1.1	15.7
70—Redcreek-Rentsac complex	5 to 30	Pinyon-Juniper	6.4	102.2
73—Rentsac channery loam	5 to 50	Pinyon-Juniper	11.3	175.3
74—Rentsac-Moyerson-Rock outcrop	5 to 65	Rentsac—Pinyon-Juniper Moyerson—Clay Loam	9.2	121.1
75—Rentsac-Piceance complex	2 to 30	Rentsac—Pinyon-Juniper Piceance—Rolling Loam	4.8	71.1
63—Silas loam	1 to 12	Mountain Swale	0.3	7.1

Table 4-18 Proposed Action Soil Disturbance

Soil Mapping Unit	Slope (%)	Ecological Site	Disturbance	
			Miles	Acres
87—Starman-Vandamore complex	5 to 40	Dry Exposure	0.5	9.0
89—Tisworth fine sandy loam	0 to 5	Alkaline Slopes	1.1	16.6
90—Torrifluvents	gullied	---	1.0	12.8
91—Torriorthents-Rock outcrop complex	15 to 90	Stony Foothills	3.4	49.8
67—Tosca channery loam	25 to 80	Brushy Swale	0.3	8.1
71—Utso-Rock outcrop complex	40 to 90	Rocky Mountain Douglas fir	0.4	6.2
104—Yamac loam	2 to 15	Rolling Loam	0.7	10.0

Hagga loam, Barcus channery loam, and Torriorthents-Rock outcrop complex soil types are located at the Alternative Action plant site, and Hagga loam and Barcus channery loam are the predominant soil types present. The majority of the site contains soils of low bearing capacity and shallow groundwater conditions. Groundwater was encountered at an average depth of 6.6 feet (Cordilleran 2004a). The gas plant foundation would need to be designed in order to avoid excessive point loads that would cause bearing capacity failure or excessive consolidation within the underlying soil. Structures placed on Hagga or Barcus channery loams would require a minimum of 5-feet of structural fill and pile foundations driven approximately 50 feet to bedrock (Cordilleran 2004a). An estimated minimum 138,000 cubic yards of fill would be required.

Rentsac channery loam, Parachute-Irigul-Rhone association, Renstac-Moyerson-Rock outcrop, and Parachute-Irigul complex are the predominant soil types along the Alternative Action pipeline corridor. The pipeline corridor crosses 29.7 miles (439 acres) of fragile soils on lands administered by the BLM WRFO. Table 4-19 presents total acres of disturbance and total miles crossed for each soil type.

Table 4-19 Alternative Action Soil Disturbance

Soil Mapping Unit	Slope (%)	Ecological Site	Disturbance	
			Miles	Acres
3—Absher loam	0 to 3	Alkaline Slopes	3.0	34.8
6—Barcus channery loamy sand	2 to 8	Foothill Swale	0.1	1.9
3—Barx loam	3 to12	Rolling Loam	0.8	11.8
7—Biedsaw-Sunup gravelly loams	10 to 40	Foothill Juniper	0.8	11.8
10—Blazon moist-Rentsac complex	8 to 65	Pinyon-Juniper	2.9	39.4
15—Castner channery loam	5 to 50	Pinyon-Juniper	2.9	53.8
33—Forelle loam	3 to 8	Rolling Loam	0.5	8.3

Table 4-19 Alternative Action Soil Disturbance

Soil Mapping Unit	Slope (%)	Ecological Site	Disturbance	
			Miles	Acres
36—Glendive fine sandy loam	---	Foothill Swale	2.6	37.4
40—Hagga loam	---	Swale Meadow	2.0	32.6
44—Happle very channery sandy loam	3 to 12	Rolling Loam	2.3	39.8
46—Happle-Rock outcrop association	25 to 65	Steep Colluvial Slopes	0.5	10.5
41—Havre loam	0 to 4	Foothill Swale	5.2	69.2
42—Irigul channery loam	5 to 50	Loamy Slopes	1.6	22.9
43—Irigul-Parachute complex	5 to 30	Irigul—Loamy Slopes Parachute—Mountain Loam	1.0	17.3
50—Irigul-Starman channery loams	5 to 35	Irigul—Loamy Slopes Starman—Dry Exposure	1.6	26.6
139—Mikim silty loam, sodic	1 to 4	Alkali Flat	1.6	18.2
52—Northwater-Adel complex	5 to 50	Northwater—Quaking Aspen Adel—Engelmann Spruce-Subalpine Fir	1.4	24.9
54—Panitchen loam	1 to 6	Foothill Swale	1.8	26.6
58—Parachute loam	25 to 75	Brushy Loam	0.7	10.6
55—Parachute-Irigul complex	5 to 30	Parachute—Mountain Loam Irigul—Loamy Slopes	6.0	92.6
56—Parachute-Irigul-Rhone association	25 to 50	Parachute—Brushy Loam Irigul—Loamy Slopes Rhone—Brushy Loam	7.5	131.4
59—Parachute-Rhone loams	5 to 30	Mountain Loam	0.2	2.7
60—Patent loam	0 to 3	Rolling Loam	0.2	2.1
61—Patent loam	3 to 8	Rolling Loam	2.2	24.9
64—Piceance fine sandy loam	5 to 15	Rolling Loam	0.4	6.4
70—Redcreek-Rentsac complex	5 to 30	Pinyon-Juniper	5.1	84.4
73—Rentsac channery loam	5 to 50	Pinyon-Juniper	11.9	183.8
74—Rentsac-Moyerson-Rock outcrop	5 to 65	Rentsac—Pinyon-Juniper Moyerson—Clay Loam	9.1	120.8
75—Rentsac-Piceance complex	2 to 30	Rentsac—Pinyon-Juniper Piceance—Rolling Loam	5.0	74.2
63—Silas loam	1 to 12	Mountain Swale	0.3	7.1
87—Starman-Vandamore complex	5 to 40	Dry Exposure	0.5	9.0
89—Tisworth fine sandy loam	0 to 5	Alkaline Slopes	1.1	16.5
90—Torrifluvents	gullied	---	1.0	12.8
91—Torriorthents-Rock outcrop complex	15 to 90	Stony Foothills	4.2	61.6
67—Tosca channery loam	25 to 80	Brushy Swale	0.3	8.1

Table 4-19 Alternative Action Soil Disturbance

Soil Mapping Unit	Slope (%)	Ecological Site	Disturbance	
			Miles	Acres
71—Utso-Rock outcrop complex	40 to 90	Rocky Mountain Douglas fir	0.4	6.2

Environmental Consequences of the Proposed Action

Construction could affect soils in several ways including increased erosion, compaction, reduced fertility, poor revegetation, and contamination from accidental spills or leaks of petroleum products. Clearing, grading, and movement of construction equipment and vehicles would remove vegetative cover and expose the soils to the effects of wind, rain, and runoff. The effects would accelerate the erosion process and could result in discharges of sediment to waterbodies and wetlands that could adversely affect water quality and aquatic life habitat. Erosion of saline soils could result in an accumulation of salts in the soil surface layer that could discourage the establishment of native species and reduce revegetation success. Grading, trenching, and backfilling activities could cause mixing of the soil horizons and could result in reduced soil fertility and reduced revegetation potential. Trenching and backfilling activities in shallow soils with underlying bedrock could mix substantial quantities of rock in the upper soil strata. Movement and operation of construction equipment could compact the soil and result in an increased erosion hazard and reduced revegetation potential. Clearing of existing vegetation could provide an opportunity for noxious weeds to invade the construction right-of-way, and movement of equipment along the right-of-way could transport weed seed and plant parts from one location to another. Accidental spills or leaks of petroleum products and coolants from construction equipment could cause soil contamination. Impacts would be short- to long-term depending upon site stabilization and successful reclamation.

Environmental Consequences of the Alternative Action

Environmental consequences would be the same as discussed for the Proposed Action.

Environmental Consequences of the No Action Alternative

None.

Mitigation

Impacts to soils would be minimized by implementing measures proposed for the proper handling of topsoil and spoil, erosion control, and reclamation procedures from EnCana's Reclamation Plan (EnCana 2005j), Noxious Weed Management Plan (EnCana 2005h), and Soil Conservation, Sedimentation, and Erosion Control Plan (EnCana 2005l), included in the Plan of Development (EnCana 2005a). EnCana would:

- Limit clearing and vegetation removal to the extent practical to provide for safe construction.
- Salvage topsoil as required by the BLM and fee-landowners:
  - BLM GJFO and VFO lands—up to 6 inches across the trenchline and working side

- BLM WRFO lands—up to 6 inches across the trenchline only
- Fee-lands—unless otherwise directed by the fee-landowner, up to 6 inches across the trenchline, except irrigated agricultural fields where up to 12 inches will be stripped across the entire right-of-way
- All areas requiring grading—up to 6 inches across the entire right-of-way

- Stockpile topsoil separately from subsoil to prevent mixing of soil layers.

- Decompact subsoil to a depth of 6 to 10 inches prior to topsoil replacement. In areas where topsoil was not salvaged, topsoil would be decompacted as necessary.

- Restore pre-construction contours and natural drainage patterns.

- Return topsoil to pre-construction depths and locations.

- Install temporary and permanent erosion control measures (i.e., silt fence, straw bales, waterbars, driveable berms) to control the erosion and transport of sediment.

- Use vegetative mulch and excess rock to reduce erosion potential by providing additional surface relief structure.

  - Distribute vegetative debris salvaged during clearing and grading operations across the right-of-way, as discussed in the Vegetation section.
  - Layer rock on the surface of erodible soils in critical areas to reduce erosion and restore appearance of native surface.
  - Apply mulch on slopes 30 percent or steeper.
  - Install erosion control matting on slopes 40 percent or steeper.

- Seed disturbed areas as discussed in the Vegetation Section.

- Control noxious weeds as discussed in the Invasive, Non-Native Species section.

- Minimize the potential for accidental spills or leaks as discussed in the Wastes, Solid or Hazardous section.

Finding on the Public Land Health Standard for Upland Soils

Soils along the project route predominantly meet the public land health standard. With successful topsoil handling procedures, erosion control methods, and restoration measures during construction and restoration activities, the project would not change this status.

VEGETATION

Affected Environment

Vegetation communities are classified in accordance with the Colorado Interagency Vegetation Classification Project standards. Eight vegetation communities are located in the project area, and are described below.

Pinyon-juniper woodlands typically occurs on warm, dry sites on mountain slopes, mesas, and plateaus and includes the pinyon pine and at least one of three juniper species. Habitats in western Colorado most often include the Utah juniper and Rocky Mountain juniper, depending on elevation. Within the project area, the elevation range for this plant community is typically between 5,000 and 7,000 feet (Mutel and Emerick 1992, Fitzgerald et al. 1994, and Kingery 1998). Only pinyon is present at the upper elevation range, but at the lower elevation range, pinyons are less common and juniper is dominant. The majority of the pinyon-juniper woodland along the proposed pipeline route is mature and occurs as closed-canopy stands. A variety of pinyon-juniper communities were observed along the pipeline alignments including pure stands of pinyon-juniper, pinyon-juniper sagebrush mix, and pinyon-juniper mountain shrub mix.

Mountain shrub communities typically occur at elevations above semidesert shrublands and pinyon-juniper woodlands and below montane forests. Depending on elevation, slope, exposure, and soil types, these shrub communities can be dominated by a variety of deciduous shrub species intermixed with mountain big sagebrush, most often Gambel oak and mountain mahogany. Understory species associated with this community typically reflect the local exposure and moisture content of the soils. Xeric shrub communities often support sagebrush, rabbitbrush, Mormon tea, and scattered pinyon pine and Utah juniper. Mesic communities support serviceberry and mountain mahogany as occasional co-dominant species and snowberry, sagebrush, and chokeberry as primary understory species. Skunkbush sumac, antelope bitterbrush, and squaw apple may also occur as secondary understory species (Mutel and Emerick 1992, Fitzgerald et al. 1994, and Kingery 1998).

Sagebrush steppe communities follow canyon bottomlands, extend onto mesas and plateaus, and occur in some mountain regions along major rivers. These communities are dominated by basin big sagebrush, Wyoming big sagebrush, and mountain big sagebrush. Other species commonly associated with this community include rabbitbrush, bitterbrush, broom snakeweed, several grass species, and mixed cacti. Often associated with this community type are other shrub dominant communities, including greasewood, four-wing saltbush, and shadscale.

Douglas fir woodlands are found throughout the Southern Rocky Mountain Range from 5,600 to 9,000 feet. At higher elevations, this cover type is widespread, but at lower elevations, it is typically restricted to north-facing slopes. Near the proposed project, these communities may occur as pure Douglas fir stands or mixed with aspen.

Aspen woodlands can occur from 5,600 to 11,000 feet elevation. Typically, sites that support well established aspen woodlands have deeper, less rocky soils than sites dominated by coniferous species. Aspens can tolerate a wide variety of soil and local climate conditions as long as they do not suffer prolonged periods of high temperatures or drought. Aspen woodlands often

support a robust and diverse understory of shrubs, grasses, and herbaceous plants. In the project area snowberry, serviceberry, and common juniper are common understory species.

Grass and forb communities form a mosaic within the sagebrush shrublands and pinyon-juniper communities and agricultural lands in areas of fine deep soils, or where disturbance is common. Dominant species of this community type can include arrowleaf balsamroot, gumweed, mule's wyethia, prairie junegrass, western wheatgrass, lupine, and Kentucky bluegrass.

Riparian communities usually occur as narrow zones at the edge between stream and river ecosystems and adjacent upland ecosystems. They have distinct vegetation and soil characteristics that result in a combination of high species diversity and high productivity. Emergent *wetlands*, most typically wet meadows and marshes, commonly occur in valley bottoms associated with sub-irrigated soils and surface drainages. Soil chemistry and duration of inundation influence the composition of these vegetation communities. These communities can be dominated by shrub willow or emergent species including water sedge, beaked sedge, Nebraska sedge, Baltic rush, bulrush, tufted hairgrass, redtop, and reedgrass. Vegetation communities observed along the pipeline alignments that have riparian and wetland biological characteristics include herbaceous riparian, irrigated hay meadow, exotic riparian, sedge, and willow.

Disturbed soil is described as a community type because of its prevalence in the project area and its potential suitability for some plant and wildlife species, including noxious weeds. Areas of disturbed soil occur along much of the proposed pipeline corridor. Previously constructed pipeline corridors, roads, well pads, and other ground disturbances have resulted in areas of disturbed soil throughout the project.

The Proposed Action gas plant site is comprised of 50 acres of pinyon-juniper woodland. The Proposed Action pipeline corridor crosses 34.1 miles (515 acres) of pinyon-juniper woodland, 12.5 miles (208 acres) of mountain shrub community, 35.6 miles (511 acres) of sagebrush steppe community, 0.2 miles (3 acres) of Douglas fir community, 5.4 miles (95 acres) of aspen woodland community, 3.6 miles (59 acres) of grass and forb community, 0.4 miles (7 acres) of riparian and wetland community, and 1.1 miles (13 acres) of disturbed soil. The Alternative Action gas plant site is comprised of 50 acres of grass and forb vegetative community. The Alternative Action pipeline corridor crosses 35.6 miles (536 acres) of pinyon-juniper woodland community, 12.5 miles (208 acres) of mountain shrub community, 31.4 miles (444 acres) of sagebrush steppe community, 0.2 miles (3 acres) of Douglas fir community, 5.4 miles (95 acres) of aspen woodland community, 2.6 miles (42 acres) of grass and forb community, 0.2 miles (3 acres) of riparian and wetland community, and 1.0 miles (12 acres) of disturbed soil.

The project area crosses 19 ecological sites. An ecological site is the product of all the environmental factors responsible for its development. It has characteristic soils that have developed over time throughout the soil development process; a characteristic hydrology, particularly runoff and infiltration, which has developed over time; and a characteristic plant community. Each is influenced by the others and influences the development of the others. The plant community on an ecological site is typified by an association of species that differs from

that of other ecological sites in the kind and/or proportion of species or in total production (NRCS 2003). Ecological site descriptions are provided in Table 4-20.

Table 4-20 Descriptions of Ecological Sites Crossed by the Project

Ecological Site Name	Predominant Plant Species
Alkali Flat	greasewood, other shrubs, alkali sacaton, bottlebrush squirreltail, shadscale saltbush, galleta, Indian ricegrass, other perennial forbs and grasses, seepweed
Alkaline Slopes	greasewood, basin big sagebrush, shadscale, winterfat, galleta, western wheatgrass
Brushy Loam	serviceberry, oakbrush, snowberry, nodding brome, sedge, slender wheatgrass, western wheatgrass, Letterman and Columbia needle grasses
Brushy Swale	basin wildrye, western wheatgrass, Indian ricegrass, big sagebrush, fourwing saltbush, rubber rabbitbrush, winterfat
Clay Loam	western wheatgrass, slender wheatgrass, mutton grass, bottlebrush squirreltail, junegrass, Letterman and Columbia needlegrasses, mountain big sagebrush
Dry Exposure	beardless bluebunch wheatgrass, needle-and-thread grass, junegrass, Indian ricegrass, fringed sage, buckwheat
Engelmann Spruce-Subalpine Fir	Douglas fir, serviceberry, chokecherry, snowberry, elk sedge, mountain brome
Foothill Juniper	Indian ricegrass, bluebunch wheatgrass, galleta, bottlebrush squirreltail, other perennial forbs, two needle pinyon, Utah juniper
Foothill Swale	basin wildrye, western wheatgrass, slender wheatgrass, streambank wheatgrass, Indian ricegrass, Nevada bluegrass, basin big sagebrush, fourwing saltbush, rubber rabbitbrush
Loamy Slopes	mountain mahogany, bitterbrush, Utah serviceberry, mountain big sagebrush, Letterman needlegrass, beardless bluebunch wheatgrass, sedge, western wheatgrass, junegrass, Indian ricegrass
Mountain Loam	polyanthus brome, nodding brome, slender wheatgrass, bearded wheatgrass, Letterman and Columbia needlegrasses, mountain big sagebrush, low rabbitbrush, snowberry, serviceberry
Mountain Swale	Basin wildrye, polyanthus brome, nodding brome, slender wheatgrass, bearded wheatgrass, Letterman and Columbia needlegrasses, sedges, rushes, mountain big sagebrush, rubber rabbitbrush, snowberry
Pinyon-Juniper	pinyon pine, Utah juniper, mountain mahogany, bitterbrush, Utah serviceberry, Wyoming big sagebrush, beardless bluebunch wheatgrass, western wheatgrass, junegrass, Indian ricegrass, mutton grass
Quaking Aspen	slender wheatgrass, Columbia needlegrass, mountain snowberry, nodding brome, blue wildrye, quaking aspen
Rocky Mountain Douglas Fir	common juniper, Saskatoon serviceberry, kinnikinnick, other perennial forbs and grasses, Oregon grape, elk sedge, Rocky Mountain Douglas fir
Rolling Loam	Wyoming big sagebrush, winterfat, low rabbitbrush, spineless horsebrush, bitterbrush, western wheatgrass, Indian ricegrass, needle-and-thread grass, junegrass, Nevada bluegrass, mutton grass
Steep Colluvial Slopes	Indian ricegrass, shadscale saltbush, bottlebrush squirreltail, other perennial forbs and grasses, western wheatgrass, Wyoming big sagebrush
Stony Foothills	beardless bluebunch wheatgrass, western wheatgrass, needle-and-thread grass, junegrass, Indian ricegrass, fringed sage, Wyoming big sagebrush, black sagebrush, serviceberry, pinyon pine, Utah juniper
Swale Meadow	western wheatgrass, Nebraska sedge, slender wheatgrass, basin wildrye, tufted hairgrasses, rushes, yarrow

Ecological site disturbance is summarized in Tables 4-21 and 4-22.

Table 4-21 Proposed Action Ecological Site Disturbance

Ecological Site	Disturbance	
	Miles	Acres
Alkali Flat	1.6	18.5
Alkaline Slopes	4.1	51.4
Brushy Loam	5.7	98.2
Brushy Swale	0.3	8.1
Clay Loam	4.6	60.5
Dry Exposure	1.3	22.3
Engelmann Spruce-Subalpine Fir	0.7	12.3
Foothill Juniper	0.8	11.8
Foothill Swale	10.8	151.7
Loamy Slopes	8.4	135.0
Mountain Loam	3.7	57.7
Mountain Swale	0.3	7.1
Pinyon-Juniper	30.5	467.2
Quaking Aspen	0.7	12.7
Rocky Mountain Douglas Fir	0.4	6.2
Rolling Loam	11.0	159.6
Steep Colluvial Slopes	0.5	10.5
Stony Foothills	3.4	49.8
Swale Meadow	3.6	59.6

Table 4-22 Alternative Action Ecological Site Disturbance

Ecological Site	Disturbance	
	Miles	Acres
Alkali Flat	1.6	18.5
Alkaline Slopes	4.1	51.3
Brushy Loam	5.7	98.2
Brushy Swale	0.3	8.1
Clay Loam	4.5	60.4
Dry Exposure	1.3	22.3
Engelmann Spruce-Subalpine Fir	0.7	12.7
Foothill Juniper	0.8	11.8
Foothill Swale	9.7	135.1
Loamy Slopes	8.4	134.7
Mountain Loam	3.7	56.5
Mountain Swale	0.3	7.1
Pinyon-Juniper	29.8	458.1
Quaking Aspen	0.7	12.7
Rocky Mountain Douglas Fir	0.4	6.2
Rolling Loam	8.9	129.4
Steep Colluvial Slopes	0.5	10.5
Stony Foothills	4.2	61.6
Swale Meadow	2.0	32.6

Environmental Consequences of the Proposed Action

Construction would result in cutting, clearing, and/or removal of existing vegetation within the construction workspace. The degree of impact would depend on the type and amount of vegetation affected and the rate at which the vegetation would regenerate after construction. Disturbances to vegetation could also increase soil erosion, increase potential for the introduction and infestation of invasive, non-native species, and reduce wildlife habitat. Impacts to vegetation would vary by vegetative community, ecological site type, and revegetation success and would be short- to long-term. Herbaceous vegetation would be likely to reestablish within 1 to 2 years and big sagebrush dominated communities would likely return to their pre-construction aspect within 20 to 75 years. Mountain shrub communities would likely take at least 50 years and pinyon-juniper woodlands would take up from 100 to 300 years to return to pre-construction conditions. Disturbed soil sites would have the highest probability of being invaded by invasive, non-native species. The success (or failure) of revegetation would affect other resources including soils, surface water quality, wildlife, visual resources, and livestock grazing. Construction and operation of the gas plant would result in a loss of pinyon juniper woodland for the life of the project. Based on EnCana's staggered and somewhat uncertain construction schedule, it is reasonable to assume that impacts to vegetation from construction and operation of the pipelines would primarily be long-term.

Environmental Consequences of the Alternative Action

Construction of the gas plant would result in the loss of grass and forb vegetative community for the life of the project. Environmental consequences from pipeline construction would be the same as for the Proposed Action.

Environmental Consequences of the No Action Alternative

None.

Mitigation

Impacts to vegetation would be minimized by implementing measures proposed in EnCana's Soil Conservation, Sedimentation, and Erosion Control Plan (EnCana 2005l), Noxious Weed Management Plan (EnCana 2005h), and Reclamation Plan (EnCana 2005j), included in the Plan of Development (EnCana 2005a). EnCana would:

- Minimize vegetation removal to the extent necessary to allow for safe and efficient construction activities.
- Cut trees with a chain saw and/or mechanical shears and cut brush with a hydraxe or similar equipment as close to the ground as possible.
- Leave stumps and root balls in place except over the trenchline, areas requiring topsoiling, or as necessary to create a safe and level workspace. Fell trees inside the approved right-of-way boundaries.
- Shred or chip brush and salvage with topsoil on fee-lands (unless specified otherwise).

- Salvage and replace topsoil, as discussed in the Soils section, to preserve and replace existing seed banks and return organic matter needed for seed establishment to the soil.

- Restore pre-construction contours, drainage patterns, and topsoil.

- Prepare a seedbed (scarifying, tilling, harrowing, or roughening) prior to seeding where needed to improve revegetation potential.

- Install and maintain erosion control measures until vegetation becomes established, as discussed in the Soils section.

- Control noxious weeds as discussed in the Invasive, Non-Native Species section.

EnCana would also implement the following BLM mitigation measures, which would be incorporated into the Plan of Development:

- Salvage 3 to 5 tons/acre of brush and trees whole on BLM lands administered by the WRFO. Stockpile material for later use in reclamation. Remaining brush and trees may be shredded or chipped and salvaged with topsoil or may be made available to the public as firewood or fenceposts.

- Shred or chip brush and salvage with topsoil on BLM lands administered by the GJFO and VFO. Make timber available to the public for firewood or fenceposts on BLM GJFO-administered lands. De-limb the wood, cut in 4- to 8-foot lengths, and stockpile on the right-of-way or within approved temporary use areas at points where the right-of-way crosses access roads.

- Seed disturbed areas with the goals of replacing suitable wildlife habitat and browse and providing a vegetative cover that stabilizes soils to control erosion and sedimentation. Typical seed mixes would reflect environmental conditions and ecological range sites along the project route and emphasize the use of native species. Seed mixes, rates, and application areas are provided in Table 4-23 and in the Reclamation Plan (EnCana 2005j), included in the Plan of Development (EnCana 2005a).

Table 4-23 Seed Mixes

Species	Rates[1] (lbs PLS/a)	Application Areas (mileposts)
Standard GJFO Seed Mix		
Western Wheatgrass (Arriba)	3.0	Meeker-South 0.0 to 6.0
Pubescent Wheatgrass (Luna)	3.0	
Indian Ricegrass (Paloma)	2.5	
Four-wing Saltbush (Rincon)	1.0	
Shadscale	1.0	
	10.5	

Table 4-23 Seed Mixes

Species	Rates[1] (lbs PLS/a)	Application Areas (mileposts)
High Elevation Sage Grouse Seed Mix		
Bluebunch wheatgrass (Secar)	1.0	Meeker-South 6.0 to 22.0
Slender wheatgrass (Pryor)	1.0	Meeker-West 13.0 to 19.0
Big bluegrass (Sherman)	1.0	
Canby bluegrass (Canbar)	1.0	
Mountain brome (Bromar)	1.0	
Blue flax (Appar)	0.5	
Rocky mountain penstemon	0.5	
Arrowleaf balsamroot	1.0	
Utah sweetvetch	1.0	
	8.0	
Mid-Elevation Sage Grouse Seed Mix		
Western wheatgrass (Rosanna,)	1.0	Meeker-South 22.0 to 30.0
Indian ricegrass (Rimrock)	1.0	Meeker-West 9.0 to 13.0
Bluebunch wheatgrass (Whitmar)	1.0	
Thickspike wheatgrass (Critana)	1.0	
Letterman needlegrass	1.0	
Globemallow	0.5	
Utah sweetvetch	1.0	
Arrowleaf balsamroot	1.0	
	7.5	
Standard WRFO Seed Mix (Native Seed Mix #2)		
Western wheatgrass (Rosanna)	2.0	Meeker-South 30.0 to 38.0
Indian ricegrass (Rimrock)	1.0	Meeker-South 43.0 to 44.5
Bluebunch wheatgrass (Whitmar)	2.0	Meeker-West 0.0 to 9.0
Thickspike wheatgrass (Critana)	2.0	Meeker-West 19.0 to 48.8
Globemallow	0.5	
Fourwing saltbush (Wytana)	1.0	
	8.5	

[1] All seeding rates are lbs Pure Live Seed (PLS) per acre.

- Use certified weed-free seed purchased from and blended by qualified producers and dealers.

- Employ drill or broadcast seed methods to ensure proper seed placement. Drill seeding is preferred and would be used wherever soil characteristics and slope allow effective operation of a rangeland seed drill. Drill seeding would be performed perpendicular to the slope. Seed would be placed in direct contact with the soil at an average depth of 0.5-inches, covered with soil, and firmed to eliminate air pockets around the seeds. Broadcast seeding would be employed only in areas where drill seeding is unsafe or physically impossible. Seed would be applied uniformly over disturbed areas with manually operated cyclone-bucket spreaders, mechanical spreaders, or blowers. Broadcast application rates would be twice that of drill rates. The seed would be uniformly raked, chained, dragged, or cultipacked to incorporate seed to a sufficient seeding depth.

- Complete drill and/or broadcast seeding prior to redistribution of woody material.

- Redistribute large, woody material salvaged during clearing operations on BLM WRFO-administered lands. Disperse materials over the portion of the right-of-way from which the trees and brush were originally removed to meet fire management objectives and to provide wildlife habitat, seedling protection and a deterrent to vehicular traffic. Woody materials dispersed across the right-of-way will not exceed 3 to 5 tons/acre.

- Establish and maintain permanent enclosures on each of the mid- and high-elevation sage grouse habitat intervals. Enclosures would be established as a means of determining the ultimate success of forbs in the reclamation seed mix and would be designed to exclude cattle and wild horses, with dimensions of 100 feet paralleling the right-of-way and a width that spans the fully authorized temporary construction right-of-way width. The location of these structures would be subject to approval of the BLM Authorized Officer. General locations on BLM lands are Meeker-South milepost 23.0 and 24.0 (mid-elevation sage grouse habitat), Meeker-West milepost 12.0 and 13.0 (mid-elevation sage grouse habitat interval), and west of Meeker-West milepost 14.0 (high-elevation sage grouse habitat). The BLM requests that, in the interest of sage grouse conservation, EnCana arrange to establish a similar enclosure on private lands in the Meeker-South high elevation segment south of Meeker-South milepost 22.0.

Finding on the Public Land Health Standard for Plant and Animal Communities

Vegetation communities along the project route have an appropriate age structure and diversity of species that meet the public land health standard. With successful reclamation, the project would not change this status.

WILDLIFE, AQUATIC

Affected Environment

A variety of ephemeral and perennial creeks and streams are present in the project area. Most notable surface waters include Conn Creek, Piceance Creek, East Douglas Creek, West Douglas Creek, Texas Creek, and Missouri Creek. The Proposed Action gas plant site is located 2.1 miles from the nearest aquatic site and the Alternative Action gas plant site is located 0.1 miles east of the nearest aquatic site (Piceance Creek). The Proposed Action pipeline corridor traverses 9 perennial streams, 90 intermittent drainages, and 0.4 miles (7 acres) of wetland and riparian vegetation that may provide aquatic habitat in the project area. The Alternative Action pipeline corridor traverses 9 perennial streams, 95 ephemeral streams, and 0.2 miles (3 acres) of wetland and riparian vegetation that may provide aquatic habitat in the project area.

The CDOW has characterized the fisheries within the project area as having limited sport fishing potential and low resource value (Prenzlow 2004) and East and West Douglas Creeks are classified as native non-game fisheries. Historic livestock use has had marked influence on the suitability of these systems for fish occupation because channel and floodplain characteristics and riparian vegetation are typically sub-optimal in terms of in-stream structure, width/depth relationships, sinuosity, bank stability, and sediment capture (BLM 1994c). Fish populations are poor due to marginal or fluctuating flows and/or degraded aquatic habitat conditions. Water

quality, as evidenced by aquatic invertebrate populations, appears satisfactory in most of these streams (BLM 1994c).

Native fish in Piceance Creek include the speckled dace, flannelmouth sucker, and mountain sucker. Trout are present in Piceance Creek, however, numbers are low (Prenzlow 2004). Irrigation drawdown is a major factor in limiting a suitable fishery on BLM portions of Piceance Creek. Trout and speckled dace are also present in East Douglas Creek. Beaver have intermittently colonized Douglas Creek and portions of West Douglas Creek. The beaver ponds and their lengthy backwaters are exploited by small, but well-distributed breeding populations of mallard, green-winged teal, and spotted sandpiper (BLM 2004c).

Refer to the Threatened, Endangered, and Sensitive Animal Species section for a discussion on the northern leopard frog and Colorado River endangered fishes.

Environmental Consequences of the Proposed Action

Construction of the gas plant would not affect aquatic wildlife. Construction of the pipelines could affect fish and aquatic organisms within waterbodies as a result of increased sedimentation and turbidity, increased streambank erosion, contamination from accidental hazardous material spills or leaks, and water withdrawals and discharges for hydrostatic testing. Clearing, grading, and movement of construction equipment and vehicles would remove vegetative cover exposing soils to the effects of wind, rain, and runoff. The effects would accelerate the erosion process and could result in discharges of sediment to waterbodies and wetlands that could adversely affect water quality and aquatic life habitat. Sedimentation and turbidity impacts would also be caused by in-stream construction. Sedimentation and turbidity impacts associated with in-stream construction would be temporary and limited to the duration of in-stream construction (typically less than 24 hours). Streambank erosion impacts would be short- to long-term depending upon site stabilization and successful reclamation. Fencing would increase the likelihood of successful stabilization and revegetation. Hydrostatic test water appropriation could result in entrapment of aquatic organisms during water withdrawals and a reduced downstream flow rate, and water discharges could result in a change in water temperature and dissolved oxygen levels, increased downstream water flows, and streambank and/or streambed scour. Impacts associated with water withdrawals and discharges for hydrostatic testing would be temporary (several days) until appropriation and discharge are complete. Spills or leaks of hazardous fluids could contaminate surface waters and adversely affect aquatic organisms. The severity of potential impacts would depend upon the chemical released, the quantity released, and the proximity of the release to a waterbody or aquifer.

Environmental Consequences of the Alternative Action

Environmental consequences for construction and operation of the gas plant would be the same as for the Proposed Action, with the exception of the likelihood of sediment discharge into a waterbody, and surface and groundwater contamination from accidental spills or leaks. Sediment discharge into a waterbody, and surface water and groundwater contamination from accidental spills and leaks would be more likely due to the proximity to surface water and alluvial aquifers.

Environmental Consequences of the No Action Alternative

None.

Mitigation

Impacts to aquatic wildlife would be minimized by obtaining and complying with the COE Nationwide Permit 12 conditions and by implementing measures proposed in EnCana's Waterbody Crossing and Wetland Protection Plan (EnCana 2005q), Soil Erosion, Sedimentation, and Erosion Control Plan (EnCana 2005l), and Strength Testing Plan (EnCana 2005o), included in the Plan of Development (EnCana 2005a). EnCana would:

- Install temporary equipment bridges across flowing waterbodies.
- Place topsoil and spoil at least 10 feet away from the waters edge.
- Bury the pipeline at least 5 feet below the bottom of each drainage.
- Cross streams during periods of low flow and complete the crossing within 24 hours, as feasible.
- Install erosion and sediment control measures, as discussed in the Soils section, to prevent the flow of spoil into any waterbodies.
- Maintain erosion and sediment control measures until streambanks and adjacent upland areas are stabilized.
- Reestablish pre-construction bed and bank contours, revegetate streambanks, and install erosion control fabric to stabilize the streambanks.
- Limit construction equipment working in wetlands to that essential for clearing, trench excavation, pipe fabrication and installation, backfilling, and restoration.
- Cut shrubs flush with the surface of the ground.
- Limit stump removal, grading, topsoil segregation, and excavation in wetlands to the area immediately over the trenchline to avoid excessive disruption of soils and the native seed and rootstock within the soils.
- Prohibit storage of hazardous materials, chemicals, fuels, lubricating oils, and concrete coating and refueling activities within 200 feet of any waterbody or wetland.
- Minimize erosion from upland areas by restoring and seeding the project area as discussed in the Vegetation and Soils sections.
- Withdraw and discharge hydrostatic test water in accordance with all applicable permits.

- Test water quality during withdrawal and discharge in accordance with permit stipulations and conditions.

- Utilize screens on the intake hoses at surface water sources to prevent the entrapment of fish or other aquatic species and monitor the appropriation rate to ensure that adequate downstream flow is maintained to support aquatic life.

- Install energy-dissipating devices and/or filter bags to prevent scour, erosion, suspension of sediment, and damage to vegetation. Monitor discharge rates to ensure effectiveness of the energy-dissipating device.

EnCana would also implement the following BLM mitigation measure, which would be incorporated into the Plan of Development:

- Fence riparian areas on BLM-administered lands at Meeker-West milepost 24.5 (East Douglas Creek) and Meeker-West milepost 27.2 (West Douglas Creek). Fence will be installed around the incised banks and channel with a sufficient gap to allow passage of wildlife or livestock up or down the channel.

Finding on the Public Land Health Standard for Plant and Animal Communities

The proposed and alternative projects would not jeopardize the viability of any animal population, and would have no significant consequence on aquatic habitat condition, utility or function, nor have any discernible effect on animal abundance or distribution at any landscape scale. The public land health standard would remain unchanged.

WILDLIFE, TERRESTRIAL

Affected Environment

As described in the Vegetation section, the project crosses eight vegetation communities that support a diversity of wildlife and wildlife habitats. Each of these communities provides nesting, cover, and foraging habitat for a variety of mammal, bird, and reptile species common to northwest Colorado and eastern Utah. Wildlife inhabiting the area, and upon which management emphasis is placed, includes big game (elk and mule deer) and non-game species (raptors).

Refer to the Threatened, Endangered, and Sensitive Animal Species section for a discussion on greater-sage grouse, fringed myotis, spotted bat, Yuma myotis, Townsend's big-eared bat, midget-faded rattlesnake, northern goshawk, and bald eagle.

Elk are adaptable animals and occupy a wide variety of habitats, ranging from semi-desert areas to coniferous forests. Although they may use coniferous forests for cover, elk are commonly found in open areas, meadows, and along forest edges. The summer range typically provides a mixture of open brushy and grassy areas, water sources, and areas of dense forest cover. Grasses and forbs dominate the summer diet. Summer populations typically occur within 0.5-mile of a water source. During winter, most elk move to winter ranges where cover and forage are more available. Some mature bulls stay on summer ranges where the snow depths can reach four feet.

The fall diet is primarily comprised of grass, forbs and some browse, and in winter, the diet shifts to mostly browse and some grasses.

The project area includes a diversity of landforms and community types that are suitable to elk. The mosaic of mountain shrub habitats, aspen woodlands, and open grass habitats provide forage, hiding cover, and parturition habitats.

Mule deer occur throughout the project area. Suitable habitat, including mountain shrub, aspen, and sagebrush habitats, provides mule deer with highly suitable forage and cover for all seasons. During the summer months, the majority of the deer can be found in the mountain shrub community, aspen woodlands, and Douglas fir forests (BLM 1999). During the winter months, after the fall migration from summer range, deer concentrate in pinyon-juniper and sagebrush ranges below 7,400 feet where snow depth and temperatures are more moderate (BLM 1986a). The Piceance Basin has historically supported one of the largest mule deer herds in North America, which has been called the largest migratory herd in the world (BLM 1999). Thousands of deer migrate off the Flat Tops area in the fall, cross Colorado Highway 13, and move into the Piceance Basin. The base population is reported to be 28,000 to 30,000, but deer populations can and have fluctuated greatly, with populations being as great as 85,000.

Raptors inhabit the project area on a year-round basis. Common breeders include the northern harrier, sharp-shinned hawk, Cooper's hawk, Northern goshawk, Swainson's hawk, red-tailed hawk, ferruginous hawk, golden eagle, American kestrel, peregrine falcon, and prairie falcon (Kingery 1998). The project area is within and near a diversity of habitats which may be suitable nesting habitats for these species. Generally, raptors return to areas in which they have nested in the past, often using the same nest sites. Nesting activities are initiated in mid-February to late-April and eggs are laid during March and April. Brooding of eggs continues until eggs hatch, at which point parental care of the nestlings occurs until the young fledge. Nest occupation continues until chicks are fledged, which usually occurs from early June to mid-August.

Although raptor nesting is expected to occur in suitable habitats near the project area, no raptor nests, active or inactive, were observed during vegetative mapping surveys conducted between August and December 2004 (Greystone 2004 and 2005).

The Proposed Action gas plant site is comprised of 50 acres of pinyon-juniper woodland. The Proposed Action pipeline corridor passes through 34.1 miles of pinyon-juniper woodland community (515 acres) (including 20.5 miles (301 acres) of mature pinyon-juniper), 12.5 miles (208 acres) of mountain shrub community, 35.6 miles (511 acres) of sagebrush steppe community, 0.2 miles (3 acres) of mature Douglas fir community, 5.4 miles (95 acres) of mature aspen woodland community, 3.6 miles (59 acres) of grass and forb community, 0.4 miles (7 acres) of riparian and wetland community, and 1.1 miles (13 acres) of disturbed soil. The Douglas fir and aspen woodlands are located adjacent to the existing corridor, 16.7 miles (245 acres) of mature pinyon-juniper are located adjacent to the existing corridor, and the remaining 3.8 miles (56 acres) of mature pinyon-juniper are bisected by the pipeline where the pipeline corridor deviates from the existing corridor.

The gas plant site is located within overall range, winter range and severe winter range for mule deer. It is in an area used extensively by deer during the winter months, with the heaviest use occurring from September through February, at which time the greatest mortality occurs (not including harvest) (BLM 1999). Mule deer habitat is located throughout the pipeline corridor, including 573 acres of mule deer summer range, 928 acres of mule deer winter range, 20 acres of mule deer critical winter range, and 290 acres of mule deer severe winter range. Habitat is present along the entire Meeker-South pipeline corridor between mileposts 0.0 to 44.5, with summer range present between mileposts 6.4 and 29.6, winter range present from mileposts 0.0 to 6.4 and 29.3 to 44.5, winter concentration areas between mileposts 0.0 and 5.7, and severe winter range located from mileposts 0.0 to 5.6 and 34.5 to 44.5. Habitat is present along the entire Meeker-West pipeline from mileposts 0.0 and 47.5, with summer range present between mileposts 6.3 and 18.2, winter range present from mileposts 0.0 to 12.2 and 18.2 and 46.2, severe winter range present between mileposts 0.0 and 2.9, and critical winter range present between mileposts 46.2 and 47.8.

The gas plant site is located within winter range for elk. Elk habitat, including 558 acres of elk summer range, 1172 acres of elk winter range, 224 acres of elk winter concentration, and 20 acres of substantial value elk winter range, is present throughout the pipeline corridor. Habitat is present along the Meeker-South pipeline corridor between mileposts 2.94 and 44.5, with summer range located between mileposts 6.9 to 29.6, winter range from mileposts 2.9 and 10.9 and mileposts 22.3 and 44.5, and winter concentration areas between mileposts 22.3 and 30.1. Habitat is present along the entire Meeker-West pipeline corridor between mileposts 0.0 and 47.5, with summer range between mileposts 6.3 and 17.8, winter range between mileposts 0.0 and 46.2, and substantial value winter range between mileposts 46.2 and 47.8.

Raptor foraging habitat is located at the gas plant site and raptor nesting and foraging habitat is located along the pipeline corridor.

The Alternative Action gas plant site is comprised of 50 acres of grass and forb vegetation community. The Alternative Action pipeline corridor crosses 35.6 miles (536 acres)of pinyon-juniper woodland community (including 22.4 miles (336 acres) of mature pinyon-juniper), 12.5 miles (208 acres) of mountain shrub community, 31.4 miles (444 acres) of sagebrush steppe community, 0.2 miles (3 acres) of mature Douglas fir community, 5.4 miles (95 acres) of mature aspen woodland community, 2.6 miles (42 acres) of grass and forb community, 0.2 miles (3 acres) of riparian and wetland community, and 1.0 miles (12 acres) of disturbed soil. The Douglas fir and aspen woodlands are located adjacent to the existing corridor, 17.4 miles (264 acres) of mature pinyon-juniper are located adjacent to the existing corridor, and the remaining 5.0 miles (72 acres) of mature pinyon-juniper woodlands are bisected by the pipeline where the pipeline corridor deviates from the existing corridor.

The gas plant site is located within winter range and severe winter range for mule deer. Mule deer habitat, including 573 acres of mule deer summer range, 861 acres of mule deer winter range, 20 acres of mule deer critical winter range, and 253 acres of mule deer severe winter range, is located throughout the pipeline corridor. Habitat is present along the entire Meeker-South pipeline corridor between mileposts 0.0 to 44.5, with summer range present between mileposts 6.44 and 29.6, winter range present from mileposts 0.0 to 6.4 and 29.3 to 40.3, winter

concentration areas between mileposts 0.0 and 5.7, and severe winter range located from mileposts 0.0 to 5.6 and 34.5 to 40.3. Habitat is present along the entire Meeker-West pipeline from mileposts 0.0 and 48.5, with summer range present between mileposts 7.4 and 19.3, winter range present from mileposts 0.0 to 13.3 and 19.3 and 47.0, severe winter range present between mileposts 0.0 and 5.0, and critical winter range present between mileposts 47.0 and 48.5.

The gas plant site is located within winter range for elk. Elk habitat, including 558 acres of elk summer range, 1105 acres of elk winter range, 224 acres of elk winter concentration, and 20 acres of substantial value elk winter range, is present throughout the pipeline corridor. Habitat is present along the Meeker-South pipeline corridor between mileposts 2.94 and 40.3, with summer range located between mileposts 6.9 to 29.6, winter range from mileposts 2.9 to 10.9 and mileposts 22.3 to 40.3, and winter concentration areas between mileposts 22.3 and 30.1. Habitat is present along the entire Meeker-West pipeline corridor between mileposts 0.0 and 48.7, with summer range between mileposts 7.4 and 18.9, winter range between mileposts 0.0 and 47.0, and substantial value winter range between mileposts 47.0 and 48.5.

Raptor nesting habitat does not occur at the gas plant site, but foraging habitat is present. Nesting and foraging habitat is present along the pipeline corridor.

Environmental Consequences of the Proposed Action

Impacts associated with construction and operation of the gas plant would occur for the life of the project, resulting in a long-term adverse effect on big game. In addition to the loss of severe winter range, operation and maintenance of the gas plant would result in increased activities and noise levels in and around the plant site. These activities may negatively impact big game through displacement or behavioral avoidance. Off-site habitat enhancement, as mitigated, would provide alternative areas for big game displaced by the development. Increased interaction near humans and motor vehicles could result in mortalities from collisions with motor vehicles or poaching; impacts would be for the life of the project.

Impacts on wildlife species and their habitats would vary depending on the requirements of each species and the existing habitat present along the proposed pipeline route. Construction activities could affect wildlife through disturbance, displacement, and mortality. The primary impact to wildlife would be the cutting, clearing, and/or removal of existing vegetation and the resulting loss of cover, nesting, and forage habitat. The degree of impact would depend on the type of habitat affected and the rate that vegetation would regenerate after construction. Herbaceous vegetation would be likely to reestablish within 1 to 2 years and big sagebrush dominated communities would likely return to their pre-construction aspect within 20 to 75 years. Mountain shrub communities would likely take at least 50 years and pinyon-juniper woodlands would take up from 100 to 300 years to return to pre-construction conditions. Clearing activities would also result in the displacement of wildlife from areas on or adjacent to the proposed pipeline route. This habitat loss could cause crowding in adjacent habitat and result in reduced productivity and increased stress-related mortality. Reproductive success and nutritional condition could decrease due to increased energy expenditures that result from physical response to disturbance. Displaced animals may relocate into similar habitats nearby; however, the lack of adequate territorial space could increase intra- and inter-specific competition and could lower reproductive success and survival. Construction through big game winter ranges could force animals out of the designated

ranges and into less suitable habitats. Displacement would likely be a temporary impact and animals would likely return to the disturbance area after construction activities are complete. Increased interaction near humans and motor vehicles could result in mortalities from collisions with motor vehicles or poaching; impacts would be for the life of the project. Wildlife could become trapped in the trench and could become stranded across the open trench. Impacts would be limited to construction, and would be minimized by installing wildlife crossover (trench plugs) across the open trench at designated locations.

Big game impacts associated with road density and use (i.e., behavioral avoidance and habitat disuse; increased energetic demands) received prominent address in the White River ROD/RMP. Vegetation clearing and grading of right-of-way tend to promote subsequent recreational vehicle use and result in unintended expansions of road and trail networks unless physical deterrents are employed. BLM's objective in controlling the proliferation of unauthorized roads and trails on big game ranges (within context of the ROD/RMP) is to stabilize existing road density. By implementing suggested mitigation (i.e., effective vehicle deterrents and rehabilitation) on newly constructed or redeveloped rights-of-way, the Proposed Action would yield no net increase in road density on Piceance Basin's big game winter range extent. The benefits associated with stabilized road density would include maintaining current levels of chronic road density-related influences (i.e., avoidance and disuse of adjacent forage and cover resources) on local big game winter ranges and aiding successful reclamation.

Environmental Consequences of the Alternative Action

Construction of the gas plant would result in the loss of 50 acres of grass and forb vegetative community for the life of the project. Environmental consequences would be the same as discussed for the Proposed Action.

Environmental Consequences of the No Action Alternative

None.

Mitigation

Impacts to wildlife would be minimized by implementing measures proposed in EnCana's Biological Resources Protection Plan (EnCana 2005b) and Reclamation Plan (EnCana 2005j), included in the Plan of Development (EnCana 2005a). EnCana would:

- Install wildlife crossovers (trench plugs), with ramps on either side of the open trench, at maximum 1-mile intervals and at well-defined livestock and wildlife trails to facilitate passage of big game across the right-of-way and to prevent wildlife from becoming trapped in the trench.

- Seed disturbed areas as discussed in the Vegetation section.

EnCana would also implement the following BLM mitigation measures, which would be incorporated into the Plan of Development:

- Conduct pre-construction nesting raptor surveys each spring prior to construction. BLM-approved biologists would be required to meet with BLM biologists prior to initiating surveys and would conduct the surveys using BLM survey protocols.

  - Surveys would be conducted in suitable nesting habitat (mature pinyon-juniper woodland) for all accipiter species in Colorado. In areas where the proposed pipeline corridor parallels existing disturbance, surveys will be conducted 300 feet from the edge of the right-of-way. In areas where the proposed right-of-way does not parallel an existing disturbance (i.e., a deviation), surveys would be conducted within 2000 feet from the edge of the right-of-way for the portion of pinyon-juniper habitat being dislocated from the stand by the pipeline corridor and 300 feet from the edge of the right-of-way for the stand portion of the habitat. Surveys would be completed when the birds are either on eggs or when chicks are present. Construction activities would be prohibited within 0.25-miles of active nests between April 15th and August 15th in Colorado, or until fledging and dispersal of the young.

  - Surveys would be conducted in suitable nesting habitats within 1-mile of the proposed project for cliff nesting species in Colorado. Construction activities would be prohibited within 0.25-miles of active nests between February 1st and August 15th in Colorado, or until fledging and dispersal of the young.

  - Surveys would be conducted in Utah by BLM approved biologists using BLM survey protocols. Timing restrictions and buffer zones for raptors in Utah are species-specific and would be determined after surveys are completed.

- Prohibit construction activities in critical mule deer winter range and substantial value elk winter range in Utah between November 1st and April 1st.

- Prohibit construction activities in severe/critical mule deer and elk winter range in Colorado between December 1st and April 30th.

- Commit to off-site mitigation to rectify the loss of approximately 50 acres of mule deer severe winter range due to construction of the gas plant. The basis of the off-site habitat improvement will be that for every acre physically disturbed within the gas plant location, 2.5 acres of off-site habitat improvement will be implemented to compensate for direct and indirect impacts. Off-site habitat enhancements may take a variety of forms, which will be determined through consultation with the BLM and CDOW. It is the intent of CDOW and BLM to design this mitigation work as close to the development site as possible to provide the most benefit for wintering mule deer displaced by the development. Off-site habitat improvements related to the gas plant will be implemented in the amount indicated by the 2.5X multiplier. The cost of these improvements shall be capped at a maximum average value of $300.00 per acre

- Redistribute large, woody material salvaged during clearing operations on BLM WRFO-administered lands. Disperse materials over the portion of the right-of-way from which the trees and brush were originally removed to meet fire management objectives and to provide

wildlife habitat, seedling protection and a deterrent to vehicular traffic. Woody materials dispersed across the right-of-way will not exceed 3 to 5 tons/acre. Excess woody materials may be mulched or made available for firewood or fenceposts.

Finding on the Public Land Health Standard for Plant and Animal Communities

The project would not jeopardize the viability of any animal population. It would not have any significant impacts on terrestrial habitat condition, utility, or function, nor have any discernible effect on animal abundance or distribution at any landscape scale. The project would not affect the achievement of the public land health standard.

OTHER NON-CRITICAL ELEMENTS

For the following elements, only those brought forward for analysis will be addressed further.

Non-Critical Element	Not Present	Applicable or Present, No Impact	Applicable and Present, Brought Forward for Analysis
Access and Transportation			X
Cadastral Survey		X	
Fire Management			X
Forest Management			X
Geology and Minerals			X
Hydrology/Water Rights			X
Law Enforcement		X	
Noise			X
Paleontology			X
Rangeland Management			X
Realty Authorizations			X
Recreation			X
Socioeconomics			X
Visual Resources			X
Wild Horses			X

ACCESS AND TRANSPORTATION

Affected Environment

The project area is accessed primarily by existing gravel and dirt roads. Interstate 70 and Colorado State Highway 64 are the major east-west arterials and Colorado State Highway 139 and Colorado State Highway 13 are the major north-south arterials within the project area. From Interstate 70, Garfield County Road 204 (Roan Creek Road) would be the main access to the southern end of the project and from Highway 139, Rio Blanco County Roads 27 (East Douglas Creek Road) and 116 (Little Horse Draw Road) would be the main access to the western portion of the project. From Highways 64 and 13, Rio Blanco County Road 5 (Piceance Creek Road) would be the main access to the central portion of the project.

Numerous unsurfaced BLM, county, and private roads provide additional access from the main access roads. The majority of these roads are used by recreationists, local ranchers, and oil and gas operators. BLM roads that could be used to provide access to the project area include 1000,

1008, 1008A, 1000B, 1009, 1009A, 1011, 1179, 1179A, 1189, 1187, 1246, 1250, 1251, and 1064.

Average daily traffic numbers complied from the Colorado Department of Transportation (CDOT) and the Garfield and Rio Blanco Counties Road and Bridge Departments for major roads that would access the project are presented in Table 4-24.

Table 4-24 Baseline Traffic Data for Project Area

Name of Road	Baseline Average Daily Traffic[1]
Colorado Highway 13 between Rifle and Rio Blanco County (RBC) 5	2,309
Colorado Highway 13 between RBC 5 and Colorado Highway 64	2,767
Colorado Highway 64 between Meeker and RBC 5	722
Colorado Highway 64 between RBC 5 and Colorado Highway 139	1,489
Colorado Highway 139 at Garfield/Rio Blanco County Line	803
Rio Blanco County Road 5 (Piceance Creek Road)	294
Garfield County Road 204 (Roan Creek Drive)	337

[1] Source: CDOT 2003, Garfield County Road and Bridge 2002, and Rio Blanco County Road and Bridge 2002.

Unless otherwise designated, off-highway vehicle (OHV) use is limited to existing travel routes in the BLM WRFO between October 1st and April 30th each year to protect wildlife resources (BLM 1997). OHV use is limited to designated roads and trails in the Canyon Pintado NHP and the Ryan Gulch ACEC. OHV use is limited to existing roads in the BLM GJFO (BLM 1987). OHV use is open to travel in the BLM VFO (Bartel 2004).

Access to the Proposed Action gas plant would be via Colorado State Highway 13 or 64 to Rio Blanco County Road 5. From Rio Blanco County Road 5, access is from an existing paved road constructed by American Soda. Access to the Alternative Action gas plant is also off of Rio Blanco County Road 5. Rio Blanco County Road 5 would be widened to include a turn lane to the alternative plant site. Access roads to the pipeline corridor are discussed above.

Environmental Consequences of the Proposed Action

Construction of the plant would result in an estimated 50 additional roundtrips per day for workers and an estimated 5 to 50 roundtrips per day for delivery of materials and supplies. Operation of the gas plant would increase traffic volume by an estimated 10 roundtrips per day. Construction of the pipelines would result in an estimated 100 additional commuter roundtrips per day per spread from communities in the region. Construction of the pipelines and gas plant would have the most impact on Rio Blanco County Road 5. Average daily traffic could double from baseline levels of 294 vehicles per day to an estimated maximum of 547 to 592 vehicles per day during construction. The number of roundtrips is highly variable based on construction phase. Traffic would peak during stringing and welding phases of the pipelines and initial material and supply delivery for construction of the gas plant.

Influx of construction workers and delivery of construction equipment and materials to the project area could result in traffic congestion and roadside parking hazards. Increased traffic on unsurfaced roads could increase particulate dust and damage the road surface, and increased

traffic on surfaced roads could damage pavement and road base. Transportation impacts would be temporary. Access along the pipeline right-of-way could increase accessibility for OHV use in restricted, previously inaccessible, and/or environmentally sensitive areas. Impacts would be long-term, but would be minimized with appropriate mitigation measures.

Environmental Consequences of the Alternative Action

Traffic loads would be the same as described above. Environmental consequences would be the same as discussed for the Proposed Action.

Environmental Consequences of the No Action Alternative

None.

Mitigation

Impacts to transportation and roads would be minimized by implementing proposed measures in EnCana's Plan of Development (EnCana 2005a), including the Fugitive Dust Control Plan (EnCana 2005g), Reclamation Plan (EnCana 2005j), and Transportation Management Plan (EnCana 2005p). EnCana would:

- Begin and end construction activities after the average workday, as practical, to minimize traffic congestion impacts to the public.
- Use the construction yards as the primary parking area for personal vehicles. Transport the majority of pipeline construction workers to the construction right-of-way by buses provided by the contractor.
- Install pipelines across county roads in accordance with Rio Blanco County, Garfield County, and Uintah County road crossing permits. County roads would be bored if paved and open-cut if unsurfaced, pending approval by county road engineers. Private roads would be crossed by the open-cut method.
- Comply with county and state weight restrictions and limitations.
- Control dust along unsurfaced access roads and minimize tracking of soil onto paved roads, as discussed in the Air Quality section.
- Maintain unsurfaced roads during construction of the project.
- Restore unsurfaced roads to equal or better condition than pre-construction levels after construction is complete.
- Repair damage on paved roads at pipeline crossings.

EnCana would also implement the following BLM mitigation measure, which would be incorporated into the Plan of Development:

- Develop measures to control unauthorized OHV use with the BLM and interested fee-landowners. Measures would include leaving the right-of-way in a roughened state and scattering vegetative debris across the surface, placing dirt berms, rock, or vegetative barriers at intersections with existing roads, and randomly placing boulders, logs, and stumps across the right-of-way to discourage OHV use. EnCana would be responsible for purchasing and installing OHV signage developed by the BLM WRFO.

EnCana would continue project discussion with the Rio Blanco County Road and Bridge Department and develop measures, as necessary, to mitigate impacts on Rio Blanco County Road 5.

FIRE MANAGEMENT

Affected Environment

Public lands are managed under four fire management units (polygons) which define the appropriate management response. The project crosses through polygon B, C, and D areas.

Wildland fire is not desired in *polygon B* areas, and unplanned ignition could have negative effects on the ecosystem without mitigation. Fire suppression is aggressive. Negative effects include risk to private lands and urban interfaces, important cultural resources, areas with unnatural fuel buildups, and areas where the seed bank does not exist for natural reseeding. Mitigation measures include fuel reduction through mechanical means or prescribed fire to reduce fuel loading around private lands and urban interfaces, creation of agreements to allow fire to cross from public lands to private lands, cultural resource inventories, and preparation of rehabilitation plans prior to a fire event. Wildland fire is desired in *polygon C* areas, but there may be social, political, or ecological constraints that must be considered (i.e., air quality, threatened or endangered species, or habitat). Significant prescribed burning would be expected in these areas for public and firefighter safety as well as to help attain desired resource/ecological conditions. Fire is desired in *polygon D* areas and there are few to no constraints to its use. These areas offer the greatest opportunity to take advantage of the full range of options available for managing fire under appropriate management responses.

The Proposed Action gas plant is located on 49 acres of polygon B6 Yellow Creek (Arch) and less than 1 acre of C6 Lower Piceance Basin. The Proposed Action pipeline would cross 1100 acres of fire management polygons as depicted in Table 4-25.

Table 4-25 Fire Management Polygon Disturbance for Proposed Action

Polygon Name	Disturbance (acres)
B-01 Upper Debeque	42.1
C6 Lower Piceance Basin	139.2
C3 Spring Creek/Big Ridge	85.5
B6 Yellow Creek (Arch)	120.2
C4 Rabbit Mountain/Dragon Trail	13.4
B5 Douglas Creek Oil and Gas	161.2
D5 Cathedral Bluff/Roan Plateau	386.5

Table 4-25 Fire Management Polygon Disturbance for Proposed Action

Polygon Name	Disturbance (acres)
D4 Little Hills	2.2
B7 Piceance Creek	71.9
C7 Evacuation Creek/Missouri Creeks	58.4

The Alternative Action gas plant is located on fee-lands, and would not cross any fire management polygons. The Alternative Action pipeline corridor would cross 1105 acres of fire management polygons as depicted on Table 4-26.

Table 4-26 Fire Management Polygon Disturbance for Alternative Action

Polygon Name	Disturbance (acres)
B-01 Upper Debeque	42.1
C6 Lower Piceance Basin	115.2
C3 Spring Creek/Big Ridge	85.5
B6 Yellow Creek (Arch)	140.6
C4 Rabbit Mountain/Dragon Trail	13.4
B5 Douglas Creek Oil and Gas	161.2
D5 Cathedral Bluff/Roan Plateau	386.5
D4 Little Hills	2.2
B7 Piceance Creek	71.9
C7 Evacuation Creek/Missouri Creeks	58.4

Environmental Consequences of the Proposed Action

Construction of the project could restrict use of wildland fires to achieve land or resource management objectives for the vegetation communities in and around the project area. Impacts would be temporary and limited to the construction period. Alternatively, fires started accidentally during construction could adversely affect land or resource management objectives for the vegetation communities in and around the project area. Vegetative removal and soil disturbance could provide an opportunity for noxious weeds and cheatgrass to invade the construction right-of-way, which could increase fire frequency and intensity. The gas plant would be designed with sufficient defensible space and would not likely impact any fire management goals.

Environmental Consequences of the Alternative Action

Environmental consequences would be the same as discussed for the Proposed Action.

Environmental Consequences of the No Action Alternative

None.

Mitigation

Accidental fires and cheatgrass infestations would be minimized by implementing measures proposed in EnCana's Fire Prevention and Suppression Plan (EnCana 2005f), Noxious Weed

Management Plan (EnCana 2005h), and Reclamation Plan (EnCana 2005j), included in the Plan of Development (EnCana 2005a). EnCana would:

- Equip construction equipment operating with internal combustion engines with approved spark arresters.
- Carry fire-fighting equipment (long-handled round-point shovel and dry chemical fire extinguisher) on motor vehicles and equipment.
- Take immediate action to suppress accidental fires.
- Control noxious weeds as discussed in the Invasive, Non-Native Species section.
- Seed disturbed areas as discussed in the Vegetation section.

EnCana would also implement the following BLM mitigation measures, which would be incorporated into the Plan of Development:

- Create defensible space around the gas plant site and any aboveground appurtenances in accordance with Colorado Firewise guidelines (www.firewise.com).
- Construct new powerlines with defensible space. Defensible space should be achieved through an ecologically and aesthetically pleasing manner with thinning and mulching of trees and brush instead of removing all vegetation.
- Redistribute large, woody material salvaged during clearing operations on BLM WRFO-administered lands. Disperse materials over the portion of the right-of-way from which the trees and brush were originally removed to meet fire management objectives and to provide wildlife habitat, seedling protection and a deterrent to vehicular traffic. Woody materials dispersed across the right-of-way will not exceed 3 to 5 tons/acre. Excess woody materials may be mulched or made available for firewood or fenceposts as discussed for BLM GJFO-administered land in the Vegetation section.

FORESTRY MANAGEMENT

Affected Environment

Forestry management is divided into Timberland Management and Woodland Management in the BLM WRFO (BLM 1997) and Pinyon-Juniper Woodlands and Commercial Forest Land in the BLM GJFO (BLM 1987). Pinyon-juniper woodlands consist of lands that are predominated by pinyon-juniper and gambel oak. Timberlands and commercial forest lands consist of trees predominated by Douglas fir, spruce fir, lodgepole pine and aspen. Pinyon-juniper woodlands in the project area are typically harvested for firewood, Christmas trees, and fenceposts. Timberlands and forestlands are typically harvested for firewood, lumber, timbers, and transplants.

Douglas fir, pinyon-juniper, and aspen woodlands are located along the project route, and pinyon-juniper woodlands are located on lands administered by the BLM WRFO and GJFO. There are no woodlands located along the VFO portion of the route. The Proposed Action gas plant site is located on 50 acres of pinyon-juniper woodland, and the Proposed Action pipeline corridor traverses 0.8 miles (11 acres) of pinyon-juniper woodlands on lands administered by the BLM GJFO and 29.9 miles (480 acres) of pinyon-juniper woodlands on lands administered by the BLM WRFO. No woodlands are located at the Alternative Action gas plant site. The Alternative Action pipeline corridor traverses 0.8 miles (11 acres) of pinyon-juniper woodland on lands administered by the BLM GJFO and 31.3 miles (500 acres) of pinyon-juniper woodland on lands administered by the BLM WRFO.

Environmental Consequences of the Proposed Action

Construction activities would remove wildlife and nesting habitat (as discussed in the Threatened, Endangered, and Sensitive Species, Wildlife and Wildlife, Terrestrial sections) and fencepost and firewood harvest area. Impacts would be long-term until woodlands revegetate successfully.

Environmental Consequences of the Alternative Action

Environmental consequences would be the same as discussed for the Proposed Action.

Environmental Consequences of the No Action Alternative

None.

Mitigation

Impacts to woodlands would be minimized by implementing measures proposed in EnCana's Plan of Development (EnCana 2005a) and Reclamation Plan (EnCana 2005j). EnCana would:

- Seed disturbed areas as discussed in the Vegetation section.

EnCana would also implement the following BLM mitigation measures, which would be incorporated into the Plan of Development:

- Acquire a Fuel Woods Permit and compensate the BLM for trees.

- Make timber available to the public for firewood or fenceposts on BLM GJFO-administered lands. De-limb the wood, cut in 4- to 8-foot lengths, and stockpile on the right-of-way or within approved temporary use areas at points where the right-of-way crosses access roads.

- Redistribute large, woody material salvaged during clearing operations on BLM WRFO-administered lands. Disperse materials over the portion of the right-of-way from which the trees and brush were originally removed to meet fire management objectives and to provide wildlife habitat, seedling protection and a deterrent to vehicular traffic. Woody materials dispersed across the right-of-way will not exceed 3 to 5 tons/acre. Excess woody materials may be mulched or made available for firewood or fenceposts as discussed for BLM GJFO-administered lands in the Vegetation section.

GEOLOGY AND MINERALS

Affected Environment

The project area is located within Colorado Plateau physiographic province (Fenneman 1931). The majority of the project area is located within the Piceance Basin, which is a broad, asymmetrical, southeast-northwest structural and topographic basin (BLM 1999). The western portion of the project area is located in the Uinta Basin, which is structurally separated from the Piceance Basin by the Douglas Arch. The surficial geology in the project area is characterized by unconsolidated Quaternary alluvium and Tertiary sedimentary deposits consisting of the Wasatch and Uinta Formations and the Douglas Creek and Parachute Creek members of the Green River Formation (Tweto 1979).

Unconsolidated Quaternary sediments consisting of Holocene alluvium and Pliestocene terrace deposits are found in river bottoms and dry washes. Alluvial floodplain deposits consist of silt, sand, and gravel and alluvial fan deposits consist of angular sandstone and marlstone boulders and pebbles mixed with silts and sands. Outcrops of the Uinta Formation occur throughout most of the Piceance Basin and consist of sandstones with interlayered sequences of siltstones and marly siltstones (BLM 1999a). Parachute Creek is the upper member of the Green River Formation and is comprised of marlstone and lean to rich oil shale, some of which contains nahcolite, halite, and nahcolitic halite. Douglas Creek is the lowest member of the Green River Formation and contains sandstone, siltstone, marlstone, algal limestone, and some lean, clay-rich oil shale. The Green River Formation rests conformably on top of the Wasatch Formation, and at the top of the Parachute Creek Member, tongues of the Green River Formation are interfingered with the lower part of the Uinta Formation (BLM 1999). The Wasatch Formation is the thickest Tertiary unit in the Piceance Creek Basin. The Wasatch formation is undivided in the northern portion of the basin and is subdivided into the Shire, Molina, and Atwell Gulch members in the southern and eastern portion of the basin (BLM 1999). The Shire Member has variegated sandstones, siltstones, and claystones. The Molina Member is dominated by massive, cross-stratified sandstone and the Atwell Gulch Member is composed of variegated siltstone and sandstone.

Mineral resources in the Piceance Basin include oil, gas, and oil shale deposits, saline minerals, and sand and gravel deposits. No active mineral areas are crossed by the project route.

The project route does not cross any known areas with active faults, seismic activity, or soil liquefaction. Instability of soil and bedrock in areas of steep slopes is a geologic hazard in the project area.

Most of the exposed strata near the Proposed Action gas plant site are light brown sandy units of the Uinta Formation. There are no outcrops at the plant site. The proposed gas plant site is located on federal sodium lease COC-118329 for which American Soda currently holds an approved sodium mining plan. The gas plant location is northwest of the identified mining zones in the approved mine plan. It is also located on federal oil and gas leases COC-061715 and COC-062805. The Alternative Action gas plant site is located on unconsolidated Quaternary sediments.

Environmental Consequences of the Proposed Action

Natural topographic slope and contours could be temporarily altered by grading activities necessary to provide a safe and level working surface for construction activities. Blasting in areas with hard bedrock could cause noise and increase dust. Construction of the pipeline over or near mineral resources could affect future production by restricting activities within the pipeline right-of-way. Potential impacts include diminished mineral land value, loss of mineral land access, and loss of revenues generated by future mineral development. Impacts of seismic activity and soil liquefaction on the pipeline would depend on the severity of the fault activity. Construction activities could affect soil structure, bulk density, and subsurface water flows that could affect slope stability and result in landslides. Slope stability is the most likely impact from construction of the proposed project. Impacts would be temporary to long-term until the disturbed areas is successfully stabilized and revegetated. Construction of the gas plant and pipelines would increase transportation and production capacity and would likely act as a stimulus to additional development of gas reserves in Northern Colorado. Increased production would allow additional gas and NGL to enter the marketplace and help satisfy consumer demand.

Environmental Consequences of the Alternative Action

Environmental consequences would be the same as discussed for the Proposed Action.

Environmental Consequences of the No Action Alternative

None.

Mitigation

Impacts would be minimized by implementing measures proposed in EnCana's Blasting Plan (EnCana 2005c), Reclamation Plan (EnCana 2005j), and Soil Conservation, Erosion, and Sedimentation Control Plan (EnCana 2005l), included in the Plan of Development (EnCana 2005a). EnCana would:

- Minimize effects of blasting and ensure public safety during blasting operations.
- Restore pre-construction contours and natural runoff and drainage patterns after construction activities are complete.
- Install temporary and permanent erosion control measures to control erosion and sediment transport as discussed in the Soils section.
- Seed disturbed areas as discussed in the Vegetation section.

HYDROLOGY AND WATER RIGHTS

Affected Environment

The project area is located within the Colorado River Basin and the Green River Basin. The White River Basin is a sub-basin to the Green River Basin and the Lower Colorado River Basin is a sub-basin to the Colorado River Basin. The project area is located within the Roan Creek,

Parachute Creek, Piceance Creek, East and West Douglas Creeks, and Evacuation Creek watersheds. The Roan Creek and Parachute Creek watersheds discharge into the Colorado River and the remaining watersheds discharge into the White River. The Proposed Action pipeline corridor crosses 9 perennial streams and 90 intermittent drainages and the Alternative Action pipeline corridor crosses 9 perennial streams and 95 intermittent drainages.

Two perennial springs with BLM water rights are located within 0.25-miles of the project area. Spring 172 is located in the Piceance Creek watershed and spring 174-73 is located in the Douglas Creek watershed. Spring 172 is located 0.2 miles east of the Meeker-South pipeline corridor in T3S R97W S14 and spring 174.73 is located 0.2 miles south of the Meeker-West pipeline corridor in T2S R100W S26. The springs are located near Meeker-South milepost 31.0 and Proposed Action Meeker-West milepost 17.2 (Alternative Action milepost 18.3).

Refer to the Water Quality, Surface and Ground section for a discussion on water quality in the project area.

Environmental Consequences of the Proposed Action

None.

Environmental Consequences of the Alternative Action

None.

Environmental Consequences of the No Action Alternative

None.

Mitigation

None.

NOISE

Affected Environment

Existing noise levels along the project route are representative of rural conditions and are expected to be between 35 and 45 decibels (BLM 1985b), except near county roads where noise levels are likely between 55 and 65 decibels (BLM 2004b). Noise sources in the project area are primarily natural, such as wind, but additional noise comes from aircraft, traffic on county roads, operation of compressor stations, and natural gas drilling and production areas.

The BLM has not established noise standards for the project area. The Colorado Oil and Gas Conservation Commission (COGCC) has established regulatory limits for natural gas facilities (including pipeline installation and maintenance) in residential areas at 55 decibels between 7:00 am to 7:00 pm and 50 decibels between 7:00 pm and 7:00 am. The limit in industrial areas is at 80 decibels between 7:00 am to 7:00 pm and 75 decibels between 7:00 pm and 7:00 am. The Rio Blanco County Land Use Regulations have established limits of 65 decibels at the edge of the property.

Environmental Consequences of the Proposed Action

Noise levels would increase near the project area during construction activities. Project-related vehicle traffic and heavy equipment operation would generate noise during construction of the gas plant and pipelines. Operation of the pipelines would not result in any noise impacts. Noise sources from operation of the gas plant would include compressors and turbine engines. Operation of the gas plant would generate noise 24 hours per day for the life of the project. Impacts from construction activities would be localized and temporary. Impacts from operation of the gas plant would be long-term, for the life of the project.

Environmental Consequences of the Alternative Action

Environmental consequences would be the same as for the Proposed Action.

Environmental Consequences of the No Action Alternative

None.

Mitigation

Construction-related noise would be minimized by muffling all vehicles and construction equipment and limiting construction activities to daylight hours as much as possible to avoid impacts to the public. Operational impacts would be minimized by installing hospital-grade mufflers on compressor engines and by designing the gas plant to meet state and Rio Blanco County noise regulations.

PALEONTOLOGY

Affected Environment

Fossils, including invertebrates such as insects and ammonites, and a wide variety of vertebrates such as fish, mammals, and reptiles are known to occur in the Piceance Basin (BLM 1994c). Geologic formations have been classified to indicate the likelihood of significant fossil occurrence (usually vertebrate fossils of scientific interest). Condition I areas are known to contain vertebrate fossils or noteworthy occurrence of invertebrate or plant fossils, Condition II areas are exposures of geologic units or settings that have high potential to contain vertebrate fossils or noteworthy occurrence of invertebrate or plant fossils, and Condition III areas are very unlikely to produce vertebrate fossils or noteworthy occurrence of invertebrate or plant fossils.

Condition I and II formations with outcrops along the project route include the Mesaverde Group, and the Wasatch, Green River, and Uinta Formations.

A literature review was conducted along the project route and a pedestrian survey was conducted along the route at Class I and Class II formations where bedrock exposures were present. Approximately 81 miles of the 93-mile Proposed Action pipeline corridor and 85 miles of the 89-mile Alternative Action pipeline corridor have been inventoried. Areas requiring inventory are presented in Table 4-27. These segments were not inventory because the pipeline corridor was modified after the ground surface was covered with snow. These areas will be surveyed after snowmelt. No construction activities will occur until approved in writing by the BLM Authorized Officer.

Table 4-27 Areas Requiring Paleontological Inventories

Location	Proposed Action Mileposts	Alternative Action Mileposts
T2S R97W Section 4 T1S R97W Sections 33 and 28	Meeker-South mileposts 40.3 to 42.6	N/A
T1S R97W Section 19 T1S R98W Sections 24, 25, 36, 35 and 34 T2S R98W Sections 3 and 4	Meeker-West mileposts 0.0 to 5.7	N/A
T2S R101W Sections 36 and 35	Meeker-West mileposts 23.2 to 24.7	Meeker-West mileposts 24.2 to 25.7
T2S R101W Section 32	Meeker-West mileposts 27.7 to 28.8	Meeker-West mileposts 28.6 to 29.7
T2S R102W Section 35	Dragon Trail Lateral from Meeker-West milepost 31.0 into the Dragon Trail Plant	Dragon Trail Lateral from Meeker-West milepost 31.9 into the Dragon Trail Plant
T3S R103W Sections 11, 10, and 9	Meeker-West mileposts 38.5 to 40.0	Meeker-West mileposts 39.3 to 40.8

Inventory of the pipeline corridor resulted in the identification of 40 new fossil localities. The majority of the localities yielded fragmentary plants remains. Vertebrate fossils were discovered at three locations and well-preserved insect fossils were discovered in the Parachute Creek Member of the Green River Formation. None of the localities or fossils documented are considered scientifically important (Erathem-Vanir Geological Consultants 2004).

Environmental Consequences of the Proposed Action

Construction of the gas plant would not affect any known paleontological resources. Construction of the pipeline could result in destruction or physical disturbance of paleontological resources. Fossil beds could be impacted by soil erosion, vegetation clearing, and unauthorized collection. Potential beneficial impacts could be the discovery of new fossils, adding to the science, which otherwise would not be discovered.

Environmental Consequences of the Alternative Action

Environmental consequences would be the same as for the Proposed Action.

Environmental Consequences of the No Action Alternative

None.

Mitigation

Impacts to paleontological resources would be minimized by implementing the following BLM mitigation measures. Measures would be incorporated into EnCana's Paleontological Resources Protection Plan (EnCana 2005i), included in the Plan of Development (EnCana 2005a). EnCana would:

- Complete paleontological inventories along segments of the route not surveyed prior to construction.
- Monitor Condition I areas and spot-check Condition II areas during construction.

- Inform all persons associated with the project that they would be subject to prosecution for knowingly disturbing paleontological sites, or for collecting fossils. If fossils are uncovered during any project or construction activities, activities would stop in the immediate area of the find that might further disturb such materials, and the BLM Authorized Officer would be immediately contacted. A BLM-approved paleontologist would evaluate the find and determine site-specific recommendations and mitigation requirements. The discovery would be protected until notified to proceed, in writing, by the BLM Authorized Officer.

- Install temporary and permanent erosion control measures, as discussed in the Soils section, to control erosion and sediment transport.

RANGELAND MANAGEMENT

Affected Environment

Livestock grazing on rangeland is the predominant land use along the pipeline corridors. Grazing allotments are areas of land where individuals graze livestock. An allotment generally consists of federal rangelands, but may also include intermingled parcels of fee-lands. The BLM stipulates the number of livestock and season of use for each allotment.

The Proposed Action gas plant would be located on the Square S allotment. The Alternative Action gas plant site is located on fee-lands, which are not included in any grazing allotment. The project crosses 10 grazing allotments, which are summarized below in Table 4-28.

Table 4-28 Grazing Allotments Crossed in the Project Area

Allotment	Livestock		Period of Use	AUMs[1]
Permittee	Type	Number		
06710 Conn Creek/McCurdy				
Aaron Largent	cattle	148	5/1 to 5/30	136
06727 IAE Ranch				
Jason and Susan Lynch	cattle	64	5/1 to 5/30	45
	cattle	96	11/1 to 12/15	101
06752 West Logan Wash				
Ned and Lyle Prather	cattle	140	5/25 to 5/30	28
06023 Piceance Mountain				
Oldland Brothers Inc. Ira Johnson MTW Ranch	cattle	400	5/1 to 5/15	97
	cattle	580	5/16 to 10/30	1570
	cattle	1026	5/15 to 11/15	3807
	cattle	650	5/1 to 5/15	90
	cattle	1300	5/16 to 10/31	2022
	cattle	600	11/1 to 11/15	83
	cattle	50	5/1 to 10/30	301
	cattle	580	5/1 to 6/20	574
	cattle	353	10/16 to 11/14	205
	cattle	177	11/15 to 1/30	264

Table 4-28 Grazing Allotments Crossed in the Project Area

Allotment	Livestock		Period of Use	AUMs[1]
Permittee	Type	Number		
06026 Reagles				
Dean Mantle	cattle	81	5/1 to 12/15	610
Larry Mautz/Connie Beard	cattle	70	5/1 to 12/15	341
06027 Square S				
Tim Mantle/Mantle Ranch Boone Vaughn	cattle	190	4/15 to 6/15	256
	cattle	46	4/15 to 7/15	92
	cattle	75	5/1 to 7/15	124
	cattle	140	7/16 to 10/1	237
	cattle	250	10/2 to 10/21	108
	cattle	80	11/30 to 4/30	264
	cattle	500	5/16 to 6/10	410
	cattle	600	6/11 to 07/30	178
	cattle	300	10/16 to 12/15	578
	cattle	100	12/16 to 5/15	477
	cattle	110	5/1 to 12/15	795
06349 Cathedral Bluffs				
W. Russell Withers Jr. W. Russell Withers	cattle	550	3/1 to 3/31	561
	cattle	550	4/1 to 4/30	504
	cattle	50	5/1 to 5/31	47
	cattle	350	5/1 to 5/31	161
	cattle	200	6/1 to 6/15	44
	cattle	150	5/1 to 6/15	186
	cattle	100	5/1 to 5/31	57
	cattle	200	6/1 to 6/15	55
	cattle	550	6/16 to 6/30	152
	cattle	550	7/1 to 8/30	386
	cattle	400	9/1 to 9/30	138
	cattle	150	9/1 to 9/30	61
	cattle	200	10/1 to 10/30	110
	cattle	350	10/1 to 10/31	146
	cattle	100	11/01 to 11/15	28
	cattle	400	11/1 to 11/15	81
	cattle	50	11/1 to 11/30	40
	cattle	100	11/15 to 11/30	49
	cattle	250	11/15 to 11/30	59
	cattle	250	12/1 to 12/30	247
	cattle	250	12/1 to 12/30	229
	cattle	50	12/1 to 12/30	40
	cattle	550	1/1 to 2/28	1067
	cattle	200	6/1 to 6/30	89
	cattle	200	6/1 to 6/30	110
	cattle	400	9/1 to 10/31	329
	cattle	200	11/1 to 11/30	89
	cattle	200	11/1 to 11/30	110
06356 East Douglas Creek				
Bryant 1991 Trust	cattle	150	3/1 to 6/30	602

Table 4-28 Grazing Allotments Crossed in the Project Area

Allotment	Livestock		Period of Use	AUMs[1]
Permittee	Type	Number		
	cattle	50	6/15 to 6/30	26
	cattle	187	7/1 to 7/31	191
	cattle	13	7/1 to 7/31	13
	cattle	187	8/1 to 8/31	191
	cattle	13	8/1 to 8/31	13
	cattle	187	9/1 to 9/30	184
	cattle	13	9/1 to 9/30	13
	cattle	60	10/1 to 11/15	91
	cattle	50	10/1 to 10/31	51
	cattle	128	11/1 to 2/28	505
06346 Twin Buttes				
Twin Buttes Ranch Company	cattle	1157	3/1 to 6/12	3956
	cattle	774	6/5 to 10/31	1289
	cattle	631	6/5 to 10/31	1236
	cattle	1158	11/1 to 2/28	4569
	cattle	82	11/15 to 1/31	98
06357 Evacuation Creek				
Jon Hill/Cripple Cowboy Cow Outfit	cattle	400	3/1 to 3/31	212
	cattle	400	3/1 to 3/31	334
	cattle	800	4/1 to 5/15	615
	cattle	400	5/16 to 5/31	200
	cattle	800	6/1 to 7/15	651
	cattle	800	7/16 to 9/15	946
	cattle	800	9/16 to 10/31	980
	cattle	400	11/1 to 11/30	375
	cattle	400	12/1 to 2/28	615
	cattle	400	12/1 to 2/28	971

[1] An animal unit month (AUM) is defined as the amount of forage necessary for a mature cow with calf for one month.

A portion of the project area within the Cathedral Bluffs allotment and the Twin Buttes allotment is used by livestock during the spring and fall migration between the summer and winter ranges. Fences, stock ponds, and other livestock management facilities are located in or adjacent to the project area. The Proposed Action pipeline corridor would cross BLM fences at Meeker-South mileposts 0.5, 4.0, 5.0, 31.3, 31.4, and 42.4 and Meeker-West mileposts 1.4, 2.9, 3.3, 5.6, 8.0, and 18.2. The Alternative Action pipeline corridor would cross BLM fences at Meeker-South mileposts 0.5, 4.0, 5.0, 31.3, and 31.4 and Meeker-West mileposts 1.4, 2.9, 3.3, 6.8, 9.1, and 19.3.

As discussed in the Vegetation section, the Proposed and Alternative Actions cross 19 ecological sites. Tables 4-29 and 4-30 summarize the total ecological site disturbance for each allotment crossed by the Proposed and Alternative Actions.

Table 4-29 Grazing Allotment Ecological Site Disturbance for Proposed Action

Allotment		Disturbance	
Number	**Name**	**Miles**	**Acres**
06752	**West Logan Wash**	**0.5**	**7.3**
	Foothill Juniper	0.4	0.6
	Rolling Loam	0.1	6.7
06710	**Conn Creek/McCurdy**	**1.0**	**14.5**
	Rolling Loam	1.0	14.5
06727	**IAE Ranch**	**3.5**	**51.0**
	Foothill Juniper	0.9	12.8
	Foothill Swale	2.0	28.7
	Rolling Loam	0.6	9.5
06023	**Piceance Mountain**	**14.4**	**271.3**
	Brushy Loam	0.4	7.0
	Dry Exposure	0.7	10.7
	Foothill Swale	1.3	21.3
	Loamy Slopes	1.4	22.3
	Mountain Loam	0.5	8.5
	Pinyon-Juniper	11.2	193.1
	Rolling Loam	0.5	8.3
06027	**Square S**	**17.4**	**257.7**
	Brushy Loam	0.6	8.1
	Dry Exposure	0.4	7.4
	Foothill Swale	0.8	11.7
	Loamy Slopes	1.4	19.9
	Mountain Loam	0.2	2.8
	Pinyon-Juniper	9.4	138.0
	Rolling Loam	4.4	64.7
	Stony Foothills	0.3	5.0
06026	**Reagles**	**2.5**	**36.8**
	Foothill Swale	0.1	1.6
	Pinyon-Juniper	1.8	27.3
	Rolling Loam	0.5	7.5
	Stony Foothills	0.0	0.4
06349	**Cathedral Bluffs**	**6.5**	**98.1**
	Alkaline Slopes	0.1	1.7
	Brushy Loam	0.2	2.7
	Clay Loam	0.7	11.2
	Dry Exposure	0.1	1.2
	Foothill Swale	0.4	6.1
	Pinyon-Juniper	2.7	42.1
	Stony Foothills	2.3	33.0
06356	**East Douglas Creek**	**3.0**	**46.9**
	Alkaline Slopes	0.4	7.6
	Clay Loam	0.8	12.8
	Foothill Swale	0.1	0.9
	Pinyon-Juniper	1.1	15.9
	Stony Foothills	0.6	9.7
06346	**Twin Buttes**	**13.5**	**165.7**
	Alkaline Slopes	1.5	19.2
	Clay Loam	2.6	31.2

Table 4-29 Grazing Allotment Ecological Site Disturbance for Proposed Action

Allotment		Disturbance	
Number	**Name**	**Miles**	**Acres**
	Foothill Swale	4.0	50.7
	Rolling Loam	1.9	21.7
	Pinyon-Juniper	3.5	41.1
	Stony Foothills	0.2	1.7
06357	**Evacuation Creek**	**6.2**	**71.1**
	Alkali Flats	1.6	18.6
	Alkaline Slopes	2.1	24.0
	Clay Loam	0.5	5.7
	Foothill Swale	1.0	10.4
	Rolling Loam	0.5	5.7
	Pinyon-Juniper	0.5	6.7

Table 4-30 Grazing Allotment Ecological Site Disturbance for Alternative Action

Allotment		Disturbance	
Number	***Name***	***Miles***	***Acres***
06752	**West Logan Wash**	**0.5**	**7.3**
	Foothill Juniper	0.4	0.6
	Rolling Loam	0.1	6.7
06710	**Conn Creek/McCurdy**	**1.0**	**14.5**
	Rolling Loam	1.0	14.5
06727	**IAE Ranch**	**3.5**	**51.0**
	Foothill Juniper	0.9	12.8
	Foothill Swale	2.0	28.7
	Rolling Loam	0.6	9.5
06023	**Piceance Mountain**	**14.4**	**271.3**
	Brushy Loam	0.4	7.0
	Dry Exposure	0.7	10.7
	Foothill Swale	1.3	21.3
	Loamy Slopes	1.4	22.3
	Mountain Loam	0.5	8.5
	Pinyon-Juniper	11.2	193.1
	Rolling Loam	0.5	8.3
06027	**Square S**	**15.6**	**247.0**
	Brushy Loam	0.6	8.7
	Dry Exposure	0.4	7.8
	Foothill Swale	0.5	7.2
	Loamy Slopes	1.4	21.3
	Mountain Loam	0.2	3.0
	Pinyon-Juniper	9.0	140.6
	Rolling Loam	2.5	39.8
	Stony Foothills	1.1	17.9
	Swale Meadow	0.0	0.7
06026	**Reagles**	**2.2**	**33.2**
	Foothill Swale	0.1	1.6

Table 4-30 Grazing Allotment Ecological Site Disturbance for Alternative Action

Allotment		Disturbance	
Number	***Name***	***Miles***	***Acres***
	Pinyon-Juniper	1.7	25.3
	Rolling Loam	0.4	5.9
	Stony Foothills	0.0	0.4
06349	**Cathedral Bluffs**	**6.5**	**98.1**
	Alkaline Slopes	0.1	1.7
	Brushy Loam	0.2	2.7
	Clay Loam	0.7	11.2
	Dry Exposure	0.1	1.2
	Foothill Swale	0.4	6.1
	Pinyon-Juniper	2.7	42.1
	Stony Foothills	2.3	33.0
06356	**East Douglas Creek**	**3.0**	**46.9**
	Alkaline Slopes	0.4	7.6
	Clay Loam	0.8	12.8
	Foothill Swale	0.1	0.9
	Pinyon-Juniper	1.1	15.9
	Stony Foothills	0.6	9.7
06346	**Twin Buttes**	**13.5**	**165.7**
	Alkaline Slopes	1.5	19.2
	Clay Loam	2.6	31.2
	Foothill Swale	4.0	50.7
	Rolling Loam	1.9	21.7
	Pinyon-Juniper	3.5	41.1
	Stony Foothills	0.2	1.7
06357	**Evacuation Creek**	**6.2**	**71.1**
	Alkali Flats	1.6	18.6
	Alkaline Slopes	2.1	24.0
	Clay Loam	0.5	5.7
	Foothill Swale	1.0	10.4
	Rolling Loam	0.5	5.7
	Pinyon-Juniper	0.5	6.7

Environmental Consequences of the Proposed Action

Construction and operation of the gas plant would result in a permanent loss of 50 acres of potential grazing lands for the life of the project. Construction of the pipelines would result in a temporary loss of 142 AUMs of forage production. Livestock could be dispersed from preferred grazing areas, the potential for the spread of invasive, non-native species could increase, and the risk of livestock/vehicle collisions would increase. Construction of the pipelines could also damage or remove stock ponds and fences and could harm or trap livestock that may enter the construction right-of-way. Livestock could be disrupted by noise and fugitive dust associated with the project. Livestock movement in the Cathedral Bluffs allotment between Meeker-West mileposts 23.0 and 25.0 and the Twin Buttes allotment between Meeker-West mileposts 28.0 and 31.0 would be restricted due to construction activities and the narrow valley bottom coupled with industrial facilities in Little Horse Draw. Impacts to livestock would be temporary until construction is complete and impacts to carrying capacity of grazing allotments would be short-

term until successful revegetation. After successful revegetation, it is probable that forage production along the pipeline corridor would exceed pre-construction conditions.

Environmental Consequences of the Alternative Action

The gas plant is not located within a grazing allotment. Construction of the pipelines would result in a temporary loss of 138 AUMs of forage production. Environmental consequences would be the same as those discussed for the Proposed Action.

Environmental Consequences of the No Action Alternative

None.

Mitigation

Impacts on rangeland would be minimized by implementing measures proposed in EnCana's Noxious Weed Management Plan (EnCana 2005h) and Reclamation Plan (EnCana 2005j), included in the Plan of Development (EnCana 2005a). EnCana would:

- Brace and secure each fence crossed before cutting the opening needed for construction to prevent slacking of the wire. The opening would be closed by temporary gates as necessary or as requested by the fee-landowner to prevent passage of livestock. Fences will be braced and secured in accordance with BLM specifications (included in Attachment 3 of the Plan of Development).

- Install temporary fencing as required by pre-construction agreements with fee-landowners to prevent livestock entry into the construction right-of-way.

- Install livestock crossovers (trench plugs), with ramps on either side of the open trench, at maximum 1-mile intervals and at well-defined livestock and wildlife trails to facilitate passage of livestock across the right-of-way and to prevent livestock from becoming trapped in the trench.

- Seed disturbed areas as discussed in the Vegetation section.

- Control noxious weeds as discussed in the Invasive, Non-Native section.

EnCana would also implement the following BLM mitigation measures, which would be incorporated into the Plan of Development:

- Prohibit construction activities between Meeker-West mileposts 23.0 to 25.0 and 28.0 to 31.0 from April 16 to June 30 and from November 1 to January 31.

- Maintain the current condition and usability of stock ponds and other facilities along the right-of-way.

- Restore damaged livestock fences, gates, cattleguards, and brace panels to BLM or fee-landowners specifications. BLM specifications are included in the Plan of Development.

EnCana would be responsible for all damages that occur because of negligence in maintaining the integrity of allotment and pasture boundary fences.

REALTY AUTHORIZATIONS

Affected Environment

The project route crosses or is adjacent to 61 existing realty authorizations, as listed below.

COC-051280, COC-040197, COC-0123147A, COC-023027, COC-036737, COC-067027; COC-031840C, COC-067548, COC-065128, COC-60300, COC-123147A, COC-37021, COC-63989, COC-63633, COC-62884, COC-62899, COC-65453, COC-50047, COC-62900, COC-0123685, COC-40613, COC-48494, COC-39349, COC-27134, COC-34260, COC-52705, COC-24402, COC-27790, COC-36394, COC-39406, COC-20275, COC-57457, COC-24676, COC-24128, COC-24128AA, COC-23734BJ, COC-3435, COC-1662, COC-012645, COC-01243, COC-56987, COC-55354, COC-54695, COC-54572, COC-52719, COC-50049, COC-27790, COC-24276, COC-54066, COC-57006, COC-58164, COC-58163, COC-30303, COC-37735, COC-43750, COC-50019, COC-36949, COC-30303L, COC-58105, COC-40585, UTU-71267.

Environmental Consequences of the Proposed Action

Existing utilities could be accidentally damaged during construction activities. Impacts would be temporary until the damage is repaired.

Environmental Consequences of the Alternative Action

Environmental consequences would be the same as discussed for the Proposed Action.

Environmental Consequences of the No Action Alternative

None.

Mitigation

Damage to existing utilities would be minimized by implementing measures proposed in EnCana's Plan of Development and Safety Plan (EnCana 2005k), included in the Plan of Development (EnCana 2005a) . EnCana would:

- Utilize the "One Call" system to locate and stake the centerline and limits of all underground facilities in the area of proposed excavation.
- Provide 48-hour notification to the owner/operator of and foreign pipeline prior to performing any work within 10 feet of buried or aboveground-pressurized gas piping.
- Prohibit machine excavation within 5 feet from any existing pipeline encountered in the right-of-way unless authorized by the pipeline owners/operators.

RECREATION

Affected Environment

The project area is located within the White River Extensive Recreation Management Area (ERMA) on BLM lands administered by the WRFO. The BLM WRFO custodially manages the ERMA to provide for unstructured recreation activities such as hunting, dispersed camping, hiking, horseback riding, wildlife viewing, and OHV use (BLM 1997). There are no designated recreation management areas within the project area in the BLM GJFO and VFO. Recreation activities along the project route are the same as listed for the BLM WRFO. The primary public recreational use of the project area is big game hunting (BLM 2003a, BLM 1994c, and BLM 1985a).

On BLM lands, the Recreation Opportunity Spectrum (ROS) is a classification system and a prescriptive tool for recreation planning and management. The portion of the project area along Meeker-South mileposts 22.0 to 44.5 and Meeker-West Proposed Action mileposts 0.0 to 19.5 (Meeker-West Alternative Action mileposts 0.0 to 20.6) has been delineated with ROS classes of semi-primitive motorized (SPM), rural (R), and roaded natural (RN). Although the remaining portion of the project area has not been classified, the area most resembles a ROS class of SPM.

The *semi-primitive motorized* physical and social recreation setting is typically characterized by a natural appearing environment with few administrative controls, low interaction between users but evidence of other users may be present. SPM recreation experience is characterized by a high probability of isolation from the sights and sounds of humans that offers an environment that offers challenge and risk. The *rural* physical and social recreation setting is culturally modified to the point that it is dominant to the sensitive travel route observer. This may include pastoral, agricultural, intensively managed wildland resource landscapes, or utility corridors. Pedestrian or other slow moving observers are constantly within view of culturally changed landscape. There is strong evidence of designed roads and/or highways. Structures are readily apparent and may range from scattered to small dominant clusters including utility corridors, farm buildings, microwave installations, and recreation sites. Frequency of contact is moderate to high at developed sites and on roads and trails, and is moderate away from developed sites. Rural recreation experience is characterized by a low probability of isolation from the sights and sounds of humans. The *roaded natural* physical and social recreation setting may have modifications that range from being easily noticed to strongly dominant to observers within the area. However, from sensitive travel routes and use areas these alterations would remain unnoticed or visually subordinate. There is strong evidence of designed roads and/or highways. Structures are generally scattered, remaining visually subordinate or unnoticed to the sensitive travel route observer. Structures may include utility corridors, microwave installations and so on. Frequency of contact is moderate to high on roads and low to moderate on trails and away from roads. RN recreation experience is characterized by a moderate probability of isolation from the sights and sounds of humans that offers an environment that offers challenge and risk.

The Proposed Action crosses 885 acres of recreation area on BLM lands and the Alternative Action crosses 889 acres of recreation area on BLM lands.

Environmental Consequences of the Proposed Action

The public would lose dispersed recreation potential while the pipelines are under construction. Increased traffic, noise, human activity, and dust could affect the quality of some users' recreational experiences by increasing the likelihood of human interactions, the sights and sounds associated with the human environment, and a less naturally appearing environment. The public would most likely not recreate in these areas and would disperse elsewhere. Construction activities during big game hunting seasons would likely displace wildlife to habitat adjacent to the pipeline corridor. Since hunting relies on the presence of game species and hunters generally prefer relatively quiet settings, it is likely that construction activities could disrupt hunting in localized areas within one mile of the construction workspace. Construction activities would disrupt the experience sought by those recreationists (hunters), but it is likely that those hunters could find relatively undisturbed settings on public lands adjacent to the project area.

The pipeline right-of-way could increase accessibility for OHV use into restricted, previously inaccessible, and/or environmentally sensitive areas. Impacts to recreational experiences would most likely be temporary; however, with EnCana's proposed construction schedule, some areas could have long-term impacts due to repeated pipeline construction spread over a period of 1 to 5 years.

Environmental Consequences of the Alternative Action

Environmental consequences would be the same as described for the Proposed Action.

Environmental Consequences of the No Action Alternative

None.

Mitigation

EnCana would implement the following BLM mitigation measure, which would be incorporated into the Plan of Development:

- Develop measures to control unauthorized OHV use with the BLM and interested fee-landowners. Measures would include leaving the right-of-way in a roughened state and scattering vegetative debris across the surface, placing dirt berms, rock, or vegetative barriers at intersections with existing roads, and randomly placing boulders, logs, and stumps across the right-of-way to discourage OHV use. EnCana would be responsible for purchasing and installing OHV signage developed by the BLM WRFO.

SOCIOECONOMICS

Affected Environment

The project would cross through Rio Blanco and Garfield Counties, Colorado and Uintah County, Utah. In 2000, the population of Garfield and Rio Blanco Counties, Colorado were 43,791 and 5,986, respectively, and in Uintah County, Utah, the population was 25,224. Communities near the project area include Grand Junction with a population of 41,986, Parachute/Battlement Mesa with a population of 4,503, Rifle with a population of 6,784, Glenwood Springs with a population of 7,736, Meeker with a population of 2,242, Rangely with

a population of 2,096, Craig with a population of 9,189, and Vernal with a population of 7,714 (Census Bureau 2000). Over the last decade, these communities have experienced varying degrees of population growth. From 1990 to 2000, population in Garfield County increased 32 percent from 29,974 to 43,791 and the population in Rio Blanco County has remained stagnant, increasing by 14 people from 5,972 to 5,986. From 1990 to 2000, the population in Uintah County has increased by 12 percent from 22,211 to 25,224 (Census Bureau 2000).

Professional services, retail and wholesale trade, services, government, and construction are the major sources of employment in Garfield County. In Rio Blanco and Uintah Counties, government, retail trade, services, mining, and agriculture are the major sources of employment. A growing number of jobs have been created in the last several years in the oil and gas extraction industry as drilling activities increase in Garfield, Rio Blanco, and Uintah Counties (Colorado Legislative Office 2002 and Utah Department of Workforce Services 2004). Increased tourism and recreational visitation have increased economic activity and employment opportunities. All counties crossed by the project are currently experiencing unemployment rates near or below the national average. Unemployment rates in Garfield and Rio Blanco Counties were 2.5 and 3.4 percent, respectively, in September 2004, which is below the Colorado unemployment rate of 4.6 percent and the national unemployment rate of 5.4 (Colorado Department of Labor 2004 and US Bureau of Labor Statistics 2004). The unemployment rate in Uintah County was 5.3 percent, which is above the Utah unemployment rate of 4.8 percent but below the national unemployment rate of 5.4 percent (Utah Department of Workforces 2004 and US Bureau of Labor Statistics 2004).

Tourism and recreation are an important part of the economies in Rio Blanco and Garfield Counties. According to a recent study prepared by the CDOW, direct sales in Rio Blanco County associated with wildlife-related recreation activities was approximately $16.3 million in 2002. Total economic impact to Rio Blanco County, including secondary spending by people who own or work for businesses related to fish and wildlife activities, was about $28.4 million. Fish and wildlife-related activities were responsible for 360 jobs, mostly in retail trade and services, in Rio Blanco County. Direct sales related to wildlife-related activities in Garfield County were $30 million in 2002. Secondary spending was estimated near $53.1 million and employment related to wildlife activities was 690 jobs. (BBC Research and Consulting 2004).

Public services and facilities are available in the project area. Each county offers police, fire, and medical services. Law enforcement services in unincorporated areas in Garfield, Rio Blanco, and Uintah Counties are provided by the Garfield County Sheriff's Department, the Rio Blanco County Sheriff's Department, and the Uintah County Sheriff's Department, respectively. Fire protection services and hospitals are located in Grand Junction, Rifle, Glenwood Springs, Meeker, Rangely, and Vernal. Due to the project location, Rio Blanco County would receive the most demand for public services and facilities.

The construction workforce is expected to be 250 persons per pipeline spread and 100 persons for the gas plant, for a total of 600 construction personnel. Operation of the pipeline and gas plant would require 20 operations personnel. Construction personnel would consist of EnCana employees, construction contractor employees, and construction and environmental inspection staff. The workforce would include local and non-local workers. When available, local workers

would be employed for construction. Construction personnel hired from outside the project area would include construction specialists, pipeline welders, supervisory personnel, and inspectors who would temporarily locate to the area. Given the brief six month construction period, most non-local workers are not expected to be accompanied by their families

Non-local workers would require temporary housing in communities adjacent to the project area. Temporary housing is available in the form of daily, weekly, and monthly rentals in motels, hotels, recreational vehicle (RV) parks, and rental houses. Summer months are the typical busy season for the entire region; however, temporary housing is almost non-existent in Rio Blanco County during the fall hunting season. Table 4-31 describes existing temporary housing conditions of the counties crossed by the project route and Grand Junction and Craig, Colorado because of their proximity to the project area.

Table 4-31 Existing Temporary Housing Conditions

Locality	Rental Housing Units[1]	Rental Vacancy Rate[1]	Hotel/Motel Rooms[2]	RV Sites[2]
Colorado				
Garfield				
Parachute/ Battlement Mesa	238/674	8.1/9.5	104	135
Rifle	1,059	2.8	231	146
Glenwood Springs	1,427	2.2	1,428	836
Mesa				
Grand Junction	6,682	5.9	2,650	798
Moffat				
Craig	2,739	12.5	328	148
Rio Blanco				
Meeker	308	16.1	75	30
Rangely	235	19.2	74	101
Utah				
Uintah				
Vernal	967	8.4	574	275

Sources: [1]Census Bureau 2000; [2]Craig, Glenwood Springs, Grand Junction, Meeker, Parachute, Rangely and Rifle Chamber of Commerces 2004; Vernal Area Convention Bureau 2004; and Yahoo Yellow Pages 2004.

Revenues from oil and gas play a significant role in the local tax base in the form of property tax, sales and use tax, and severance tax. Oil and gas property taxes contributed $11.6 million to Garfield County in 2002, $8.5 million to Rio Blanco County in 2002, and $8.9 million to Uintah County in 2001. Oil and gas property taxes comprise 45 percent of Garfield County property tax revenue, 67 percent of Rio Blanco County property tax revenue, and 59 percent of Uintah County property tax revenue (Garfield County Assessor 2004, Rio Blanco County Assessor 2004, and BLM 2004a).

Oil and gas operations also contribute revenue in the form of sales and use taxes on goods and services used. Examples of purchases that generate sales tax revenue include gravel, fuel, fencing supplies, and other supplies purchased locally. The sales tax rate is 3.9 percent in unincorporated

Garfield County with higher rates in incorporated areas and 6.5 percent in Rio Blanco and Uintah Counties. Rio Blanco County collects a 3.6 percent use tax on materials purchased outside the county (e.g., materials delivered to the construction site from vendors outside the county). Severance tax, based on oil and gas production, is paid to the state. In Colorado, severance tax is $10,750 plus 5 percent of gross income in excess of $300,000 and in Utah, the severance tax rate ranges from 3 to 5 percent of production revenue.

Environmental Consequences of the Proposed Action

Construction of the pipelines and the gas plant would result in a temporary increase of populations in communities within commuting distance of the project. Demand for temporary housing would rise, and would increase significantly during hunting season in Rio Blanco County. Housing would still be available, but would be more difficult to find and/or more expensive to secure. Construction workers may have to drive longer distances to locate accommodations. Other demands on local agencies would include increased enforcement activities associated with issuing permits for vehicle load and width limits, emergency medical services to treat injuries resulting from construction activities, and law enforcement services to respond to traffic violations and accidents, landowner complaints, and criminal activities. Local businesses, including gas stations, laundromats, restaurants, liquor stores, and grocery stores would see an increase in revenue. Cities and counties would see an increase in sales tax revenue due to increased purchases by the construction workforce. The purchases of materials, supplies, goods, and local services would have a positive, short-term impact on communities near the project area. Operation of the gas plant would have a positive, long-term impact on Rio Blanco County due to increased property tax revenues. The increased demand for public services could have a negative, short-term impact on communities near the project area.

Environmental Consequences of the Alternative Action

Environmental consequences would be the same as discussed for the Proposed Action.

Environmental Consequences of the No Action Alternative

Cities and counties would not see an increase in sales tax revenue due to increased purchases by the construction workforce, and Rio Blanco County would not see an increase in property tax revenues from construction and operation of the gas plant.

Mitigation

EnCana has initiated discussions with Rio Blanco County to determine appropriate mitigation measures to offset demands on local services. EnCana would:

- Implement a health and safety program that would include training on-site supervisory personnel in First Aid and cardiopulmonary resuscitation (CPR).
- Provide security measures and/or personnel to patrol EnCana facilities.
- Implement a fire prevention and control program as discussed in the Fire Management section.

- Continue project discussions with Rio Blanco County over the life of the project to determine appropriate mitigation measures, as necessary.

VISUAL RESOURCES

Affected Environment

The majority of the project is located on BLM-administered lands that have been inventoried for visual resources. The description of the visual resources of the project area is based on the methodology described in the BLM's Visual Resource Inventory Manual (BLM 1986b), that places lands into one of four resource inventory classes. These visual resource management (VRM) classes represent the relative value of the visual resource and provide a basis for considering visual value objectives defining how the visual environment is to be managed, with VRM Class I the most protective of the resource and VRM Class IV allowing the most modification to the existing character of the landscape.

The project area includes Class III, Class IV, and unclassified VRM classes. *Class III* is intended to partially retain the existing characteristics of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention, but they should not dominate the view of the casual observer. Changes should repeat the basic elements of line, form, color, and texture found in the predominant natural features of the characteristic landscape. *Class IV* is intended to provide for major modification of the existing character of the landscape. The level of change to the characteristic landscape can be very high. Management activities may dominate the view and be the major focus of viewer attention. Every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repetition of basic elements.

The Proposed Action gas plant site is located in a VRM Class III area. The Proposed Action pipeline route crosses Class III and IV areas. The pipeline route is located outside an existing utility corridor for 10.2 miles, of which approximately 9.1 miles are located on BLM lands. Table 4-32 summarizes disturbance, vegetation community, and VRM class of each portion of the pipeline corridor located outside existing corridors on BLM-administered lands.

Table 4-32 Disturbance and VRM Class for Proposed Action Corridor Deviations

Mileposts	Disturbance (acres)	Maximum Distance From Nearest Corridor	Vegetation Community	VRM Class
Meeker-South				
31.5 to 32.1	10.2	1103	sagebrush, pinyon-juniper	III
33.0 to 33.5	8.5	337	pinyon-juniper	III
34.2 to 35.9	28.3	1990	sagebrush, pinyon-juniper	III
36.8 to 37.3	7.9	377	pinyon-juniper, sagebrush	III
Meeker-West				
0.0 to 0.6	8.7	1034	pinyon-juniper	III
3.2 to 3.4	2.9	447	pinyon-juniper	III
22.8 to 23.1	4.4	423	pinyon-juniper, sagebrush	III
25.0 to 25.1	1.5	400	sagebrush	III

Table 4-32 Disturbance and VRM Class for Proposed Action Corridor Deviations

Mileposts	Disturbance (acres)	Maximum Distance From Nearest Corridor	Vegetation Community	VRM Class
25.7 to 26.8	16.0	1105	pinyon-juniper, sagebrush	III
26.8 to 27.6	11.6	251	pinyon-juniper, sagebrush	III
31.9 to 33.2	14.2	460	pinyon-juniper	III
34.6 to 34.8	2.2	306	pinyon-juniper	IV
36.2 to 37.2	14.5	540	sagebrush	IV
47.0 to 47.2	2.2	275	sagebrush	IV

A corridor deviation between Meeker-South mileposts 31.4 to 37.3 would be located primarily on ridgetops adjacent to ridgetops that the existing TransColorado corridor traverses. Access to this area is poor and users tend to be local ranchers, hunters, and oil and gas industry workers. The existing TransColorado corridor and oil and gas roads in the area have created visual impacts including line, color, and texture contrast that affect the natural appearance of the landscape. The disturbance outside existing utility corridors would not be visible to travelers on Rio Blanco County Road 5.

A corridor deviation between Meeker-West mileposts 0.0 and 3.4 would be visible to travelers on Rio Blanco County Road 83 (Yellow Creek Jeep Trail). Visitors along this road tend to be local ranchers, hunters, and oil and gas industry workers.

A corridor deviation between Meeker-West mileposts 22.8 to 23.1 and mileposts 25.0 to 25.1 would be visible to travelers on Rio Blanco County Road 27 (Douglas Creek Road). The viewshed from Douglas Creek Road contains several pipeline corridors. The new corridor would be located down a ridgeline, with the two ridges to the north each having a pipeline corridor.

A corridor deviation between Meeker-West mileposts 25.7 to 27.6 would be visible in part to travelers on Colorado State Highway 139. Existing oil and gas development has visually affected the area, and several roads, pipeline corridors, and oil and gas facilities are visible in the landscape. The existing rights-of-ways have caused visual impacts including contrasts in vegetation patterns, and added industrial structures such as valves and meter stations that have changed the natural character of the landscape in some areas.

A corridor deviation between Meeker-West mileposts 31.9 to 33.2, 34.6 to 34.8, 36.2 to 37.2, and 47.0 to 47.2 would be visible from Rio Blanco County Road 116, an oil and gas lease road, and Rio Blanco County Road 116, respectively. Access to this area is poor and users tend to be local ranchers, hunters, and oil and gas workers. The viewshed contains existing well pads, lease roads, and pipeline corridors.

The Alternative Action gas plant is located on fee-lands and therefore, is not classified with a BLM VRM Class. The COE visited the site in August 2004 and expressed concern regarding impacts to the viewshed from the placement of a large industrial facility in the Piceance Creek valley. The COE recommended that EnCana consider an alternative site in an area less visible to the public (COE 2004).

The Alternative Action pipeline route is located outside an existing utility corridor for 11.8 miles, of which approximately 10.6 miles are located on BLM lands. Table 4-33 summarizes disturbance, vegetation community, and VRM class of each portion of the pipeline corridor located outside existing corridors on BLM-administered lands.

Table 4-33 Disturbance and VRM Class for Alternative Action Corridor Deviations

Mileposts	Disturbance (acres)	Maximum Distance From Nearest Corridor	Vegetation Community	VRM Class
Meeker-South				
31.5 to 32.1	10.2	1103	sagebrush, pinyon-juniper	III
33.0 to 33.5	8.5	337	pinyon-juniper	III
34.2 to 35.9	28.3	1990	sagebrush, pinyon-juniper	III
36.8 to 37.3	7.9	377	pinyon-juniper, sagebrush	III
Meeker-West				
1.2 to 2.6	20.4	3840	pinyon-juniper	III
5.8 to 6.1	4.4	260	pinyon-juniper	III
23.9 to 24.2	4.4	423	pinyon-juniper, sagebrush	III
25.3 to 26.0	10.2	400	sagebrush	III
26.6 to 27.7	16.0	1105	pinyon-juniper, sagebrush	III
27.7 to 28.5	11.6	251	pinyon-juniper, sagebrush	III
32.7 to 34.0	14.2	460	pinyon-juniper	III
35.4 to 35.6	2.2	306	pinyon-juniper	IV
37.0 to 38.0	14.5	540	sagebrush	IV
47.8 to 48.0	2.2	275	sagebrush	IV

Corridor deviations along Meeker-South would be the same as discussed for the Proposed Action.

A corridor deviation between Meeker-West mileposts 1.2 to 2.6 would traverse hillsides and rolling ridgetops. The eastern portion of the corridor would be visible to travelers on Rio Blanco County Road 5 (Piceance Creek Road). The existing pipeline corridors (TransColorado, Questar, and CIG) in the area of the new corridor have created visual impacts including line, color, and texture contrast that affect the natural appearance of the landscape.

A corridor deviation between Meeker-West mileposts 5.8 to 6.1 is located in a viewshed that contains a pipeline corridor. New disturbance would be visible to OHV users.

The remainder of the corridor deviations between Meeker-West mileposts 23.9 to 24.2, 25.3 to 26.0, 26.6 and 28.5, 32.7 to 34.0, 35.4 to 35.6, 37.0 to 38.0, and 47.8 to 48.0 are the same as described for the Proposed Action Meeker-West mileposts 22.8 to 23.1, 25.0 to 25.1, 25.7 to 26.8, 26.8 to 27.6, 31.9 to 33.2, 34.6 to 34.8, 36.2 to 37.2, and 47.0 to 47.2.

Environmental Consequences of the Proposed Action

Construction of the gas plant would create visual impacts for the life of the project. The plant facilities would introduce man-made structures and forms in the landscape that would draw attention to their size, color, and shape; however, this would be an incremental effect because the

plant site is located adjacent to the existing American Soda Processing plant. Nighttime lighting would create a noticeable nighttime lighting source. Visibility of these changes would vary according to viewer location and orientation. The plant site is located on the plateau above the Piceance Creek valley floor, which creates topographic and vegetative screening of the plant site from viewpoints along Rio Blanco County Road 5 (Piceance Creek Road). The plant would not be visible from the roadway and would not dominate the viewshed. Rio Blanco County Road 83 (Yellow Creek Jeep Trail) is located on the top of the plateau and is adjacent to the southeastern edge of the plant site. This road is used mostly by local ranchers, workers involved in oil and gas extraction, and hunters (BLM 1999). Travelers on this road would not likely have the same sensitivity to development of the site and the accompanying impact to the scenic resource as would recreationists and other people involved in activities where visual quality is an important component of their outdoor enjoyment. Viewers along the road would be drawn to the plant site and the plant would dominate the viewshed, but the duration would be brief and the sensitivity of the road is considered low due to minimal use and the type of user. Impacts would be long-term and would last throughout the life of the project.

Construction of the pipelines would cause visual impacts from removal of existing vegetation and the degree of the impact would depend on the type of vegetation affected. In grasslands, meadows, and cultivated agricultural lands, the visual impacts would be hardly noticeable once vegetation has returned to its original state. Areas cleared of forested vegetation would cause the most impact, and visual impacts would persist for years. In areas where the pipeline corridor parallels an exiting pipeline or road corridor, the visual impacts would be an incremental increase to those already existing and the new corridor would leave similar line, color, and texture contrast.

Construction of pipelines in areas not adjacent to existing utility corridors would create linear features in the landscape due to the contrasting soil color and changes in vegetation. The majority of the new disturbance is located in pinyon-juniper vegetation communities and the contrast between the surrounding vegetation and cleared right-of-way would visually be very apparent. Soil color contrasts would be eliminated after the right-of-way is reclaimed and revegetated, but the contrasts caused by the difference in vegetation types between the right-of-way and the surrounding landscape would be a long-term effect until the disturbed area revegetated to pre-construction conditions.

Environmental Consequences of the Alternative Action

Construction of the gas plant would create visual impacts for the life of the project. The site would be highly visible to viewers traveling along Rio Blanco County Road 5, and would appear as a large industrial facility with high contrasts to the existing, undeveloped rural landscape. Impacts would be long-term. Environmental consequences for construction of the pipelines would be the same as discussed for the Proposed Action.

Environmental Consequences of the No Action Alternative

None.

Mitigation

EnCana would acquire a Special Use Operator License from Rio Blanco County and would construct the plant in accordance with the Rio Blanco County Land Use Regulations. Visual contrast impacts would be minimized by implementing measures proposed in EnCana's Reclamation Plan (EnCana 2005j), included in the Plan of Development (EnCana 2005a). EnCana would:

- Restore the right-of-way to as near as possible original contours and restore natural drainage and runoff patterns.
- Scatter salvaged vegetative debris randomly across the right-of-way.
- Restore the appearance of naturally rocky slopes and areas that have a natural gravel, cobble, or boulder veneer on the surface by layering or scattering rock across the right-of-way.
- Seed disturbed areas as discussed in the Vegetation section.

EnCana would also implement the following BLM mitigation measure, which would be incorporated into the Plan of Development:

- Paint all aboveground facilities Munsell Soil Chart Juniper Green.

WILD HORSES

Affected Environment

The project area crosses through the 190,130-acre Piceance-East Douglas Herd Management Area (HMA). Wild horses on public land are protected under the Wild and Free Roaming Horse and Burro Act of 1971. Wild horses are managed by the BLM to provide a healthy, viable breeding population with a diverse age structure (BLM 1997).

The herd population of the Piceance-East Douglas herd, prior to the spring 2005 foal crop, is estimated at 290 individuals. The management range is between 135 and 235 animals. Vegetation within the HMA consists of pinyon-juniper woodlands interspersed with sagebrush and greasewood. Wild horses rely on these woodlands during the summer months for shade and protection of newborn foals from predation, and during the winter months for cover during severe winter storms. Over 90 percent of wild horse diet is comprised of grasses with shrubs becoming more important during periods of heavy snowfall when horses can less readily paw through snow cover to the grass below. Water intake is supplied by springs, man-made water developments, stock ponds, and perennial streams.

The current configuration of the HMA provides for high altitude late spring through early fall summer range on the Cathedral Bluffs. The Bluffs are surrounded by adjacent fall-winter-spring ranges in both the Piceance and Douglas Creek basins. Movement of horse bands is influenced by fences that are interspersed through portions of the HMA, social interaction, seasonal climatic factors, forage availability, and water supplies. A number of resident bands inhabit the lower

elevations of the HMA throughout the year in the Duckwater, Barcus Creek, Greasewood, Rocky Ridge and Boxelder vicinities. The majority of horses in the herd exhibit increased mobility and follow the snow line up into Cathedral Bluffs during the spring, summer and mid-fall before moving back into the lower elevations of the HMA during the late fall and through the winter, concentrating in sagebrush and greasewood bottoms.

The Proposed and Alternative Action gas plants would not be located within a wild horse HMA. The project route crosses 248 acres of the HMA between Meeker-West Proposed Action mileposts 8.0 and 24.5 and Meeker-West Alternative Action mileposts 9.1 and 25.6.

Environmental Consequences of the Proposed Action

Construction and operation of the gas plant would not affect wild horses. Construction of the pipelines would affect wild horses through disturbance and displacement. The primary impact would be removal of existing vegetation and the resulting loss of forage and cover. Construction activities would also result in the displacement of wild horses from areas on or adjacent to the pipeline route. Wild horses could become trapped in the trench and could become stranded across the open trench. Horses may be disrupted by noise and fugitive dust associated with construction activities. Impacts would be temporary and limited to the construction period.

Environmental Consequences of the Alternative Action

Environmental consequences would be the same as discussed for the Proposed Action.

Environmental Consequences of the No Action Alternative

None.

Mitigation

Impacts to wild horses would be minimized by implementing measures proposed in EnCana's Biological Resources Protection Plan (EnCana 2005b) and Reclamation Plan (EnCana 2005j), included in the Plan of Development (EnCana 2005a). EnCana would:

- Install crossovers (trench plugs), with ramps on either side of the open trench, at maximum 1-mile intervals and at well-defined livestock and wildlife trails to facilitate passage of wild horses across the right-of-way and to prevent entrapment in the trench.

- Maintain and repair fences as discussed in the Range Management section.

- Seed disturbed areas as discussed in the Vegetation section.

EnCana would also implement the following BLM mitigation measures, which would be incorporated into the Plan of Development:

- Avoid construction activities during recognized foaling season between March 1 and June 15.

- Replace water sources disturbed during construction with equal sources of water in locations determined by BLM specialists.

CUMULATIVE IMPACTS

This section provides an analysis of the cumulative impacts of past, present, or reasonably foreseeable future projects on various natural and human resources. Cumulative impacts may result when the environmental impacts associated with a proposed project are added to temporary or permanent impacts associated with past, present, or reasonably foreseeable future projects. Although the individual impact of each separate project might not be significant, the additive impacts of multiple projects could be.

Existing environmental conditions in the project area reflect changes based on past projects and activities. The project area is rural and relatively undeveloped. Approximately 86 percent of the Proposed Action would be located adjacent to existing utility corridors. The Kinder Morgan TransColorado, American Soda, CIG Uintah Basin, and EnCana NGL pipeline right-of-ways are 5 to 12 years old, and are considered existing conditions. Construction of the Proposed would result in an incremental increase in existing right-of-way width.

The primary human influences on the project area are oil and gas development, historic oil shale and nahcolite mining, and livestock grazing. Estimates of the total past, present, and foreseeable future surface disturbance from oil and gas development and oil shale and nahcolite mining are presented in Table 5-1. Future developments are based on proposed EnCana, CIG, and ROC Gas oil and gas projects and future oil and gas development. Non-EnCana existing and future oil and gas development is based on estimates from the BLM Colorado State Office (Daggett 2005). Disturbance includes BLM and fee-lands. The timeframe analyzed is 5 years.

The study area for cumulative impacts is the White River Resource Area, which is managed by the WRFO Resource Management Plan and Record of Decision. Cumulative impacts from oil and gas development were analyzed in the White River Resource Area Draft Resource Management Plan (DRMP) and Environmental Impact Statement (EIS). Current development, including the Proposed Action, has not exceeded the foreseeable development analyzed in the DRMP and EIS.

Table 5-1 Surface Disturbance Estimate for Past, Present, and Reasonably Foreseeable Future Projects in the White River Resource Area

Activity	Assumptions	Disturbance (acres)
Existing Pipelines		
CIG Uintah Basin	84 miles (220 miles total) of 20-inch diameter natural gas pipeline from Uintah County, Utah to Greasewood Hub, Colorado to Sweetwater County, Wyoming.	475
EnCana Eureka and Double Willow Units	Variable length and diameter gathering pipelines in Piceance Basin, Colorado.	175
NGL Pipeline	16.9 miles of 4-inch diameter NGL pipeline from Dragon Trail Plant, Colorado to Dragon, Utah	85
Kinder Morgan TransColorado	32 miles (300 miles total) of 22-inch diameter natural gas	300

Table 5-1 Surface Disturbance Estimate for Past, Present, and Reasonably Foreseeable Future Projects in the White River Resource Area

Activity	Assumptions	Disturbance (acres)
	pipeline from Greasewood Hub, Colorado to Farmington, New Mexico.	
Questar	45 miles (45 miles total) of 14-inch diameter natural gas pipeline from Plateau Creek, Colorado to Greasewood Hub, Colorado to Utah.	260
Future Pipelines		
El Paso	38 miles (143 miles total) of 24-inch diameter natural gas pipeline from Greasewood Hub, Colorado to Wamsutter, Wyoming.	350
Entrega	46 miles (327 miles total) of 36-inch and 42-inch diameter natural gas pipelines from Meeker Hub, Colorado to Cheyenne, Wyoming.	560
ROC Gas	9.5 miles of up to 8-inch diameter and 10-inch diameter gathering and residue pipelines near Stake Springs Draw, Colorado	60
EnCana Meeker Project	175 miles (205 miles total) of up to 10-inch, 12-inch, 16-inch, 24-inch, 30-inch, and 36-inch natural gas, NGL and water pipelines from Logan Wash, Colorado to Dragon, Utah.	1,222
Eureka and Double Willow Units	Variable length and diameter gathering pipelines in Piceance Basin, Colorado.	875
Proposed Gas Plants		
EnCana	Natural Gas Plant near Meeker Hub, Colorado.	50
Riata Energy	Natural Gas Plant near Stake Springs Draw.	10
Existing Oil and Gas Development		
Other Oil and Gas Oil and Gas Wells	2,348 wells and ancillary facilities	6,740
Future Oil and Gas Development		
EnCana Figure Four Unit	327 wells and ancillary facilities	900
Other Oil and Gas Oil and Gas Wells	3,400 wells and ancillary facilities	10,363
Existing Nahcolite Mining		
American Soda	Parachute Pipeline, Mining Production Well Field and Piceance Processing Site	827
Natural Soda Inc.	Mining Production Well Field	72
Existing Oil Shale Mining		
Cb Tract	Prototype Oil Shale Lease	170
Shell Mahogany Project	Experimental Oil Shale Recovery Activities	170
Total		23,664

Sources: BLM 1991, 1992, 1994a, 1994b, 1994c, 1997, 1999, 2003a, 2004b, and 2004e, NRG 2004, and CIG 2004.

The potential cumulative impacts associated with each critical and non-critical element that must be addressed to meet the Public Land Health Standard are discussed below.

AIR QUALITY

Construction of the Proposed Action would result in temporary impacts to air quality during construction and long-term impacts during operation of the gas plant. Construction of the reasonably foreseeable future projects would involve the use of heavy equipment that produces exhaust emissions and fugitive dust. The majority of impacts would be mitigated by the large geographical area in which the projects would occur. Wind dispersion and dilution would reduce the magnitude of emissions and fugitive dust.

Over 70 sources operating and permitted to operate within 25 kilometers were modeled (using the same methodology as discussed in the Air Quality section; Buys and Associates 2005) to predict air impacts for the proposed gas plant and cumulative sources. As shown on Table 5-2, the modeling results indicated that NO_2 and CO maximum cumulative levels would be low throughout the modeling area and PM_{10} levels would be higher at a location (Greasewood Hub) about two miles east of the proposed gas plant. Cumulative impacts would decrease after the natural gas-fired compressor engines are replaced with electric compressor engines.

Table 5-2 Predicted Cumulative Ambient Air Quality Impacts

Pollutant	Averaging Period	Maximum Concentration ($\mu g/m^3$)	Applicable Ambient Air Quality Standard ($\mu g/m^3$)	Percent Applicable Ambient Air Quality Standard
NO_2	Annual	4.1	100	9.4
CO	1-hour	323	40,000	2.9
CO	8-hour	135	10,000	2.1
PM_{10}	24-hour	1.8	150	75.8
PM_{10}	Annual	0.3	50	39.0

($\mu g/m^3$) micrograms of pollutant / cubic meter air

AREAS OF CRITICAL ENVIRONMENTAL CONCERN

Construction of the Proposed Action would be limited to the exiting disturbance footprint in the Ryan Gulch ACEC. Construction of the reasonably foreseeable future projects would be limited to existing disturbance footprints within any ACEC. No cumulative impacts would occur.

CULTURAL RESOURCES AND NATIVE AMERICAN RELIGIOUS CONCERNS

Past disturbances to cultural resources in the project area have been related to prior collection, disturbance by OHV users, intentional destruction or vandalism, and construction associated with roads and utilities. Construction of the Proposed Action could affect five known cultural sites. Each of the proposed reasonably foreseeable future projects would include mitigation measures designed to avoid or minimize additional direct impacts on cultural resources. Where direct disturbance cannot be avoided, mitigation (i.e., data recovery) would occur prior to

construction. Pressure on nearby sites would likely continue; however, and would be at least slightly exacerbated by the addition of more cleared right-of-ways in the same general area. Increased access by right-of-ways would increase the potential for trespass or vandalism at previously inaccessible sites. The Proposed Action would add incrementally to the impacts on cultural resources in the project area.

SOILS AND FARMLANDS, PRIME AND UNIQUE

Construction of the proposed project would have short- to long-term impacts depending upon site stabilization and successful reclamation. The Proposed Action would add incrementally to the impacts on soils in the project area. These impacts would be highly localized and limited to the period of construction and reclamation. Cumulative impacts would be minimized by implementing measures for the proper handling of topsoil and spoil, erosion control, and reclamation procedures for each of the reasonably foreseeable future projects.

FLOODPLAINS

Construction of the Proposed Action would have long-term impacts on floodplains until vegetation cover returns to pre-construction conditions, but would not permanently alter or modify any floodplain. The Proposed Action would add incrementally to the impacts on floodplains in the project area. Cumulative impacts would be minimized by implementing streambank stabilization and restoration measures and engineering practices to ensure negative buoyancy of the pipeline during flood events.

VEGETATION AND INVASIVE, NON-NATIVE SPECIES

Construction of the Proposed Action would have temporary to long-term impacts on vegetation. Removal of vegetation and the disturbance of soils during construction would create optimal conditions for the invasion and establishment of invasive, non-native species that could continue for many years after the initial disturbance. The Proposed Action would have a cumulative impact on vegetation and invasive species; however, the amount of vegetation that would be disturbed by the Proposed Action is relatively small compared to the projected oil and gas vegetative disturbance in the WRFO DRMP and EIS. It is estimated that the project would contribute to 12.9 percent of the sagebrush, 4.5 percent of mountain shrub, and 3 percent of pinyon-juniper community disturbance analyzed in the DRMP and EIS. These impacts would be greatest where other projects are constructed within the same period and area as the Proposed Action. Cumulative impacts would be minimized by implementing measures for the proper handling of topsoil and spoil, erosion control, preventative and remedial noxious weed management, and revegetation for each of the reasonably foreseeable future projects.

MIGRATORY BIRDS

Construction of the Proposed Action would result in habitat loss and displacement of migratory birds from areas on or adjacent to the project route. Impacts would be limited to the construction and reclamation phase of the pipeline project, and would have no measurable influence on the abundance or distribution of migratory birds at the scale proposed. Due to abundant suitable

habitat throughout the project area, habitat fragmentation would be unlikely. Cumulative impacts would be minimized by co-locating reasonably foreseeable future projects in existing utility corridors, to the extent feasible, imposing timing limitations and avoidance areas to protect nesting birds, and implementing measures for reclamation for each of the reasonably foreseeable future projects.

THREATENED, ENDANGERED, AND SENSITIVE ANIMAL SPECIES

Construction of the Proposed or Alternative Action would not likely jeopardize the viability of any threatened, endangered, or sensitive animal species. Construction of the Proposed Action would result in a loss of northern goshawk and Greater sage grouse habitat, and could result in nest abandonment, direct mortality, reproductive failure, and destruction of nests if constructed during breeding and nesting periods. The Proposed Action would contribute to a minor cumulative impact on northern goshawk and Greater sage grouse habitat loss. Long-term suitable sage grouse habitat and northern goshawk habitat loss from construction of the Proposed Action would be less than 1 percent of levels analyzed in the WRFO DRMP and EIS. Cumulative impacts would be greatest where other projects are constructed within the same timeframe and area as the Proposed or Alternative Action. Localized Greater sage grouse habitat fragmentation could occur along sagebrush-dominated ridgelines. Cumulative impacts would be minimized by co-locating reasonably foreseeable future projects in existing utility corridors, to the extent feasible, and implementing measures that prohibit construction activities during sensitive wildlife periods for each of the reasonably foreseeable future projects. Reclamation activities would reestablish sagebrush and forb species, and reasonably foreseeable future projects would commit to off-site mitigation (tree removal, vegetative community treatment/conversion, seeding, etc.), as necessary, to compensate for unavoidable disturbances to sage grouse winter range and production areas.

THREATENED, ENDANGERED, AND SENSITIVE PLANT SPECIES

Construction of the Proposed or Alternative Actions would not jeopardize the viability of any threatened, endangered, or sensitive plant species. Reasonably foreseeable future projects would be subject to pre-construction surveys, avoidance requirements, and mitigation measures if special status species plants cannot be avoided. Cumulative impacts are not anticipated.

WASTES, SOLID OR HAZARDOUS

Accidental spills or leaks associated with equipment failures, refueling and maintenance of equipment, and storage of fuel, oil, or other fluids could cause soil, surface water, and/or groundwater contamination during construction of the Proposed Action. The severity of potential impacts from an accidental hazardous material spill would depend upon the chemical released, the quantity released, and the proximity of the release to a waterbody or aquifer. The project would increase contributions to solid waste landfills and would contribute to cumulative impacts on solid waste. Reasonably foreseeable projects would be required to comply with all applicable federal, state, and local regulations. Hazardous waste cumulative impacts are not anticipated.

WATER RESOURCES, SURFACE OR GROUND

Construction of the Proposed Action would have temporary impacts on surface and groundwater resources. Cumulative impacts on surface waterbodies affected by the Proposed Action would be limited primarily to waterbodies that are affected by other projects within the same watersheds as the Proposed Action. Direct in-stream impacts associated with open-cut crossings and increased sediment load during initial storm events following construction would have the greatest impacts on water resources. Runoff from construction activities near waterbodies could also result in cumulative impacts. Cumulative impacts would be minimized with implementation of erosion control measures, and streambank stabilization and restoration measures. Reestablishment of pre-construction contours and vegetation would allow surface waters to infiltrate back into groundwater recharge areas; therefore, cumulative impacts on groundwater resources are not expected.

WETLANDS AND RIPARIAN ZONES

Construction of the Proposed Action would have temporary impacts on wetlands and riparian zones. No wetlands would be permanently filled or drained as a result of pipeline construction. Cumulative impacts would occur where the reasonably foreseeable future projects are constructed adjacent to the Proposed Action corridor, but the impacts would be temporary until wetland vegetation returned to pre-construction levels. Cumulative impacts would be minimized by implementing measures to lessen the duration of disturbance, reduce the soil disturbance, and enhance restoration.

WILDLIFE, AQUATIC AND WILDLIFE, TERRESTRIAL

Construction of the Proposed Action would have temporary to long-term impacts on wildlife resources. Long-term raptor habitat loss and mule deer severe winter range habitat loss from construction of the Proposed Action would be less than 1 percent of levels analyzed in the WRFO DRMP and EIS. Vegetation removal would result in a loss of cover, nesting, and forage habitat. The degree of impact would depend on the type of habitat affected and the rate that vegetation would regenerate after construction. Impacts would be limited to the construction and reclamation phase of the each project, and would be greatest where other projects are constructed within the same period and area as the Proposed Action. Due to abundant suitable habitat throughout the project area, habitat fragmentation would be unlikely and the projects would have no measurable influence on the abundance or distribution of wildlife at the scale proposed. Cumulative impacts would be minimized by co-locating reasonably foreseeable future projects in existing utility corridors, to the extent feasible, and implementing measures that prohibit construction activities during sensitive wildlife periods and for noxious weed management and reclamation. The proposed and reasonably foreseeable projects would likely result in a cumulative increase in big game/vehicle collisions, but the impacts would not affect overall big game populations.

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CONSULTATION, PREPARATION, AND REVIEW

The following agencies were consulted with during preparation of this document:

AGENCY CONSULTATION

Army Corps of Engineers
Bureau of Land Management
Fish and Wildlife Service
Colorado Division of Wildlife
Colorado Department of Public Health and Environment
Utah Division of Wildlife Resources
Rio Blanco County Commissioners
Rio Blanco County Planning Commission
Rio Blanco County Road and Bridge Department
Uintah County Building Department

This Environmental Assessment was prepared by Trigon EPC (a third-party contractor) with direction and independent review by BLM employees in the Grand Junction, White River, and Vernal Field Offices. Preparers are listed below in Table 7-1, and Tables 7-2 through 7-5 list the BLM employees serving on the interdisciplinary review teams.

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INTERDISCIPLINARY REVIEW

Table 7-2 Grand Junction Field Office Interdisciplinary Team

Grand Junction Field Office		
Name	**Title**	**Area of Responsibility**
Dave Stevens	Natural Resource Specialist	Air Quality
Dave Stevens	Natural Resource Specialist	Areas of Critical Environmental Concern
David Smith	Fisheries Biologist	Threatened, Endangered and Sensitive Plant Species
Aline LaForge	Archaeologist	Cultural Resources Paleontological Resources
David Smith	Fisheries Biologist	Invasive, Non-Native Species
Ron Lambeth	Wildlife Biologist	Migratory Birds
Ron Lambeth	Wildlife Biologist	Threatened, Endangered and Sensitive Animal Species
Alan Kraus	Hazardous Material Coordinator	Wastes, Hazardous or Solid
Jim Scheidt	Hydrologist	Water Quality, Surface and Ground Hydrology and Water Rights
Lynae Rogers	Rangeland Management Specialist	Wetlands and Riparian Zones
Britta Laub	Recreation Planner	Wilderness
Tom Bargsten	Natural Resource Specialist	Soils
Jim Dollerschell	Rangeland Management Specialist	Vegetation
Ron Lambeth	Wildlife Biologist	Wildlife, Terrestrial and Wildlife, Aquatic
Dave Trappett	Environmental Protection Specialist	Access and Transportation
Dave Stevens	Natural Resource Specialist	Fire Management
Dave Stevens	Natural Resource Specialist	Forest Management
Bruce Fowler	Geologist	Geology and Minerals
Harley Metz	Ecologist	Rangeland Management
Tom Bargsten	Natural Resource Specialist	Realty Authorizations
Britta Laub	Recreation Planner	Recreation
Jim Cooper	Outdoor Recreation Planner	Visual Resources
Jim Dollerschell	Rangeland Management Specialist	Wild Horses

Table 7-3 White River Field Office Interdisciplinary Team

White River Field Office		
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Chris Ham	Outdoor Recreation Planner	Areas of Critical Environmental Concern
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Michael Selle	Archaeologist	Cultural Resources Paleontological Resources
Mark Hafkenschiel	Rangeland Management Specialist	Invasive, Non-Native Species
Lisa Belmonte	Wildlife Biologist	Migratory Birds
Lisa Belmonte	Wildlife Biologist	Threatened, Endangered and Sensitive Animal Species
Paul Daggett	Mining Engineer	Wastes, Hazardous or Solid
Carol Hollowed	Hydrologist/Planning and Environmental Coordinator	Water Quality, Surface and Ground Hydrology and Water Rights
Lisa Belmonte	Wildlife Biologist	Wetlands and Riparian Zones
Chris Ham	Outdoor Recreation Planner	Wilderness
Carol Hollowed	Hydrologist/Planning and Environmental Coordinator	Soils
Bob Fowler Mark Hafkenschiel	Forester Rangeland Management Specialist	Vegetation
Lisa Smith	Wildlife Biologist	Wildlife, Terrestrial and Wildlife, Aquatic
Chris Ham	Outdoor Recreation Planner	Access and Transportation
Ken Holsinger	Natural Resource Specialist	Fire Management
Bob Fowler	Forester	Forest Management
Paul Daggett	Mining Engineer	Geology and Minerals
Mark Hafkenschiel Bob Fowler	Rangeland Management Specialist Forester	Rangeland Management
Penny Brown	Realty Specialist	Realty Authorizations
Chris Ham	Outdoor Recreation Planner	Recreation
Keith Whitaker	Natural Resource Specialist	Visual Resources
Valerie Dobrich	Natural Resource Specialist	Wild Horses

Table 7-4 Vernal Field Office Interdisciplinary Team

Vernal Field Office		
Name	**Title**	**Area of Responsibility**
Shauna Derbyshire	Realty Specialist	Air Quality
Shauna Derbyshire	Realty Specialist	Areas of Critical Environmental Concern
Robert Specht	Botanist	Threatened, Endangered and Sensitive Plant Species
Blaine Phillips	Archaeologist	Cultural Resources
John Mayers	Geologist	Paleontological Resources
Robert Specht	Botanist	Invasive, Non-Native Species
Dixie Sadlier	Wildlife Biologist	Migratory Birds
Dixie Sadlier	Wildlife Biologist	Threatened, Endangered and Sensitive Animal Species
Merlin Sinfield	Civil Engineering Technician	Wastes, Hazardous or Solid
John Mayers	Geologist	Water Quality, Surface and Ground Hydrology and Water Rights
Karl Wright	Natural Resource Specialist	Wetlands and Riparian Zones
Shauna Derbyshire	Realty Specialist	Wilderness
Dylan Tucker	Natural Resource Specialist	Soils
Robert Specht	Botanist	Vegetation
Dixie Sadlier	Wildlife Biologist	Wildlife, Terrestrial and Wildlife, Aquatic
Shauna Derbyshire	Realty Specialist	Access and Transportation
Troy Suwyn	Fuels Management Specialist	Fire Management
Dave Moore	Land Use Planner	Forest Management
John Mayers	Geologist	Geology and Minerals
Karl Wright	Natural Resource Specialist	Rangeland Management
Shauna Derbyshire	Realty Specialist	Realty Authorizations
Kim Bartel	Recreation Planner	Recreation
Kim Bartel	Recreation Planner	Visual Resources
Karl Wright	Natural Resource Specialist	Wild Horses

Table 7-5 Colorado State Office Interdisciplinary Team

Colorado State Office		
Name	**Title**	**Area of Responsibility**
Scott Archer	Senior Air Resource Specialist	Air Quality