BLM

United States Department of the Interior
Bureau of Land Management

Environmental Assessment
for the
Meeker Gas Plant Expansion Project

White River Field Office
220 E. Market Street
Meeker, Colorado 81641

DOI-BLM-CO-110-2008-0196-EA

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List of Abbreviations and Acronyms

Δdv	delta-deciviews
AADT	annual average daily traffic
ACEC	Area of Critical Environmental Concern
amsl	above mean sea level
ANC	acid neutralizing capacity
AO	Authorized Officer
APCD	Air Pollution Control Division
AQRVs	Air Quality Related Values
AUM	animal unit month
BCC	Birds of Conservation Concern
BEA	U.S. Bureau of Economic Analysis
BGEPA	Bald and Golden Eagle Protection Act

bgs	below ground surface
BLM	Bureau of Land Management
BLS	Bureau of Labor Statistics
BMPs	Best Management Practices
bscfd	billion standard cubic feet per day
^{o}C	degrees centigrade
CAAQS	Colorado Ambient Air Quality Standards
CASTNET	Clean Air Status and Trends Network
CCS	Center for Climate Strategies
CDLE	Colorado Department of Labor and Employment
CEQ	Council on Environmental Quality
CDOLA	Colorado Department of Local Affairs
CDOT	Colorado Department of Transportation
CDOW	Colorado Division of Wildlife
CDPHE	Colorado Department of Public Health and Environment
CDSS	Colorado's Decision Support Systems
CEAA	Cumulative Effects Analysis Area
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CH_4	methane
cm	centimeter
CO	carbon monoxide
CO_2	carbon dioxide
CNHP	Colorado Natural Heritage Program
COGCC	Colorado Oil and Gas Commission
Cordilleran	Cordilleran Compliance Services, Inc.
CPW	Colorado Parks and Wildlife
CRAI	Cultural Resource Analysts, Inc.
CRVFO	Colorado River Valley Field Office
CRVRMP	Colorado River Valley Resource Management Plan
CSP	Colorado State Patrol
CSU	Colorado State University
CU	University of Colorado
DATs	deposition analysis thresholds
DAU	Data Analysis Unit
DPC	desired plant community
dv	deciview
EA	Environmental Assessment
EMS	Emergency Medical Services
Enterprise	Enterprise Gas Processing, LLC
EPA	U.S. Environmental Protection Agency
ERMA	Extensive Recreation Management Area
ESA	Endangered Species Act
ESAL	equivalent single axle load
EVG	Erathem-Vanir Geological
FLAG	Federal Land Managers' Air Quality Related Values Work Group
FLMs	Federal Land Managers
FLPMA	Federal Land Policy and Management Act
FMU	Fire Management Unit

FWS	U.S. Fish and Wildlife Service
GHGs	greenhouse gases
GWP	Global Warming Potential
H_2S	hydrogen sulfide
HMA	Herd Management Area
HNO_3	nitric acid
IDLH	Immediately Dangerous to Life or Health
IMPROVE	Interagency Monitoring of Protected Visual Environments
kg/ha-yr	kilograms per hectare per year
km	kilometer
kV	kilovolt
MEI	maximum exposed individual
mg/l	milligram per liter
mmhos	micromhos
MLA	Mineral Leasing Act
MLE	most likely exposure
mmscfd	million standard cubic feet per day
MMIF	Mesoscale Model Interface Program
MP	milepost
mph	miles per hour
MU	Mapping Unit
N	nitrogen
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NADP	National Acid Deposition Program
NEPA	National Environmental Policy Act
NGL	natural gas liquid
NH_4	ammonium
NIOSH	National Institute for Occupational Safety and Health
NO_2	nitrogen dioxide
NO_3	nitrate
NO_x	nitrous oxides
NPS	National Park Service
NRCS	Natural Resources Conservation Service
NSPS	New Source Performance Standards
NTN	National Trends Network
NWCFMU	Northwest Colorado Fire Management Unit
O_3	ozone
OHV	off-highway vehicle
PBA	Programmatic Biological Assessment
PBO	Programmatic Biological Opinion
PFYC	Potential Fossil Yield Classification
$PM_{2.5}$	particulate matter less than 2.5 microns in effective diameter
PM_{10}	particulate matter less than 10 microns in effective diameter
PMC	Pioneers Medical Center
POD	Plan of Development
PRPA	Paleontological Resources Preservation Act
PSD	Prevention of Significant Deterioration
PUP	pesticide use proposal

RBC	Rio Blanco County
RELs	Reference Exposure Levels
RfCs	Reference Concentrations for Chronic Inhalation
RFD	reasonably foreseeable development
RMP	Resource Management Plan
ROD	Record of Decision
ROS	Recreation Opportunity Spectrum
RV	recreational vehicle
S	sulfur
SAR	Sodium Adsorption Ratio
SCS	Soil Conservation Service
SH	State Highway
SHPO	State Historic Preservation Office
SIC	Standard Industrial Classification
SO_2	sulfur dioxide
SO_4	sulfate
SPCC	Spill Prevention, Control, and Countermeasures
SPM	Semi-Primitive Motorized
SVR	Standard Visual Range
SWMP	Storm Water Management Plan
tg	terragrams
TMDL	Total Maximum Daily Load
tpy	tons per year
µeq/l	microequivalents per liter
$\mu g/m^3$	micrograms per cubic meter
URF	chronic inhalation unit risk factors
USC	United States Code
USDI	U.S. Department of the Interior
USGS	U.S. Geological Survey
VIEWS	Visibility Information Exchange Web System
VOCs	volatile organic compounds
VRM	Visual Resource Management
WestJumpAQMS	West-wide Jump Start Air Quality Modeling Study
WRAP	Western Regional Air Partnership
WRCC	Western Regional Climate Center
WREA	White River Electric Association, Inc.
WRF	Weather Research and Forecasting
WRFO	White River Field Office

1.0 INTRODUCTION

1.1 Identifying Information

NUMBER: DOI-BLM-CO-110-2008-0196-EA

CASEFILE/PROJECT NUMBER: COC73901(Gas Plant Expansion)
COC75514 (Power Line)

PROJECT NAME: Meeker Gas Plant Expansion Project

LEGAL DESCRIPTION:
Sixth Principal Meridian, Colorado

Meeker Gas Plant Expansion
T. 1 S., R. 97 W. Sec. 17, SW¼SW¼, NW¼SW¼
Sec. 18, NE¼SE¼, SE¼SE¼, SW¼SE¼

Power Line
T. 1 S., R. 97 W. Sec. 19, Lot 1 and Lot 2
Sec. 18, Lot 3 and Lot 4, NE¼SW¼, NW¼SE¼, SW¼SE¼

APPLICANTS: Enterprise Gas Processing, LLC (Enterprise)
White River Electric Association, Inc. (WREA)

1.2 Purpose & Need for the Action

The Bureau of Land Management (BLM) purpose is to provide increased legal access to federal land administered by the BLM for construction and operation of a gas plant expansion and associated power line. The Proposed Action would increase the ability of the existing Meeker Gas Plant to provide natural gas processing that would accommodate the projected future volumes of natural gas from the western slope of Colorado and the Rocky Mountain region.

The BLM's need for federal action arises from the BLM's responsibility under the Federal Land Policy and Management Act of 1976 (FLPMA). FLPMA gives the Secretary of the Interior authority to grant rights-of-ways on public lands administered by the BLM. The BLM is required by FLPMA to consider and respond to the Applicant's right-of-way request.

The Proposed Action includes design and implementation of appropriate mitigation intended to make the project consistent with the goals, objectives, and decisions of the White River Record of Decision and Approved Resource Management Plan (White River ROD/RMP) (BLM 1997), as well as with applicable local, state and federal policies, regulations, and laws.

Decision to be Made: This Environmental Assessment (EA) has been prepared in conformance with the policy guidance provided in the BLM's National Environmental Policy (NEPA) Handbook H-1790-1 (BLM, 2008). The BLM NEPA Handbook provides instructions for

compliance with the Council on Environmental Quality (CEQ) regulations for implementing the procedural provisions of NEPA (40 CFR §1500-1508) and U.S. Department of the Interior (USDI) Manual 516 DM 1-7 on NEPA compliance (USDI, 2005).

The BLM decision-makers will decide, based on the analysis contained in this EA, whether or not to authorize the proposed action, and if so, under what terms and conditions.

The Decision Record associated with this EA may not constitute the final approval for all actions, such as individual rights-of-way grants and temporary use permits associated with the Proposed Action. It does, however, provide the BLM's Authorized Officer (AO) with an analysis from which to base the final approval, if warranted, for individual project components such as individual rights-of-way grants or temporary use permits.

1.3 Scoping, Public Involvement, and Issues

1.3.1 Scoping

Scoping was the primary mechanism used by the BLM to identify issues. Internal scoping was initiated when the project was presented to the BLM White River Field Office (WRFO) interdisciplinary team on June 17, 2008. External scoping was conducted by posting this project on the BLM WRFO's on-line NEPA register on June 17, 2008. The BLM held a public meeting in Meeker on July 16th, 2009. Two individuals attended the public meeting. A description of the proposal and the meeting notice were published in the Rio Blanco Herald Times on July 9th, 16th, and 23rd, 2009.

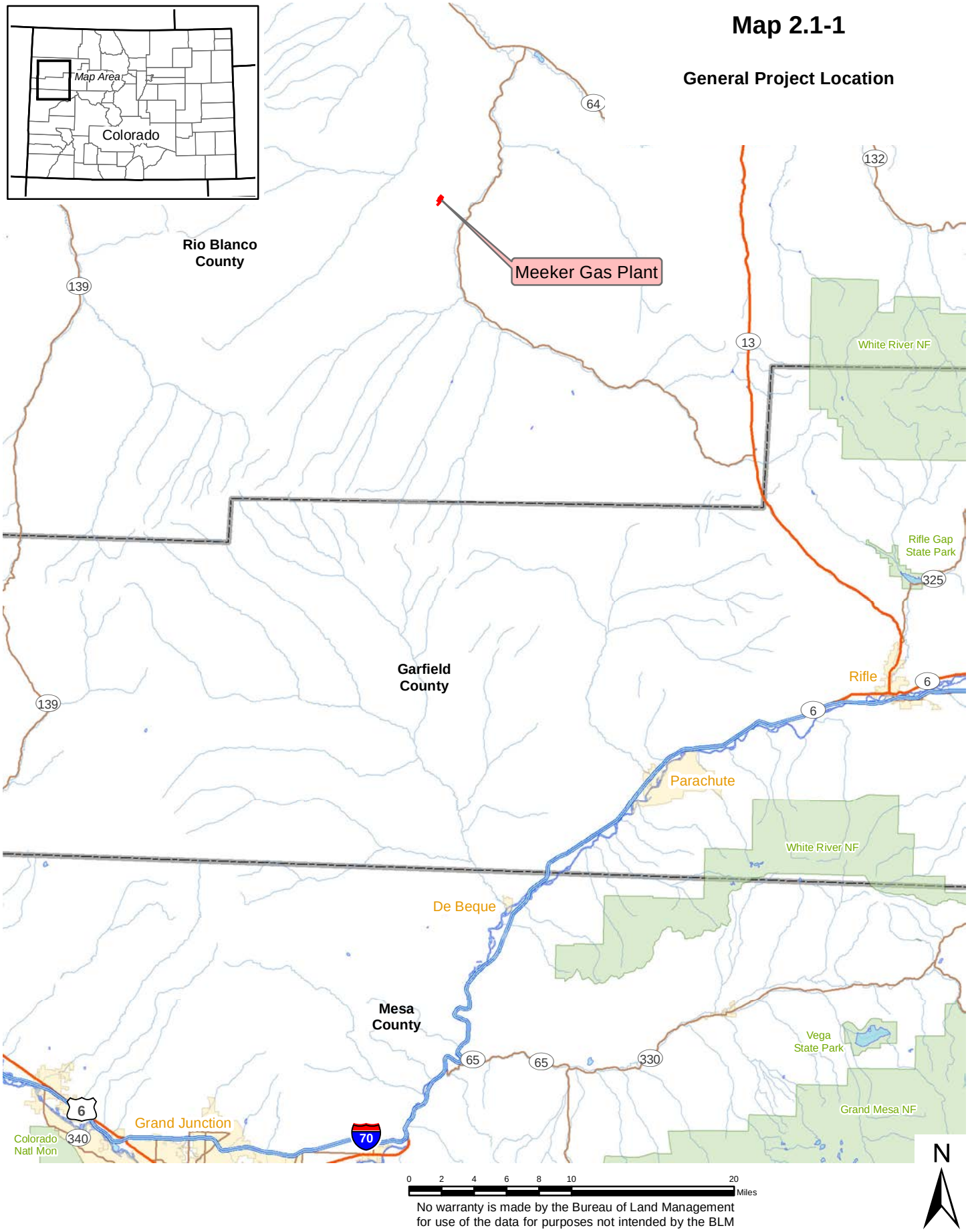
1.3.2 Issues

No issues were identified during public scoping.

2.0 PROPOSED ACTION AND ALTERNATIVES

2.1 Background/Introduction:

The Meeker Gas Plant is located in Rio Blanco County, Colorado (see Map 2.1-1). On July 22, 2004, Encana Oil and Gas (USA) Inc. filed an application with the BLM for a right-of-way grant under Section 28 of the Mineral Leasing Act (MLA) of 1920, as amended. Construction, operation, and maintenance of the Meeker Gas Plant was analyzed by the BLM in an EA (CO-110-2004-188-EA) and approved with a Finding of No Significant Impact and Decision Record signed on November 11, 2005 (BLM, 2005). In addition to approval for the gas plant, the BLM approved construction of 4 miles of 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 natural gas liquids (NGL) pipeline, 21 miles of up to 12-inch diameter natural gas or water pipeline, 44.5 miles of up to 10-inch diameter NGL pipeline, and related aboveground appurtenances; and conversion of the existing American Soda water/sodium slurry pipelines to natural gas, natural gas liquids, and/or water pipelines.



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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. Before the Meeker Gas Plant was constructed, 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 was loaded onto trucks and hauled to terminal points in the Piceance and Paradox Basins for injection into existing NGL pipelines. Expanding the central gas plant (the Meeker Gas Plant) allows for further maximizing processing technology and minimizing the number of processing facilities, land disturbance, noise, and truck traffic throughout the Piceance Basin.

The Meeker Gas Plant Project was sold to Enterprise in early 2006. Enterprise constructed the Meeker Gas Plant in two phases; Meeker I in 2006 and Meeker II in 2007. Enterprise holds a right-of-way grant (COC-73901) from the BLM for 50 acres. On February 25, 2009, the BLM issued a Temporary Use Permit (COC-73408) to Enterprise for a 7.1 acre temporary laydown area immediately adjacent to the Meeker Gas Plant. The 7.1 acres would be entirely within the gas plant expansion.

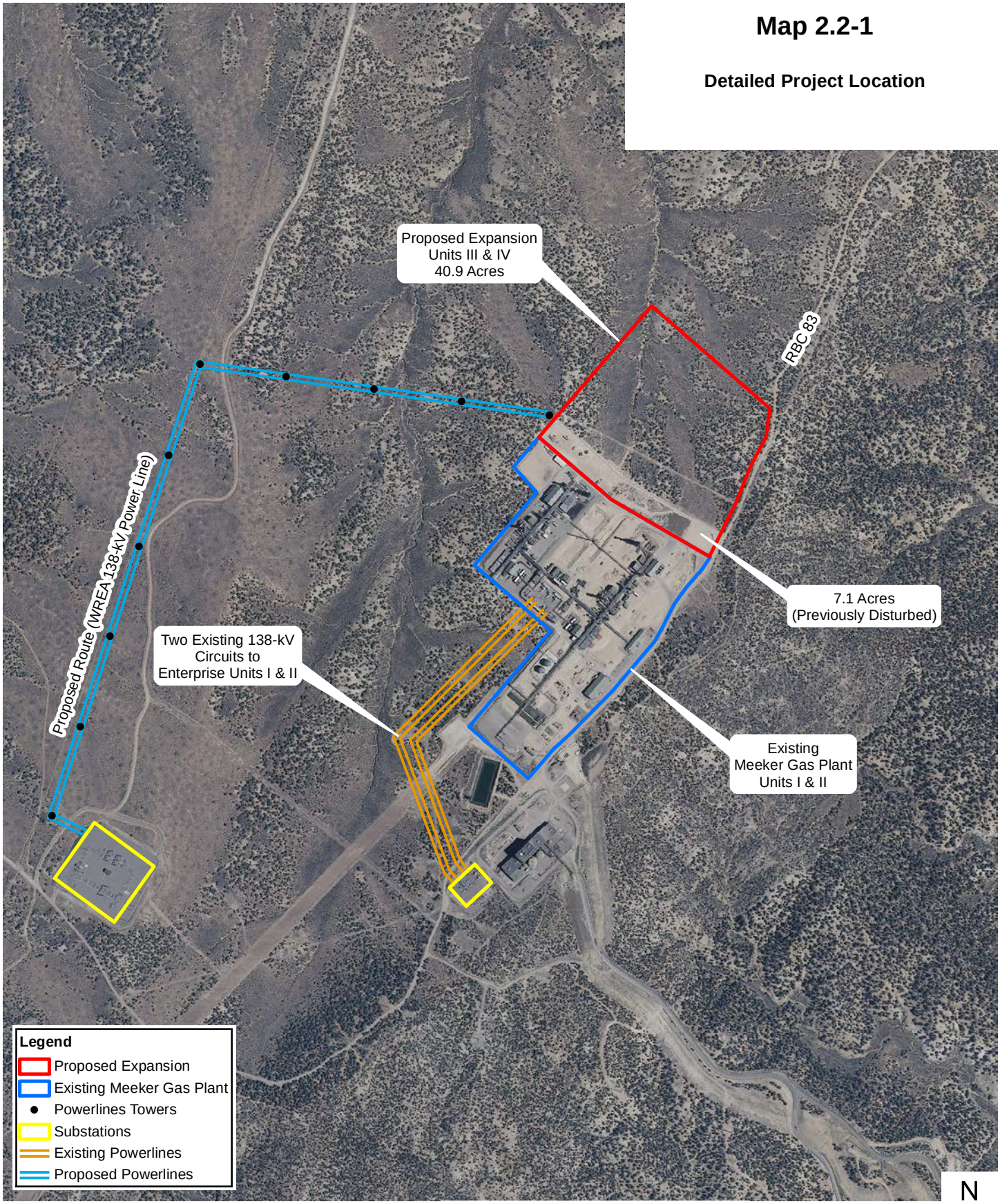
On June 16, 2008, Enterprise filed an application (SF299) with the BLM WRFO requesting a right-of-way for an additional 65 acres (60 acres for the gas plant expansion and 5 acres for a truck unloading facility). On January 26, 2009, WREA filed an application (SF299) with the BLM WRFO requesting a right-of-way for a new 138-kV power line to serve the proposed electrical needs of the gas plant expansion. In July 2012, Enterprise revised the SF299 to request 40.9 acres for the gas plant expansion and also submitted a revised Plan of Development (POD) for the expansion.

Meeker I and Meeker II can each process up to 750 million standard cubic feet per day (mmscfd) of natural gas for a total of 1.5 billion standard cubic feet per day (bscfd) of natural gas. The two units can produce up to 70,000 barrels of mixed natural gas liquids per day but currently produce only about 55,000 barrels per day. Enterprise proposes to expand the Meeker Gas Plant by constructing, operating, and maintaining two additional processing units (Meeker III and Meeker IV). Each processing unit would be capable of processing up to 350 mmscfd of natural gas for a total expansion of 700 mmscfd of natural gas and an additional 55,000 barrels per day of mixed natural gas liquids over the next 30 years to meet demand due to increased development in the area. This would bring the total capacity of the Meeker Gas Plant to over 2.1 bscfd making the Meeker Gas Plant one of the largest gas plants in the United States.

2.2 Proposed Action

2.2.1 Land Requirements

Expansion of the Meeker Gas Plant would require 40.9 acres, of which 7.1 acres was previously disturbed for a temporary laydown area. Installation of the power line would require a 100-foot wide right-of-way (15.3 acres) of which 1.8 acres would be cleared around a 50-foot radius for the poles. Total disturbance for the project is 42.7 acres, of which 7.1 acres is previously disturbed. The proposed project components are shown on Map 2.2-1.



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2.2.2 Gas Plant Expansion Description

The proposed expansion units (Meeker III and IV) would be operated using the same process used in the existing Meeker Gas Plant. NGL would be recovered from the natural gas stream to meet carbon dioxide specifications for natural gas gathered from the Piceance Basin and delivered into inter- and intrastate pipelines. The process 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 expansion units would have discharge compression to deliver natural gas into the various sales outlets in the area. All compression would be electric-driven.

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 treated gas would 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 (estimated to be 28.5 barrels per day), which would be stored and trucked off-site. Water for disposal is trucked by Tu & Frum Trucking, and disposed of at La Point Storage and Recycling in LaPoint, Utah. Water for disposal is also trucked by RNI-Dalbo to one or more of that company's seven fluid disposal facilities located in the Uinta and Piceance basins.

The existing infrastructure for the Meeker Gas Plant including the office complex, sewage system, potable water system, and communications system would be used to accommodate the expansion. The existing security fence would be extended around the expansion area and the plant would continue to be staffed 24 hours per day.

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/7days per week/365 days per year. Enterprise would continue to use down cast lighting and use the least intrusive shade of lighting within the constraints of Occupational Safety and Health Administration requirements and standard industry engineering practices. Lighting would comply with Rio Blanco County Land Use Regulations.

Operations at the proposed expansion would require an additional 67 barrels of deionized water per day. Currently at the existing gas plant, the deionized water is supplied from the City of Meeker in trucks. Potable water is supplied to the existing gas plant in trucks from the City of Meeker. Enterprise anticipates that the existing facilities would accommodate the expansion and no additional potable water would be required.

The following actions would occur during construction: The construction site would be cleared and grubbed. Vegetation would be removed and placed in a windrow around the perimeter of the

disturbance when possible. The site would be graded. Topsoil would be removed, salvaged and stockpiled during initial grading and seeded to establish a protective vegetative cover. The site would be leveled during general grading using cut and fill slopes. For final grading, the site would be leveled with appropriate grades and graveled, built on or stabilized as applicable. All stockpiles would have storm water Best Management Practices (BMPs) implemented to reduce sediment transport and erosion of topsoil as applicable to the location (see Map 2.2-2). Sediment basins, rock check dams, diversion ditches and water bars would be implemented where construction occurs. Check dams may be used in ditches to dissipate water flow velocity. Each construction activity in the project would be under routine inspection until final stabilization has occurred.

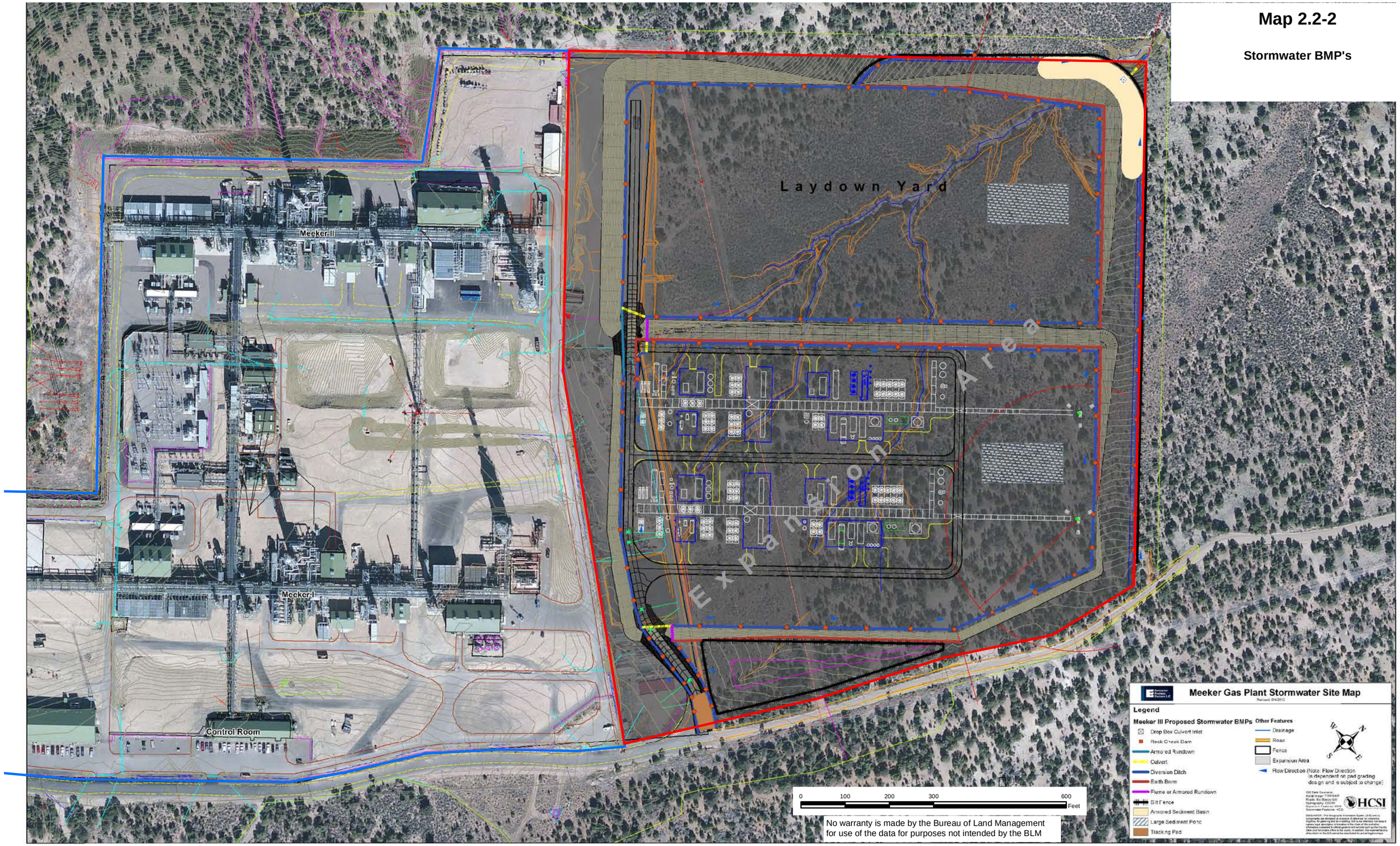
After the construction phase, areas of disturbance (all area inside the fence) would be graveled. The following elements would be constructed on the site:

- Two level areas. The site would be graded into two separate, level areas. A short slope would be created between the upper and the lower area.

- Vehicle track pad. A vehicle track pad would be installed at the entrance of the site. The track pad would be approximately 40 feet wide and 100 feet long. This would eliminate sediment transport from vehicles leaving the site.

- Two sets of diversion ditches. One set of diversion ditches – the interior ditches - would run along the site perimeter of each of the two level areas, the exterior diversion ditches would run around the outside perimeter of the full site. Flumes or armored rundowns would connect the interior diversion ditches surrounding the upper area with the interior ditches surrounding the lower area. The exterior diversion ditches would collect storm water runoff from outside the project area and prevent it from running onto the site area. The interior ditches would collect water from the steep side grades along the perimeter of the project and between the two level areas. None of the diversion ditches would collect water that has come in contact with any of the operational equipment.

- Sediment basin: Diversion ditches for stormwater outside the facility fence would terminate in a sediment basin, from where overflow water would be discharged via a culvert into an ephemeral tributary to Yellow Creek. The sediment basin would be designed to manage precipitation runoff per the requirements of the Colorado Department of Public Health and Environment (CDPHE) Water Quality General Construction Permit Series COR030000. A sediment basin provides adequate settling time, retention capacity and reduction of flow velocities minimizing erosion and allowing for settling of suspended sediment. A basin may be constructed by excavating a basin at the terminus end of a diversion ditch or berm. Basins usually consist of a dam, blanketed or hydroseeded downgradient slopes/berms and a stabilized outlet (spillway). Sediment basins are formed by excavating or constructing an earthen embankment at the terminal end of a diversion ditch or berm. Basins should be placed at the end of perimeter sediment ditches, diversion ditches, along bar ditches upgradient areas from which sediment-laden storm water directly enters a drainage or watercourse. The size of the structure would depend upon the location, size of drainage area, soil type, rainfall pattern and desired outflow releases.


Map 2.2-2
Stormwater BMP's
Laydown Yard
Expansion Area
Meeker-II
Meeker-I
Control Room
Meeker Gas Plant Stormwater Site Map
Legend
Meeker III Proposed Stormwater BMPs
Drop Box Culvert Inlet
Rock Check Dam
Armored Rundown
Culvert
Diversion Ditch
Earth Berm
Flume or Armored Rundown
Silt Fence
Armored Sediment Basin
Large Sediment Pond
Tracking Pad
Other Features
Drainage
Road
Fence
Expansion Area
Flow Direction (Note: Flow Direction is dependent on yard grading design and is subject to change)
HCSI
0 100 200 300 600
Feet
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- Interior storm water collection system. The storm water system for the interior of the expansion area (inside the fenced area) would be a stand-alone system separate from the storm water BMPs that would be implemented on the perimeter of the site. The interior system would work similar to the Meeker I and Meeker II systems. Upon final grade, all storm water would be directed via graveled/concrete ditches to storm drains. Water coming off of structures would be directed into storm drains. The storm drains (located at applicable locations) would then direct the water into scrubber boxes (removing hydrocarbons and other contaminates) and finally terminating into the large retention basins where the water would evaporate and/or infiltrate into the ground.

- Interior retention basins. The interior retention basins would be located on the north side of the facility. The internal storm water system would terminate into these basins. Water released into these basins would evaporate or infiltrate into the ground. These retention basins would be designed to retain a 100-year event for the given amount of acreage of the facility. This basin would not be lined. Water collected in the basin would be from precipitation events only. The scrubber boxes installed at all storm drain locations would remove any petroleum based products that may collect in the storm water as it moves across the facility. The design of the basin would allow for easy access for clearing of sediment and debris should an accumulation occur.

During construction, dust would be controlled by spraying water on disturbed areas as needed. During the dry months of the year, an estimated one truck load of water (80 barrels) per day of water would be used for dust control.

2.2.3 Power Line Description

As a component of the Proposed Action, WREA would construct a double circuit 138-kV 3-phase aboveground power line between the existing McBryde Substation and the proposed gas plant expansion. The route would originate from the northwest corner of the McBryde Substation, extend northwest for approximately 300 feet then follow an existing fenceline to the northeast for 3,582 feet before turning east for 2,680 feet to enter the expansion area on the west side. The total route would be approximately 6,562 feet. Enterprise's transformer(s) would be located within the expansion area.

Ten single pole wood power poles would be spaced along the route with the location dependent on site conditions. All poles would be electrically safe for raptors. Perching deterrents have not been incorporated into the design.

The proposed route follows existing road and fence lines and therefore, WREA anticipates minimal disturbance and brush/tree clearing. Where necessary, brush, shrubs, and small trees along the right-of-way, beneath the location of the overhead conductors would be mown, close to ground level, to allow for conductor stringing and vehicle travel. Larger trees that may affect future electrical clearances would be discriminately cut and either be used to block the right-of-way from future public use, or scattered. Disturbance including grading and cutting would not occur other than specifically where poles would be placed. Long-term, vegetation would be cleared within the 100-foot right-of-way around each pole structure, within an assumed circular area with 50-foot radius centered on the pole location (an area of 0.18 acres per pole – 1.8 acres for ten poles). Equipment used during construction would include a 2-ton, 4-wheel drive digger/derrick truck, 2-ton bucket truck, basic utility trucks and a small rubber-tire backhoe.

2.2.4 Schedule

Construction of the Proposed Action would begin following receipt of all required permits and approvals. Meeker III and Meeker IV would be built sequentially, in two 18-month construction phases. Each train would become operational upon construction completion. The Proposed Action/plant expansion is expected to be in operation for 30 years. The proposed power line would take approximately 14 days to install.

2.2.5 Workforce

For each train (Meeker III and Meeker IV), Enterprise estimates that construction activities would require between 50 and 150 workers over an 18-month construction schedule. The construction workforce would initially include approximately 50 workers for 6 to 10 months and increase to 90 workers for another 6 to 9 months. The construction workforce would peak at 150 workers for an approximate 2 to 3 month period.

The Meeker Gas Plant currently employs approximately 40 workers, including 10 supervisors, 16 operators and 12 maintenance personnel. Enterprise estimates that the operational workforce associated with the Meeker III expansion would include an additional 6 workers and that another 4 workers would be required for the Meeker IV expansion, for a total of 10 new operational workers associated with the expansion (Brennan, 2012).

Construction of the power line from the existing substation to the expansion area would require approximately 4 to 6 workers for 14 days. Operation of the power line would not require additional workers.

2.2.6 Traffic

Enterprise prepared a Transportation Plan which addresses traffic associated with the gas plant expansion (see Appendix A in Enterprise's POD). State Highway 13 (SH 13), State Highway 64 (SH 64), and Rio Blanco County Road 5 (RBC 5 or Piceance Creek Road) are the primary roads that would be used to access the project area. Traffic associated with construction of train would include approximately 35 light vehicles and between 10 and 13 heavy vehicles per day. Light vehicles would include supervisor, worker and inspection vehicles, and light delivery trucks. Heavy vehicles would include worker transport busses and large trucks delivering materials and supplies. An additional four heavy vehicles would remain on-site throughout construction.

During construction, most traffic would originate at the Enterprise Yard on SH 64 west of Meeker. Heavy truck traffic would travel to the project area early in the morning (6:30am – 7:45 am) and return in the evening (5:30 pm – 7:30 pm). Most construction workers would commute to the project area in busses with a 30-passenger seating capacity. Busses would transport workers to the project area from the Enterprise Yard and yet-to-be determined locations in Rifle between 5:30 am and 7:30 am, and return from the project area between 4:30 pm and 6:00 pm.

Traffic associated with the operational phase of the Proposed Action would consist primarily of light vehicles transporting workers. Operation of Meeker III would include approximately 6 light vehicles and operation of Meeker IV would include approximate four light vehicles. Heavy traffic associated with the operation of Meeker III and IV would include one water supply truck every other day and one truck hauling wastewater to approved disposal facilities approximately every four days.

2.2.7 Reclamation

The entire 40.9 acres proposed for expansion of the gas plant would be graveled and therefore, no interim reclamation would occur. At the end of the project life (approximately 30 years), Enterprise would reclaim the entire plant site according to their reclamation plan (Appendix B in Enterprise's POD) modified as needed to be consistent with WRFO's most current reclamation standards.

Once the power line is installed, all disturbed areas would be reseeded at the first appropriate seeding window to reduce the potential for invasive species infestation. Either rangeland-type drill, broadcast, or hydro-mulch would be used. If possible, seed would be applied during periods of maximum soil moisture. WREA would visually inspect the reseeded area and rake and/or harrow the area to cover the seed, leaving the area roughened to improve surface water retention and prolonged soil moisture. The area would be reseeded with a BLM-recommended see mixture. If, after two growing seasons, the success criteria outlined as mitigation in the vegetation section are not achieved, then the steps would be reassessed in consultation with the BLM WRFO and additional seeding at an appropriate seeding window would occur.

2.2.8 Wildlife

Enterprise has agreed to a one-time payment of $77,400.00 to Colorado Parks and Wildlife (CPW) for off-site compensatory mitigation for disturbance within mule deer severe winter range. To mitigate the loss of 50 acres of severe winter range from construction of Meeker I and II, a commitment was made to implement compensatory off-site mitigation that would improve 2.5 acres of habitat, off-site, for every acre of habitat physically disturbed by construction of the gas plant (see page 4-79 in BLM, 2005). That commitment, to provide compensatory mitigation (a cost of $37,500.00), would improve 125 acres of big game winter habitat but has not been implemented. The gas plant expansion would affect an additional 40.9 acres, also within mule deer severe winter range. The total mitigation payment of $77,400 includes the original mitigation cost and an additional $39,900.00 to mitigate for the gas plant expansion.

2.3 No Action Alternative

Expansion of the Meeker Gas Plant would not occur under this alternative. The power line from the existing McBryde Substation to the gas plant expansion would not be constructed.

2.4 Alternatives Considered but Not Carried Forward

No alternatives were identified that were not carried forward. The proposed expansion of the Meeker Gas Plant would occur immediately adjacent to the existing gas plant and therefore an alternate location would result in greater impact.

2.5 Plan Conformance Review

The Proposed Action is subject to and has been reviewed for conformance with the following plan (43 CFR 1610.5, BLM 1617.3):

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

Date Approved July 1, 1997

Decision Number/Page: Page 2-49 through 2-52

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."

3.0 AFFECTED ENVIRONMENT & ENVIRONMENTAL CONSEQUENCES

3.1 Introduction

3.1.1 Standards for Public Land Health

In January 1997, Colorado BLM approved the Standards for Public Land Health. These standards cover upland soils, riparian systems, plant and animal communities, threatened and endangered species, and water quality. Standards describe conditions needed to sustain public land health and relate to all uses of the public lands. Because a standard exists for these five categories, a finding must be made for each of them in an environmental analysis. These findings are located in specific elements listed below.

3.1.2 Affected Resources

The CEQ Regulations state that NEPA documents "must concentrate on the issues that are truly significant to the action in question, rather than amassing needless detail" (40 CFR 1500.1(b)). While many issues may arise during scoping, not all of the issues raised warrant analysis in (EA. Issues will be analyzed if: 1) an analysis of the issue is necessary to make a reasoned choice between alternatives, or 2) if the issue is associated with a significant direct, indirect, or cumulative impact, or where analysis is necessary to determine the significance of the impacts. Table 3.1-1 lists the resources considered and the determination as to whether they require additional analysis.

Table 3.1-1
Resources and Determination of Need for Further Analysis

Determination[1]	Resource	Rationale for Determination
Physical Resources		
PI	Air Quality	The Meeker Gas Plant expansion would emit criteria pollutants.
PI	Geology and Minerals	Minerals are leased within the project area.
PI	Soil Resources*	Soils would be disturbed during construction.
PI	Surface and Ground Water Quality*	Possible effects to surface water quality could occur during construction and operation of the Meeker Gas Plant Expansion.
Biological Resources		
NP	Wetlands and Riparian Zones*	The nearest wetland is over 2 miles from the project area.
PI	Vegetation*	Vegetation would be removed during construction.

Determination[1]	Resource	Rationale for Determination
PI	Invasive, Non-native Species	There is the potential for spread of non-native species.
PI	Special Status Animal Species*	Potentially present in the project area.
PI	Special Status Plant Species*	Potentially present in the project area.
PI	Migratory Birds	Potentially present in the project area.
PI	Aquatic Wildlife*	Water depletions are included in the Proposed Action.
PI	Terrestrial Wildlife*	Big game winter range and other species present in project area.
NP	Wild Horses	Wild horses are not present in the project area.
Heritage Resources and the Human Environment		
PI	Cultural Resources	Cultural resources may be present in the project area.
PI	Paleontological Resources	The gas plant expansion would occur on formations which potentially contain fossils.
NP	Native American Religious Concerns	No Native American Religious Concerns are known in the area, and none have been noted by Northern Ute tribal authorities. Should recommended inventories or future consultations with Tribal authorities reveal the existence of such sensitive properties, appropriate mitigation and/or protection measures may be undertaken.
PI	Visual Resources	Expansion of the gas plant would create a visual impact.
PI	Hazardous or Solid Wastes	Wastes would be generated as a result of the Proposed Action.
PI	Fire Management	There is the potential for fire during project construction.
PI	Social and Economic Conditions	Expansion of the gas plant would result in increases in workforce and county revenues.
NP	Environmental Justice	According to recent Census Bureau statistics (2000), there are no minority or low income populations within the WRFO.
Resource Uses		
PI	Forest Management	Pinyon-juniper woodland vegetation would be removed.
PI	Rangeland Management	Expansion of the gas plant would permanently remove 40.9 acres from the grazing allotment.
PI	Floodplains, Hydrology, and Water Rights	Expansion of the gas plant would permanently alter the hydrology in the project area.
PI	Realty Authorizations	Several existing rights-of-ways could be impacted by expansion of the gas plant.
PI	Recreation	Hunting and other recreation could occur in the project area.
PI	Access and Transportation	Construction of the gas plant expansion would temporarily increase traffic in the project area.

Determination[1]	Resource	Rationale for Determination
NP	Prime and Unique Farmlands	There are no Prime and Unique Farmlands within the project area.
Special Designations		
NP	Areas of Critical Environmental Concern	The closest ACEC is 0.7 miles to the southeast of the project area (Ryan Gulch).
NP	Wilderness	There are no wilderness or wilderness study areas in the vicinity of the project area.
NP	Wild and Scenic Rivers	There are no Wild and Scenic Rivers in the WRFO.
NP	Scenic Byways	There are no Scenic Byways within the project area.

[1] NP = Not present in the area impacted by the Proposed Action or Alternatives. NI = Present, but not affected to a degree that detailed analysis is required. PI = Present with potential for impact analyzed in detail in the EA.
* Public Land Health Standard

3.2 AIR QUALITY

3.2.1 Affected Environment

Regional air quality is influenced by a combination of factors including climate, meteorology, the magnitude and spatial distribution of local and regional air pollution sources, and the chemical properties of emitted pollutants. Within the lower atmosphere, regional and local scale air masses interact with regional topography to influence atmospheric dispersion and transport of pollutants. The following sections summarize the climatic conditions and existing air quality within the project area and surrounding region.

The project area is located in a semiarid (dry and cold), mid-continental climate regime. The area is typified by dry, sunny days, clear nights, and large daily temperature changes. The nearest long-term meteorological measurements were collected at Meeker, Colorado (1900-present), located east of the project area at an elevation of 6,240 feet above mean sea level (amsl) (Western Regional Climate Center - WRCC 2012).

The annual average total precipitation at Meeker (about 22 miles NE of the plant) is 16.4 inches, with annual totals ranging from 10.7 inches (2002) to 25.5 inches (1957). Precipitation is fairly consistent throughout the year with average monthly precipitation ranging from 1.10 inches (January) to 1.78 inches (August). An average of 69.7 inches of snow falls during the year (annual high 117.6 inches in 1955), with the majority of the snow distributed evenly between November and March.

The region has cool temperatures, with average temperature (in degrees Fahrenheit - ˚F) ranging between 7.0˚F and 36.5˚F in January to between 46.9˚F and 85.7˚F in July. Extreme temperatures have ranged from -43˚F (1912) to 103˚F (1900). The frost free period generally occurs from June to August. Table 3.2-1 shows the mean monthly temperature ranges and total precipitation amounts.

Table 3.2-1
Mean Monthly Temperature Ranges
and Total Precipitation Amounts for Meeker

Month	**Average Temperature Range (˚F)**	**Total Precipitation (inches)**
January	7.0-36.5	1.10
February	11.6-40.4	1.02
March	20.1-48.1	1.35
April	28.0-58.4	1.75
May	34.7-69.1	1.49
June	40.6-78.9	1.23
July	46.9-85.7	1.37
August	45.9-83.1	1.78
September	37.6-75.2	1.57
October	28.2-63.7	1.47
November	18.6-48.9	1.18
December	9.4-37.3	1.13
ANNUAL	43.9 (mean)	16.4 (mean)
Source: WRCC, 2012.		

The closest comprehensive wind measurements were collected in the project area at the Bar D Ranch meteorological monitoring station located approximately 8 miles southwest of the project area (Tables 3.2-2 and 3.2-3). To describe the wind flow pattern for the region, a windrose for the Bar D site, for available years 2002 and 2004, is presented in Figure 3.2-1. From this information, it is evident that the winds originate from the south to southeast nearly 40 percent of the time.

The frequency and strength of winds greatly affect the transport and dispersion of air pollutants. The annual mean wind speed is 8.1 miles per hour (mph), and that relatively high average wind speed indicates the presence of good dispersion and mixing of any potential pollutant emissions resulting from project sources.

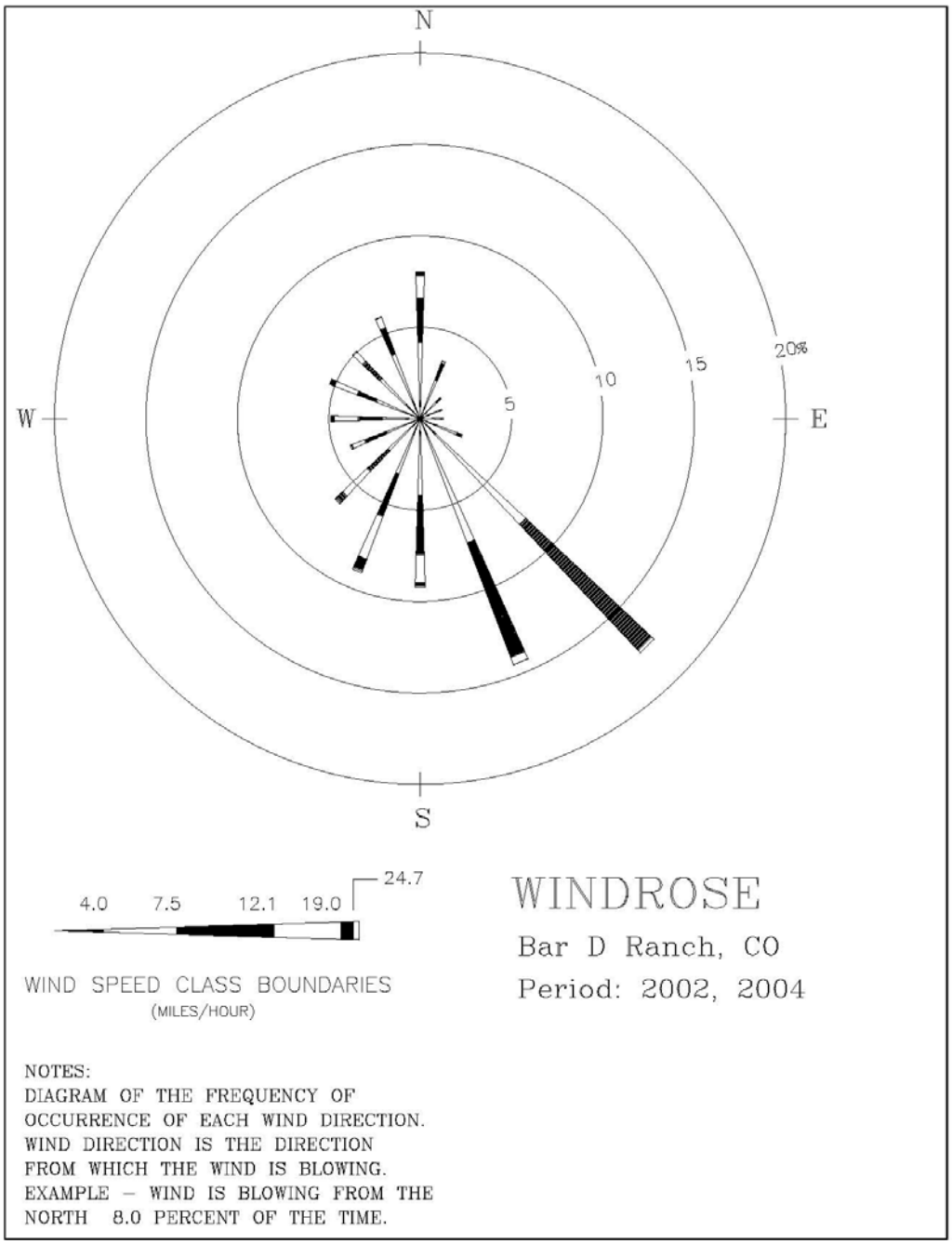


Figure 3.2-1
Bar D Ranch Meteorological Data Wind Rose, Rio Blanco County, Colorado

Table 3.2-2
Wind Speed Distribution, Bar D Ranch, Colorado, 2002 and 2004[1]

Wind Speed (mph)	Frequency (%)
0 – 4.0	13.2
4.0 – 7.5	37.3
7.5 – 12.1	34.4
12.1 – 19.0	12.6
19.0 – 24.7	2.1
Greater than 24.7	0.3
[1] Source: Compliance Partners, 2009a.	

Table 3.2-3
Wind Direction Frequency Distribution
Bar D Ranch, Colorado, 2001 and 2004[1]

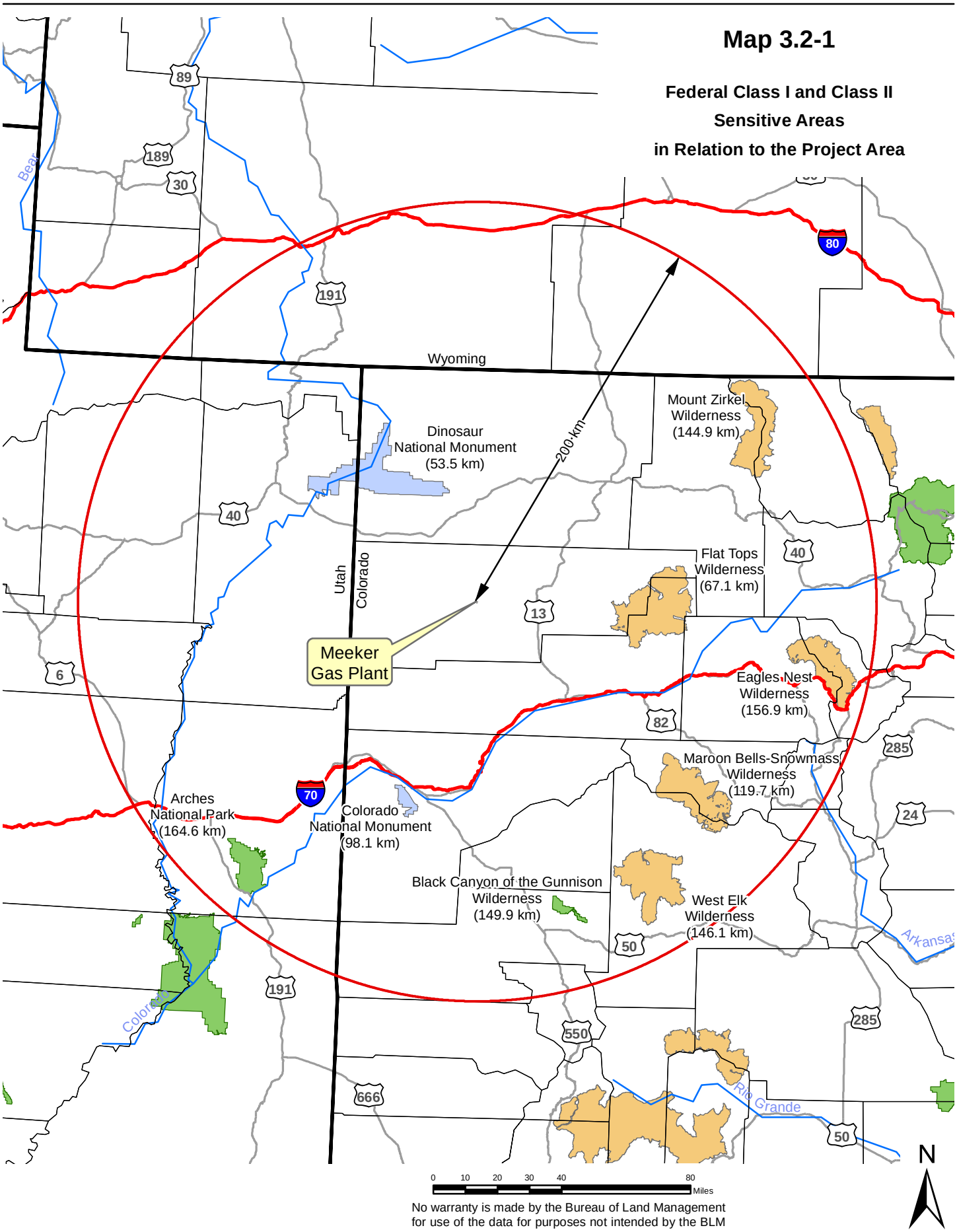
Wind Direction	Frequency (%)
N	8.0
NNE	3.4
NE	1.6
ENE	1.3
E	1.3
ESE	2.5
SE	17.6
SSE	14.4
S	9.2
SSW	9.0
SW	6.4
WSW	4.1
W	4.9
WNW	5.3
NW	5.1
NNW	6.0
[1] Source: Compliance Partners, 2009.	

3.2.1.1 Air Pollutant Concentrations

The U.S. Environmental Protection Agency (EPA) and the States set limits on permissible concentrations of air pollutants. The National Ambient Air Quality Standards (NAAQS) and Colorado Ambient Air Quality Standards (CAAQS) are health-based criteria for the maximum acceptable concentrations of air pollutants at all locations to which the public has access.

Monitoring of air pollutant concentrations has been conducted in the region. These monitoring sites are part of several monitoring networks overseen by state and federal agencies, including: CDPHE, Clean Air Status and Trends Network (CASTNET), Interagency Monitoring of Protected Visual Environments (IMPROVE), and National Acid Deposition Program (NADP) National Trends Network (NTN).

The project area is within 200 kilometers (km) of seven Prevention of Significant Deterioration (PSD) Class I areas and two sensitive Class II areas as shown on Map 3.2-1. Class I areas within 200 km of the project area include the Flat Tops Wilderness, Maroon Bells – Snowmass Wilderness (67 km), Mount Zirkel Wilderness (145 km), West Elk Wilderness (146 km), Black



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Canyon of the Gunnison Wilderness (150 km), Eagles Nest Wilderness (156 km), and Arches National Park (165 km). Federal Class II areas within 200 km of the project area that are considered sensitive areas are Dinosaur National Monument (54 km), and Colorado National Monument (98 km). Dinosaur National Monument is regulated as a Class I area for sulfur dioxide (SO_2) by the CDPHE.

Air pollutants monitored in the region include carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), particulate matter less than 10 microns in effective diameter (PM_{10}), particulate matter less than 2.5 microns in effective diameter ($PM_{2.5}$), and SO_2. Background concentrations of these pollutants define ambient air concentrations in the region and establish existing compliance with ambient air quality standards. The most representative monitored regional background concentrations available for criteria pollutants as identified by CDPHE are shown in Table 3.2-4.

Table 3.2-4
Background Ambient Air Quality Concentrations

Pollutant	**Averaging Period**	**Measured Background Concentration** µg/m^3
CO[1]	1-hour 8-hour	1,145 1,145
NO_2[2]	1-hour Annual	26 2
PM_{10}[1]	24-hour Annual	36 11
$PM_{2.5}$[3]	24-hour Annual	24 9
SO_2[4]	1-hour 3-hour 24-hour Annual	31 24 13 5

[1] American Soda, Piceance 2003-2005, CDPHE.
[2] Encana, 2007-2009, CDPHE.
[3] Based on 650 South Avenue in Grand Junction, Colorado 2003-2006, CDPHE.
[4] 1-hour concentration data from Holcim, Portland, 2005-2006, other averaging periods from Unocal, 1983-1984, CDPHE.

3.2.1.2 Air Quality Related Values

Air quality related values (AQRVs) such as visibility, atmospheric deposition, and the change in water chemistry associated with atmospheric deposition at acid sensitive lakes have been identified as a concern at several Class I and sensitive Class II areas within the study area.

Visibility conditions can be measured as standard visual range (SVR). SVR is the farthest distance at which an observer can just see a black object viewed against the horizon sky; the larger the SVR, the cleaner the air. Visibility for the region is considered to be very good. Continuous visibility-related optical background data have been collected in the PSD Class I Mount Zirkel and Arches National Park, as part of the IMPROVE program. The average SVR is historically greater than 150 km at Arches National park and greater than 200 km at Mount Zirkel (Visibility Information Exchange Web System – VIEWS, 2012).

Atmospheric deposition refers to the processes by which air pollutants are removed from the atmosphere and deposited on terrestrial and aquatic ecosystems, and it is reported as the mass of material deposited on an area per year in kilograms per hectare per year (kg/ha-yr). Air pollutants are deposited by wet deposition (precipitation) and dry deposition (gravitational settling of pollutants). The chemical components of wet deposition include sulfate (SO_4), nitrate (NO_3), and ammonium (NH_4); the chemical components of dry deposition include SO_4, SO_2, NO_X, NO_3, NH_4, and nitric acid (HNO_3).

The NADP and the NTN station monitors wet atmospheric deposition and the CASTNET station monitors dry atmospheric deposition at the Gothic site, approximately 99.1 miles southeast of the project area. The total annual deposition (wet and dry) reported as total nitrogen (N) and total sulfur (S) deposition for year 2009 are shown in Table 3.2-5.

Table 3.2-5
Background N and S Deposition Values (kg/ha-yr)[1]

Site Location	Nitrogen Deposition			Sulfur Deposition			Year of Monitoring
	Wet	Dry	Total	Wet	Dry	Total	
Gothic	3.56	0.08	3.64	2.45	0.23	2.68	2009
[1]EPA (2012a).							

Table 3.2-6 presents a list of four lakes within the study area that have been identified as acid sensitive lakes. Analyses for potential changes to lake acidity from atmospheric deposition are based on the acid neutralizing capacity (ANC) for the lake. The most recent lake chemistry background ANC data available from the Forest Service are shown in Table 3.2-6. The ANC values shown are the 10th percentile lowest ANC values which were calculated for each lake following procedures provided from the Forest Service. The years of monitoring data that were currently available, and the number of samples used in the calculation of the 10th percentile lowest ANC values, are provided.

Of the four lakes listed in Table 3.2-6, one lake (Upper Ned Wilson) is considered by the Forest Service as extremely sensitive to atmospheric deposition because the background ANC values are less than 25 microequivalents per liter (µeq/l).

Table 3.2-6
Background ANC Values for Acid Sensitive Lakes[1]

Wilderness Area	Lake	Latitude (Deg-Min-Sec)	Longitude (Deg-Min-Sec)	10th Percentile Lowest ANC Value (μeq/l)[2]	Number of Samples	Monitoring Period
Flat Tops WA	Ned Wilson Lake	39°57'41"	107°19'25"	39.4	195	1981-2007
Flat Tops WA	Upper Ned Wilson Lake	39°57'46"	107°19'25"	12.9	144	1983-2007
Flat Tops WA	Lower Packtrail Pothole	39°58'5"	107°19'24"	29.7	96	1987-2007
Flat Tops WA	Upper Packtrail Pothole	39°57'56"	107°19'23"	48.7	96	1987-2007

[1] Source: Forest Service (2010).
[2] 10th Percentile Lowest ANC Values reported.

3.2.1.3 Overview of Regulatory Environment

The CDPHE-Air Pollution Control Division (APCD) is the primary air quality regulatory agency responsible for determining potential impacts once detailed industrial development plans have been made, and those development plans are subject to applicable air quality laws, regulations, standards, control measures, and management practices. Therefore, the CDPHE-APCD has the ultimate responsibility for reviewing and permitting the project prior to its operation. Unlike the conceptual 'reasonable, but conservative' engineering designs used in NEPA analyses, any CDPHE-APCD air quality preconstruction permitting demonstrations required would be based on very site-specific, detailed engineering values, which would be assessed in the permit application review. Any facility developed under the Proposed Action which meets the requirements set forth under Colorado regulations will be subject to CDPHE-APCD permitting and compliance processes.

Federal air quality regulations adopted and enforced by CDPHE-APCD limit incremental emission increases to specific levels defined by the classification of air quality in an area. The PSD Program is designed to limit the incremental increase of specific air pollutant concentrations above a legally defined baseline level. Incremental increases in PSD Class I areas are strictly limited, while increases allowed in Class II areas are less strict. Through the PSD program, Class I areas are protected by Federal Land Managers (FLMs) by management of AQRVs such as visibility, aquatic ecosystems, flora, fauna, etc.

The 1977 Clean Air Act amendments established visibility as an AQRV that FLMs must consider. The 1990 Clean Air Act amendments contain a goal of improving visibility within PSD Class I areas. The Regional Haze Rule finalized in 1999 requires the states, in coordination with federal agencies and other interested parties, to develop and implement air quality protection plans to reduce the pollution that causes visibility impairment.

Regulations and standards which limit permissible levels of air pollutant concentrations and air emissions and are relevant to the project air impact analysis include:

- NAAQS, CAAQS;
- PSD; and
- New Source Performance Standards (NSPS).

Each of these regulations is further described in the following sections.

Ambient Air Quality Standards. The Clean Air Act requires the EPA to set NAAQS for pollutants considered to endanger public health and the environment. The NAAQS prescribe limits on ambient levels of these pollutants in order to protect public health, including the health of sensitive groups. The EPA has developed NAAQS for six criteria pollutants: NO_2, CO, SO_2, PM_{10}, $PM_{2.5}$, O_3, and lead. Lead emissions from project sources are negligible and therefore, the lead NAAQS is not addressed in this analysis. States typically adopt the NAAQS but may also develop state-specific ambient air quality standards for certain pollutants. The NAAQS and the CAAQS are summarized in Table 3.2-7. PSD Class I and Class II increments are also included in Table 3.2-7.

An area that is shown to exceed the NAAQS for a given pollutant may be designated as a nonattainment area for that pollutant. The project area is located in an area designated as attainment for all pollutants.

Air Toxics. Toxic air pollutants, also known as air toxics, are those pollutants that are known or suspected to cause cancer or other serious health effects, such as reproductive effects or birth defects, or adverse environmental effects. No ambient air quality standards exist for air toxics, instead, emissions of these pollutants are regulated by a variety of regulations that target the specific source class and industrial sectors for stationary, mobile, and product use/formulations.

For the air quality analysis short-term (1-hour) air toxics concentrations are compared to acute Reference Exposure Levels (RELs) (EPA, 2011) shown in Table 3.2-8. RELs are defined as concentrations at or below which no adverse health effects are expected. No RELs are available for ethyl benzene and n-hexane; instead, the available Immediately Dangerous to Life or Health divided by 10 (IDLH/10) values are used. These IDLH values were determined by the National Institute for Occupational Safety and Health (NIOSH) and were obtained from EPA's Air Toxics Database (EPA, 2011). These values are approximately comparable to mild effects levels for 1-hour exposures.

Long-term exposure to air toxics are compared to Reference Concentrations for Chronic Inhalation (RfCs). An RfC is defined by EPA as the daily inhalation concentration at which no long-term adverse health effects are expected. RfCs exist for both non-carcinogenic and carcinogenic effects on human health (EPA, 2012b). Annual modeled air toxics concentrations for all air toxics emitted are compared directly to the non-carcinogenic RfCs shown in Table 3.2-9.

Long-term exposures to emissions of suspected carcinogens (benzene, ethyl benzene, and formaldehyde) are also evaluated based on estimates of the increased latent cancer risk over a 70-year lifetime.

Table 3.2-7
Ambient Air Quality Standards and PSD Increments (µg/m^3)

Pollutant/Averaging Time	NAAQS	CAAQS	PSD Class I Increment[1]	PSD Class II Increment[1]
CO				
1-hour[2]	40,000	40,000	--[3]	--[3]
8-hour[2]	10,000	10,000	--	--
NO_2				
1-hour[8]	188			
Annual[4]	100	100	2.5	25
O_3				
8-hour[6]	147	147	--[3]	--[3]
PM_{10}				
24-hour[2]	150	150	8	30
Annual[4]	--[5]	50	4	17
$PM_{2.5}$				
24-hour[7]	35	35	2	9
Annual[4]	15	15	1	4
SO_2				
1-hour[9]	196			
3-hour[2]	1,300	700	25	512
24-hour[2]	365	365	5	91
Annual[4]	80	60	2	20

[1] The PSD demonstrations serve information purposes only and do not constitute a regulatory PSD increment consumption analysis.
[2] No more than one exceedance per year.
[3] No PSD increments have been established for this pollutant.
[4] Annual arithmetic mean.
[5] The NAAQS for this averaging time for this pollutant has been revoked by EPA.
[6] An area is in compliance with the standard if the fourth-highest daily maximum 8-hour ozone concentrations in a year, averaged over 3 years, is less than or equal to the level of the standard.
[7] An area is in compliance with the standard if the highest 24-hour $PM_{2.5}$ concentrations in a year, averaged over 3 years, is less than or equal to the level of the standard.
[8] An area is in compliance with the standard if the 98th percentile of daily maximum 1-hour NO_2 concentrations in a year, averaged over 3 years, is less than or equal to the level of the standard.
[9] An area is in compliance with the standard if the 99th percentile of daily maximum 1-hour SO_2 concentrations in a year, averaged over 3 years, is less than or equal to the level of the standard.

Table 3.2-8
Acute RELs (1-Hour Exposure)

Air Toxic	REL (µg/m^3)
Benzene	1,300[1]
Toluene	37,000[1]
Ethyl benzene	350,000[2]
Xylene	22,000[1]
n-Hexane	390,000[2]
Formaldehyde	55[1]
Hydrogen Sulfide	42[1]
[1] EPA Air Toxics Database, Table 2 (EPA, 2011). [2] No REL available for these air toxics. Values shown are from Immediately Dangerous to Life or Health (IDLH/10, EPA Air Toxics Database, Table 2 (EPA, 2011).	

Table 3.2-9
Non-Carcinogenic Air Toxics RfCs (Annual Average)[1]

Air Toxic	Non-CarcinogenicRfC1 (µg/m^3)
Benzene	30
Toluene	5,000
Ethyl benzene	1,000
Xylene	100
n-Hexane	700
Formaldehyde	9.8
Hydrogen Sulfide	2
[1] EPA Air Toxics Database, Table 1 (EPA, 2012b).	

Prevention of Significant Deterioration. The PSD Program is designed to limit the incremental increase of specific air pollutant concentrations above a legally defined baseline level. All areas of the country are assigned a classification which describes the degree of degradation to the existing air quality that is allowed to occur within the area under the PSD permitting rules. PSD Class I areas are areas of special national or regional natural, scenic, recreational, or historic value, and very little degradation in air quality is allowed by strictly limiting industrial growth. PSD Class II areas allow for reasonable industrial/economic expansion. Certain national parks and wilderness areas are designated as PSD Class I, and air quality in these areas is protected by allowing only slight incremental increases in pollutant concentrations. PSD Class I areas within 200 km of the project area are shown on Map 3.2-1. All other areas not designated PSD Class I are classified as PSD Class II, where less stringent limits on increases in pollutant concentrations apply. Sensitive PSD Class II areas are subject to PSD Class II Increments shown in Table 3.2-7.

Comparisons of project impacts to the PSD Class I and II increments are for informational purposes only and are intended to evaluate a threshold of concern. They do not represent a regulatory PSD Increment Consumption Analysis, which would be completed as necessary during the New Source Review permitting process by the State of Colorado.

In addition to the PSD increments, Class I areas are protected by the FLMs through management of AQRVs such as visibility, aquatic ecosystems, flora, fauna, etc. Evaluations of potential

impacts to AQRVs would also be performed during the New Source Review permitting process under the direction of the CDPHE-APCD in consultation with the FLMs.

AQRVs to be analyzed for the Proposed Action include visibility, atmospheric deposition and potential sensitive lake acidification, a discussion of the applicable background data and analysis thresholds are provided below.

Visibility. Change in atmospheric light extinction relative to background conditions is used to measure regional haze. Analysis thresholds for atmospheric light extinction are set forth in The Federal Land Managers' Air Quality Related Values Work Group (FLAG) Report (FLAG, 2010), with the results reported in percent change in light extinction and change in deciviews (dv). A 5 percent change in light extinction (approximately equal to a 0.5 change in dv) is the threshold recommended in FLAG (2010) and is considered to contribute to regional haze visibility impairment. A 10 percent change in light extinction (approximately equal to 1.0 dv) is considered to represent a noticeable change in visibility when compared to background conditions.

Estimated visibility degradation at the Class I areas and sensitive Class II areas of concern are presented in terms of the number of days that exceed a threshold percent change in extinction, or dv relative to background conditions. Although procedures and thresholds have not been established for sensitive Class II areas, BLM is including these areas in its visibility analysis.

Atmospheric Deposition and Lake Chemistry. The effects of atmospheric deposition of nitrogen and sulfur compounds on terrestrial and aquatic ecosystems are well documented and have been shown to cause leaching of nutrients from soils, acidification of surface waters, injury to high elevation vegetation, and changes in nutrient cycling and species composition.

FLAG (2010) recommends that applicable sources assess impacts of nitrogen and sulfur deposition at Class I areas. This guidance recognizes the importance of establishing critical deposition loading values ("critical loads") for each specific Class I area as these critical loads are completely dependent on local atmospheric, aquatic and terrestrial conditions and chemistry. Critical load thresholds are essentially a level of atmospheric pollutant deposition below which negative ecosystem effects are not likely to occur. FLAG (2010) does not include any critical load levels for specific Class I areas and refers to site-specific critical load information on FLM websites for each area of concern. This guidance does, however recommend the use of deposition analysis thresholds (DATs) developed by the National Park Service and the Fish and Wildlife Service. The DATs represent screening level values for nitrogen and sulfur deposition from project alone emission sources below which estimated impacts are considered negligible. The DAT established for both nitrogen and sulfur in western Class I areas is 0.005 kg/ha-yr.

The BLM has compiled currently available research data on critical load values for Class I areas in the vicinity of this project. Critical load thresholds published by Fox et al. (1989) established pollutant loadings for total nitrogen of 3-5 kg/ha-yr and for total sulfur of 5 kg/ha-yr for the Bob Marshall Wilderness Area in Montana and the Bridger Wilderness Area in Wyoming. However, the National Park Service (NPS) has recently stated that these pollutant loadings are not protective of sensitive resources and in its *"Technical Guidance on Assessing Impacts to Air Quality in NEPA and Planning Documents"*, January 2011 suggests that critical load values

above 3 kg/ha-yr may result in moderate impacts. Research conducted by Baron (2006) using hindcasting of diatom communities suggests 1.5 kg/ha-yr as a critical loading value for wet nitrogen deposition for high elevation lakes in Rocky Mountain National Park, Colorado. Recent research conducted by Saros, et al. (2010) using fossil diatom assemblages suggests that a critical load value of 1.4 kg/ha-yr for wet nitrogen is applicable to the eastern Sierra Nevada and Greater Yellowstone ecosystems. Project N and S deposition impacts are compared to the following critical load values: with 1.5 kg/ha-yr used as a surrogate for total N deposition and 3 kg/ha-yr used for total S deposition for Class I and Class II areas.

Analyses to assess the change in water chemistry associated with atmospheric deposition are performed following the procedures developed by the Forest Service Rocky Mountain Region (Forest Service, 2000). The analysis assesses the change in the ANC of four sensitive lakes (Table 3.2-6) in the region. Predicted changes in ANC are compared with the applicable threshold for each identified lake: 10 percent change in ANC for lakes with background ANC values greater than 25 µeq/l, and less than a 1 µeq/l change in ANC for lakes with background ANC values equal to or less than 25 µeq/l.

Greenhouse Gases. The U.S. Supreme Court ruled in 2007 that EPA has the authority to regulate greenhouse gases (GHGs) such as methane (CH_4) and carbon dioxide (CO_2) as air pollutants under the Clean Air Act; however, there are currently no ambient air quality standards for GHGs, nor are there currently any emissions limits on GHGs that would apply to sources developed under the Proposed Action. As part of the development of the project emission inventory, an inventory of CO_2, CH_4, and nitrous oxide (N_2O) was prepared. GHGs were not modeled, but the GHG inventory is presented for informational purposes.

3.2.2 Environmental Consequences of the Proposed Action

3.2.2.1 Introduction

An air quality modeling analysis was performed to assess the impacts on ambient air quality and AQRVs from potential air emissions due to the expansion of the Meeker Gas Plant. The project emissions and methods used in the air analysis were documented in an Air Quality Impact Assessment Protocol (Edge and Carter Lake, 2012) that was developed prior to the air impact assessment to ensure that the approach, input data, and computation methods were acceptable to the BLM. Both near-field and far-field air quality analyses were performed. Potential ambient air quality impacts were quantified and compared to applicable state and federal ambient air quality standards and PSD increments, air toxics thresholds, and AQRV impacts (impacts on visibility, atmospheric deposition, and potential increases in acidification to acid-sensitive lakes) were determined and compared to applicable thresholds.

<u>Near-field Modeling</u>

A near-field ambient air quality impact assessment was performed to evaluate maximum pollutant impacts nearby the Meeker Gas Plant resulting from the existing and expanded facility emissions. EPA's Guideline (EPA, 2005) model, AERMOD (version 12060), was used to assess these near-field impacts. The near field modeling used two years of meteorological data collected during 2002 and 2004 at the Bar D site which is approximately 8 miles southeast of the project area.

The near-field criteria pollutant assessment was performed to estimate maximum potential impacts of CO, NO_x, SO_2, PM_{10}, and $PM_{2.5}$ from facility emissions sources. Near-field air toxics (hydrogen sulfide - H_2S, benzene, toluene, ethyl benzene, xylene, n-hexane and formaldehyde) concentrations were calculated for assessing impacts in the immediate vicinity of project area for both short-term (acute) exposure assessment and for calculation of long-term risk. The near-field assessment utilized a receptor grid that extended outward 12 kilometers (km) from the center of the facility. Discrete modeling receptors were defined on a 25-meter interval on the facility limit of public access and on a 50-meter interval the first 100 meters surrounding the facility. Receptors were then defined on a 100-meter interval out to 1,000 meters and on a 250-meter interval out to 3 km. Receptors were defined on a 500-meter interval for the remainder of the modeling domain.

Far-field Modeling

A far-field ambient air quality impact assessment was carried out to quantify potential air quality impacts to both ambient air concentrations and AQRVs from air pollutant emissions of NOx, SO_2, PM_{10}, and $PM_{2.5}$ expected to result from the project. Ambient air quality impacts of NO_2, SO_2, PM_{10}, and $PM_{2.5}$, and AQRVs were analyzed at far-field federal Class I and sensitive Class II areas that are within 200 km of the project area. The Class I and sensitive Class II areas located within 200 km of the project area include the Flat Tops Wilderness, Maroon Bells – Snowmass Wilderness, Mount Zirkel Wilderness, West Elk Wilderness, Black Canyon of the Gunnison Wilderness, Eagles Nest Wilderness, and Arches National Park. Federal Class II areas within 200 km of the project area that are considered as sensitive areas include Dinosaur National Monument and Colorado National Monument. Dinosaur National Monument is regulated as a Class I area for SO_2 by the CDPHE. In addition, four lakes that are designated as acid sensitive and are located within the Flat Tops PSD Class I Wilderness area (Ned Wilson Lake, Upper Ned Wilson Lake, Lower Packtrail Pothole, and Upper Packtrail Pothole) were assessed for potential lake acidification from atmospheric deposition impacts.

The far field analyses used the EPA-approved version of the CALPUFF modeling system (Version 5.8) along with a windfield developed for year 2008 using the Mesoscale Model Interface Program (MMIF) Version 2.1 (ENVIRON, 2012) and the 2008 Weather Research and Forecasting (WRF) meteorological model output that was produced as part of the Western Regional Air Partnership's (WRAP) West-wide Jump Start Air Quality Modeling Study (WestJumpAQMS) (ENVIRON et al., 2012).

3.2.2.2 Impact Significance Criteria

Air quality impacts from pollutant emissions are limited by regulations, standards, and implementation plans established under the Federal Clean Air Act, as administered by the CDPHE-APCD under authorization of the EPA. Under FLPMA and the Clean Air Act, the BLM cannot conduct or authorize any activity which does not conform to all applicable local, state, tribal or federal air quality laws, statutes, regulations, standards, or implementation plans. As such, significant impacts to air quality from project-related activities would result if it is demonstrated that:

- NAAQS or CAAQS would be exceeded; or
- Class I or Class II PSD Increments would be exceeded; or

- AQRVs would be impacted beyond acceptable levels.

All NEPA analysis comparisons to the PSD Class I and II increments are intended to evaluate a threshold of concern, and do not represent a regulatory PSD Increment Consumption Analysis. The determination of PSD increment consumption is an air quality regulatory agency responsibility. Such an analysis would be conducted to determine minor source increment consumption or, for major sources, as part of the New Source Review process. The New Source Review process would also include an evaluation of potential impacts to AQRVs such as visibility, aquatic ecosystems, flora, fauna, etc. performed under the direction of federal land managers.

3.2.2.3 Emission Inventory Development

Air pollutant emissions would occur during construction of the expanded facility and from gas processing operations. These emissions would impact air quality in the project area occurring temporarily during construction and long-term during operation of the expanded facility over the life of the project. The primary pollutants emitted would be PM_{10}, $PM_{2.5}$, NO_x, CO, SO_2, volatile organic compounds (VOCs), and air toxics including H_2S, benzene, toluene, ethyl benzene, xylene, n-hexane, and formaldehyde. CO_2, CH_4 N_2O compounds are included in the project inventory for purposes of quantifying GHG emissions.

Air pollutant emissions from gas processing over the life of the project would occur from operation of the heaters, thermal oxidizers, flares, and emergency generators, as well as fugitives from equipment leaks, compressor seals, and stabilizer packing. This equipment would emit NO_x, CO, SO_2, VOC, PM_{10} and $PM_{2.5}$ and air toxics emissions.

Construction activities related to the development of a power line and Meeker units III and IV would result in pollutant emissions of NO_x, CO, SO_2, VOC, PM_{10} and $PM_{2.5}$. The emissions resulting from heavy equipment usage and from wind erosion during facility construction would be temporary, occurring only during the 14 day construction period for the power line, and over the 18-month construction period for each unit. The maximum annual construction emissions are shown in Table 3.2-10.

Table 3.2-10
Meeker Gas Plant Construction Emissions (tons per year)

Pollutant	Power Line	Units III and IV	Total
NO_x	0.07	6.4	6.5
SO_2	0.002	0.2	0.2
CO	0.04	3.7	3.8
VOC	0.006	0.6	0.6
PM_{10}	0.2	38.8	38.9
$PM_{2.5}$	0.02	3.9	3.9

Air pollutant emissions from all Proposed Action sources are summarized in Table 3.2-11. Table 3.2-11 also includes the emissions for the existing facility, and the total emissions that would result from operation of the expanded facility under the Proposed Action. Emissions from traffic during production would be negligible and were not included in the emissions totals.

Table 3.2-11
Meeker Gas Plant Criteria Pollutant and Air Toxics Emissions (tons per year)

Pollutant	Existing Facility	Expanded Facility	Total Facility
Criteria Pollutants			
NO_x	134.2	95.1	229.3
SO_2	206.5	87.2	293.7
CO	241.8	179.8	421.6
$PM_{10}/PM_{2.5}$	26.4	28.1	54.5
VOC	297.3	71.3	368.6
Air Toxics			
H_2S	2.3	1.0	3.3
Benzene	13.4	0.9	14.3
Toluene	24.8	1.6	26.4
Ethyl benzene	0.5	0.2	0.7
Xylene	11.9	0.3	12.2
Formaldehyde	0.2	0.2	0.4
n-Hexane	6.9	2.7	9.6
Total Air Toxics	**60.0**	**6.9**	**66.9**

Greenhouse Gases

As part of the development of the project emission inventory, an inventory of CO_2, CH_4, and N_2O emissions from operation activities was prepared. GHGs were not modeled in either the near-field or far-field impact analyses, but the GHG inventory is presented here for informational purposes and is compared to other U.S. GHG emission inventories in order to provide context for the project GHG emissions.

In the Meeker project emission inventory, emissions of the greenhouse gases CO_2, CH_4, and N_2O from new and existing sources are quantified in terms of CO_2 equivalents (CO_2e). Measuring emissions in terms of CO_2e allows for the comparison of emissions from different greenhouse gases based on their Global Warming Potential (GWP). GWP is defined as the cumulative radiative forcing of a gas over a specified time horizon relative to a reference gas resulting from the emission of a unit mass of gas. The reference gas is taken to be CO_2. The CO_2e emissions for a greenhouse gas are derived by multiplying the emissions of the gas by the associated GWP. The GWPs for the inventoried greenhouse gases are CO_2:1, CH_4:21, N_2O:310 (EPA, 2011).

Greenhouse gas emissions for the existing and expanded Meeker Gas Plant are shown in Table 3.2-12.

Table 3.2-12
Meeker Gas Plant GHG Emissions (metric tons per year)

Pollutant	Existing Facility	Expanded Facility	Total Facility
CO_2	969,040.4	422,627.5	1,391,667.9
CH_4	4,314.1	3,424.4	7,738.5
N_2O	0.5	0.4	0.9
CO_2e	1,122,542.8	528,549.6	1,651,092.4

3.2.2.4 Modeling Results

Near-Field Modeling

Air pollutant dispersion modeling was performed to quantify maximum potential PM_{10}, $PM_{2.5}$, NOx, CO, SO_2, and air toxics impacts from operation related activities. While air pollutant emissions from heavy equipment use and from wind erosion would occur at increased levels during facility construction, potential impacts would be temporary, occurring only during the construction period. As a result, air quality impacts from construction are not quantitatively assessed in this analysis. AERMOD was used to model the maximum potential emissions of PM_{10}, $PM_{2.5}$, NO_x, CO, and SO_2 that could occur from the Proposed Action (Meeker III and IV) alone, and the existing facility (Meeker I and II) and Proposed Action combined. Table 3.2-13 presents the maximum modeled air pollutant concentrations for these scenarios. When maximum modeled concentrations from both modeled scenarios are added to representative background concentrations, it is demonstrated that the total concentrations are less than the applicable NAAQS and CAAQS. In addition, direct modeled concentrations are below the applicable PSD Class II increments.

Modeling was performed to estimate the maximum impacts that could occur from air toxics emissions generated by the existing Meeker Gas Plant and the Proposed Action combined. Potential maximum acute (short-term; 1-hour) air toxics concentrations are shown in Table 3.2-14 compared with the acute RELs (EPA, 2011). RELs are defined as concentrations at or below which no adverse health effects are expected. No RELs are available for ethyl benzene and n-hexane; instead, the available Immediately Dangerous to Life or Health divided by 10 (IDLH/10) values are used. These IDLH values are determined by the National Institute for Occupational Safety and Health (NIOSH) and were obtained from EPA's Air Toxics Database (EPA, 2011). As shown in Table 3.2-14, the maximum predicted acute air toxics concentrations are below the threshold levels.

Table 3.2-13
Maximum Modeled Pollutant Concentration
Impacts from Meeker Gas Plant Operations (µg/m^3)

Pollutant	Averaging Period	Direct Modeled	PSD Class II Increment[1]	Background	Total Predicted	NAAQS	CAAQS
Proposed Action (Meeker III and IV)							
CO	1-hour	215.1	--	1,144.5	1359.6	40,000	40,000
	8-hour	56.6	--	1,144.5	1201.1	10,000	10,000
NO_2	1-hour	16.9	--	26.3	43.2	188	--
	Annual	0.9	25	9.4	10.3	100	100
SO_2	1-hour	34.7	--	31.4	66.1	196	--
	3-hour	25.7	512	23.5	49.2	1,300	700
	24-hour	8.9	91	13.1	22.0	365	365
	Annual	1.1	20	5.2	6.3	80	80
PM_{10}	24-hour	3.69	30	36	39.7	150	150
	Annual	0.35	17	11	11.3	--	50
$PM_{2.5}$	24-hour	3.69	9	24	27.7	35	35
	Annual	0.35	4	9	9.3	15	15
Expanded Facility							
CO	1-hour	586.6	--	1,144.5	1731.1	40,000	40,000
	8-hour	245.7	--	1,144.5	1390.2	10,000	10,000
NO_2	1-hour	17.0	--	26.3	43.3	188	--
	Annual	1.2	25	9.4	10.6	100	100
SO_2	1-hour	187.7	--	31.4	187.7	196	--
	3-hour	108.1	512	23.5	131.6	1,300	700
	24-hour	29.3	91	13.1	42.4	365	365
	Annual	4.7	20	5.2	9.9	80	80
PM_{10}	24-hour	3.69	30	36	39.7	150	150
	Annual	0.36	17	11	11.4	--	50
$PM_{2.5}$	24-hour	3.69	9	24	27.7	35	35
	Annual	0.36	4	9	9.4	15	15

[1] The PSD demonstrations serve informational purposes only and do not constitute a regulatory PSD increment consumption analysis.

Table 3.2-14
Maximum Modeled 1-Hour Air Toxics Concentration
Impacts from Meeker Gas Plant Operations (µg/m^3)

Air Toxics	Proposed Action	Expanded Facility (All Meeker Units)	REL
Benzene	3.9	74.2	1,300
Toluene	6.9	510.2	37,000
Ethyl benzene	3.6	4.9	350,000[1]
Xylene	2.8	648.7	22,000
n-Hexane	17.4	91.0	390,000[1]
Formaldehyde	43.4	46.2	94
Hydrogen Sulfide	0.6	2.3	42

[1] No REL available for these air toxics. Values shown are from Immediately Dangerous to Life or Health (IDLH/10), EPA Air Toxics Database, Table 2 (EPA, 2011).

Potential long-term (annual) air toxics concentrations are shown in Table 3.2-15 compared to non-carcinogenic Reference Concentrations for Chronic Inhalation (RfCs) (EPA, 2012). An RfC is defined by EPA as the daily inhalation concentration at which no long-term adverse health effects are expected. As shown in Table 3.2-15, the maximum modeled annual air toxics impacts are below the RfC levels.

Table 3.2-15
Maximum Modeled Annual Air Toxics Concentration Impacts from Meeker Gas Plant Operations (µg/m^3)

Air Toxic	Proposed Action	Expanded Facility (All Meeker Units)	RfC
Benzene	0.09	4.2	30
Toluene	0.16	26.8	400
Ethyl benzene	0.08	0.23	1,000
Xylene	0.06	33.6	100
n-Hexane	0.38	6.06	200
Formaldehyde	0.02	0.02	9.8
Hydrogen Sulfide	0.01	0.05	2

Modeling was performed to estimate the potential cancer risk at the nearest residence, which is approximately 2.5 miles south-southeast of the Meeker Gas Plant, from the expanded facility emissions. Long-term exposures to emissions of suspected carcinogens (benzene, ethyl benzene and formaldehyde), were evaluated based on estimates of the increased latent cancer risk over a 70-year lifetime. This analysis presents the potential incremental risk from these pollutants and does not represent a total risk analysis. The cancer risks were calculated using the maximum predicted annual concentrations and EPA's chronic inhalation unit risk factors (URF) for carcinogenic constituents (EPA, 2012b). Estimated cancer risks were evaluated based on the Superfund National Oil and Hazardous Substances Pollution Contingency Plan (EPA, 1990), where a cancer risk range of 1 to 100 x 10^{-6} is generally acceptable. Two estimates of cancer risk are presented: 1) a most likely exposure (MLE) scenario; and 2) a maximum exposed individual (MEI) scenario. The estimated cancer risks are adjusted to account for duration of exposure and time spent at home.

The adjustment for the MLE scenario is assumed to be nine years, which corresponds to the mean duration that a family remains at a residence (EPA, 1993). This duration corresponds to an adjustment factor of 9/70 = 0.13. The duration of exposure for the MEI scenario is assumed to be 30 years (i.e., the life of the project), corresponding to an adjustment factor of 30/70 = 0.429. A second adjustment is made for time spent at home versus time spent elsewhere. For the MLE scenario, the at-home time fraction is 0.64 (EPA, 1993) and it is assumed that during the rest of the day the individual would remain in an area where annual air toxics concentrations would be one-quarter as large as the maximum annual average concentration. Therefore, the final MLE adjustment factor is (0.13) x [(0.64 x 1.0) + (0.36 x 0.25)] = 0.094. The MEI scenario assumes that the individual is at home 100 percent of the time, for a final MEI adjustment factor of (0.429 x 1.0) = 0.429.

For each constituent, the cancer risk is computed by multiplying the maximum predicted annual concentration by the URF and by the overall exposure adjustment factor. The cancer risks for

both constituents are then summed to provide an estimate of the total inhalation cancer risk. The modeled long-term risk from benzene, ethyl benzene and formaldehyde emissions from the existing Meeker Gas Plant and Proposed Action combined are shown in Table 3.2-16. Under the MLE scenario, the estimated incremental and combined cancer risk associated with long-term exposure to benzene, ethyl benzene, and formaldehyde is less than the acceptable range of 1 to 100 x 10^{-6}.

Table 3.2-16
Long-term Modeled MLE and MEI Cancer Risk Analyses for Expanded Meeker Facility

Analysis	Air Toxic	Modeled Concentration ($\mu g/m^3$)	Unit Risk Factor $1/(\mu g/m^3)$	Exposure Adjustment Factor	Cancer Risk
MLE	Benzene	0.0158	7.8 x 10^{-6}	0.094	1.17 x 10^{-8}
	Ethyl benzene	0.0019	2.5 x 10^{-6}	0.094	4.58 x 10^{-10}
	Formaldehyde	0.0002	1.3 x 10^{-5}	0.094	2.96 x 10^{-10}
				Total Combined[1]	**1.25 x 10^{-8}**
MEI	Benzene	0.0158	7.8 x 10^{-6}	0.429	5.31 x 10^{-8}
	Ethyl benzene	0.0019	2.5 x 10^{-6}	0.429	2.07 x 10^{-9}
	Formaldehyde	0.0002	1.3 x 10^{-5}	0.429	1.34 x 10^{-9}
				Total Combined[1]	**5.65 x 10^{-8}**

[1] Total risk is calculated here; however, the additive effects of multiple chemicals are not fully understood and this should be taken into account when viewing these results.

Far-Field Modeling

Far-field modeling at Class I and sensitive Class II areas within 200 km of the project area using the CALPUFF model was performed to quantify potential air quality impacts to both ambient air concentrations and AQRVs from air pollutant emissions of NOx, SO_2, PM_{10}, and $PM_{2.5}$ expected to result from the development of the Proposed Action. The Class I and sensitive Class II areas analyzed include the Class I Flat Tops Wilderness, Maroon Bells – Snowmass Wilderness, Mount Zirkel Wilderness, West Elk Wilderness, Black Canyon of the Gunnison Wilderness, Eagles Nest Wilderness, and Arches National Park, and the Class II Dinosaur National Monument, and Colorado National Monument.

PSD Increment Comparison. The direct modeled concentrations of NO_2, SO_2, PM_{10}, and $PM_{2.5}$ at the Class I and sensitive Class II areas are provided in Table 3.2-17 for comparison to applicable PSD Class I and Class II increments. As shown in Table 3.2-17, these values are below the PSD Class I and Class II increments.

Table 3.2-17
Maximum Modeled Pollutant Concentration Impacts from
Meeker Gas Plant Operations at PSD Class I and Sensitive Class II Areas (µg/m^3)

Location	Pollutant	Averaging Time	Direct Modeled Concentration		PSD Class I Increment[1]
			Proposed Action	Expanded Facility	
Arches National Park	NO_2	Annual	0.0001	0.0003	2.5
	SO_2	3-hour	0.021	0.074	25
		24-hour	0.007	0.022	5
		Annual	0.0002	0.0006	2
	PM_{10}	24-hour	0.007	0.018	8
		Annual	0.0003	0.0006	4
	$PM_{2.5}$	24-hour	0.007	0.018	2
		Annual	0.0003	0.0006	1
Black Canyon of the Gunnison Wilderness Area	NO_2	Annual	0.0002	0.0004	2.5
	SO_2	3-hour	0.022	0.074	25
		24-hour	0.007	0.022	5
		Annual	0.0003	0.0008	2
	PM_{10}	24-hour	0.016	0.036	8
		Annual	0.0004	0.001	4
	$PM_{2.5}$	24-hour	0.016	0.036	2
		Annual	0.0004	0.001	1
Eagles Nest Wilderness Area	NO_2	Annual	0.0001	0.0003	2
	SO_2	3-hour	0.015	0.049	25
		24-hour	0.003	0.009	5
		Annual	0.0002	0.0007	2
	PM_{10}	24-hour	0.005	0.013	8
		Annual	0.0004	0.0009	4
	$PM_{2.5}$	24-hour	0.005	0.013	2
		Annual	0.0004	0.0009	1
Flat Tops Wilderness Area	NO_2	Annual	0.0004	0.001	2.5
	SO_2	3-hour	0.036	0.116	25
		24-hour	0.008	0.028	5
		Annual	0.0006	0.002	2
	PM_{10}	24-hour	0.013	0.032	8
		Annual	0.0008	0.002	4
	$PM_{2.5}$	24-hour	0.013	0.032	2
		Annual	0.0008	0.002	1
Maroon Bells/Snowmass Wilderness Area	NO_2	Annual	0.0002	0.0004	2.5
	SO_2	3-hour	0.011	0.035	25
		24-hour	0.004	0.013	5
		Annual	0.0003	0.0009	2
	PM_{10}	24-hour	0.008	0.018	8
		Annual	0.0004	0.001	4
	$PM_{2.5}$	24-hour	0.008	0.018	2
		Annual	0.0004	0.001	1
Mount Zirkel	NO_2	Annual	0.0002	0.0005	2.5
	SO_2	3-hour	0.013	0.046	25
		24-hour	0.004	0.012	5
		Annual	0.0004	0.001	2
	PM_{10}	24-hour	0.005	0.011	8
		Annual	0.0005	0.001	4
	$PM_{2.5}$	24-hour	0.005	0.011	2
		Annual	0.0005	0.001	1
West Elk Wilderness Area	NO_2	Annual	0.0001	0.0003	2.5
	SO_2	3-hour	0.011	0.037	25
		24-hour	0.004	0.013	5
		Annual	0.0002	0.0006	2
	PM_{10}	24-hour	0.007	0.017	8

Location	Pollutant	Averaging	Direct Modeled Concentration		PSD Class I
		Annual	0.0003	0.0008	4
	$PM_{2.5}$	24-hour Annual	0.007 0.0003	0.017 0.0008	2 1
Colorado National Monument	NO_2	Annual	0.0007	0.002	25
	SO_2	3-hour 24-hour Annual	0.053 0.024 0.0007	0.18 0.075 0.002	25 5 2
	PM_{10}	24-hour Annual	0.018 0.0001	0.042 0.002	30 17
	$PM_{2.5}$	24-hour Annual	0.018 0.0001	0.042 0.002	9 4
Dinosaur National Monument	NO_2	Annual	0.007	0.013	25
	SO_2	3-hour 24-hour Annual	0.35 0.08 0.007	1.20 0.28 0.024	25 5 2
	PM_{10}	24-hour Annual	0.040 0.004	0.086 0.008	30 17
	$PM_{2.5}$	24-hour Annual	0.040 0.004	0.086 0.008	9 4

[1] The PSD demonstrations serve informational purposes only and do not constitute a regulatory PSD increment consumption analysis.

AQRV Impacts.

Visibility Impacts. Visibility impacts estimated, calculated following FLAG 2010 (FLAG, 2010), at Class I and sensitive Class II areas resulting from Proposed Action and the expanded facility source emissions are shown in Table 3.2-18. The visibility analysis indicated that for both the Proposed Action and the expanded facility, there are zero days above the 0.5 delta-deciviews (Δdv) threshold at any of the Class I and sensitive Class II areas. A maximum predicted visibility impact was 0.31 Δdv, occurring at Dinosaur National Monument for the expanded facility.

Table 3.2-18
Maximum Visibility Impacts from Meeker Gas
Plant Operations at Class I and Sensitive Class II Areas

Location	Maximum Impact (Δdv)	
	Proposed Action	Expanded Facility
Arches National Park	0.02	0.06
Black Canyon of the Gunnison Wilderness Area	0.05	0.11
Eagles Nest Wilderness Area	0.02	0.05
Flat Tops Wilderness Area	0.05	0.13
Maroon Bells/Snowmass Wilderness Area	0.03	0.07
Mount Zirkel	0.01	0.03
West Elk Wilderness Area	0.02	0.06
Colorado National Monument	0.04	0.11
Dinosaur National Monument	0.13	0.31

Deposition Impacts. Potential direct atmospheric deposition impacts within Class I and sensitive Class II areas were also calculated for both the Proposed Action and the expanded facility. At all Class I and sensitive Class II areas, the maximum direct total (wet and dry) N and S deposition for the Proposed Action and expanded facility were predicted to be below the BLM thresholds of 3 kg/ha-yr for S and 1.5 kg/ha-yr for N. The predicted deposition values at each sensitive area are all below the DAT of 0.005 kg/ha-yr for the Proposed Action and expanded facility, except at

Dinosaur National Monument where S deposition from the expanded facility was predicted to be approximately 2.3 times greater than the DAT. Predicted N and S deposition impacts are shown in Table 3.2-19.

Table 3.2-19
Maximum N and S Deposition Impacts from
Meeker Gas Plant Operations at Class I and Sensitive Class II Areas

Location	Maximum N Deposition (kg/ha-yr)		Maximum S Deposition (kg/ha-yr)	
	Proposed Action	Expanded Facility	Proposed Action	Expanded Facility
Arches National Park	0.00004	0.0001	0.0001	0.0004
Black Canyon of the Gunnison Wilderness Area	0.0001	0.0002	0.0003	0.0009
Eagles Nest Wilderness Area	0.0002	0.0005	0.0004	0.0012
Flat Tops Wilderness Area	0.0004	0.0011	0.0011	0.0036
Maroon Bells/Snowmass Wilderness Area	0.0002	0.0005	0.0004	0.0013
Mount Zirkel	0.0003	0.0007	0.0006	0.0019
West Elk Wilderness Area	0.0001	0.0003	0.0003	0.0008
Colorado National Monument	0.0001	0.0004	0.0005	0.0015
Dinosaur National Monument	0.0006	0.0011	0.0034	0.0117

In addition, potential changes in ANC, resulting from potential N and S deposition from the expanded facility, were calculated for four lakes within the Flat Tops Wilderness Area. For all lakes the estimated changes in ANC were all predicted to be less than the significance thresholds (Forest Service, 2000). The estimated change in ANC was 0.095 percent at Lower Packtrail Pothole, 0.058 percent at Upper Packtrail Pothole, and 0.071 percent at Ned Wilson Lake (compared to the 10 percent threshold), and a 0.03 microequivalent per liter (μeq/l) change at the more sensitive Upper Ned Wilson Lake (compared to a 1.0 μeq/l threshold for sensitive lakes).

Greenhouse Gas Emissions

The maximum GHG emissions resulting from the Proposed Action source emissions are estimated at 0.5 terragrams (tg)/yr of CO_2 equivalent emissions. The Meeker Gas Plant combined emissions from new and existing sources are approximately 1.7 tg/year of CO_2e emissions. To place the project GHG emissions in context, the GHG emissions from the top five emitting coal-fired power plants in Colorado range from 3.5 to 9.8 tg/year (EPA, 2012c).

3.2.3 Environmental Consequences of the No Action Alternative

Under the No Action Alternative, the gas plant expansion would not be constructed in the project area. No air emissions would occur beyond those which are currently authorized for this region, and the existing facility would continue to operate as permitted with no additional air quality impacts from expanded gas processing capacity.

Near-Field Modeling

Air pollutant emissions from the existing facility were analyzed using the AERMOD dispersion model to quantify maximum potential PM_{10}, $PM_{2.5}$, NO_x, CO, SO_2, and air toxics impacts during plant operation under the No Action Alternative. Table 3.2-20 presents maximum modeled air pollutant concentrations from the existing Meeker Gas Plant. When the maximum modeled concentrations are added to representative background concentrations, it is demonstrated that the total air pollutant concentrations from the No Action Alternative are less than the applicable NAAQS and CAAQS. In addition, direct modeled concentrations are below the applicable PSD Class II increments.

Table 3.2-20
Maximum Modeled Pollutant Concentration Impacts from Existing Meeker Gas Plant Operations (µg/m^3)

Pollutant	Averaging Period	Direct Modeled	PSD Class II Increment[1]	Background	Total Predicted	NAAQS	CAAQS
CO	1-hour	586.6	n/a	1,144.5	1731.1	40,000	40,000
	8-hour	245.7	n/a	1,144.5	1390.2	10,000	10,000
NO_2	1-hour	15.3	n/a	26.3	41.6	100	100
	Annual	0.5	25	9.4	9.9		
SO_2	1-hour	165.6	n/a	31.4	197.0	1,300	700
	3-hour	108.1	512	23.5	131.6	365	365
	24-hour	28.2	91	13.1	41.3	80	80
	Annual	4.4	20	5.2	9.6		
PM_{10}	24-hour	0.31	30	36	36.3	150	150
	Annual	0.05	17	11	11.0	50	50
$PM_{2.5}$	24-hour	0.31	n/a	24	24.3	65	65
	Annual	0.05	n/a	9	9.0	15	15

[1] The PSD demonstrations serve informational purposes only and do not constitute a regulatory PSD increment consumption analysis.

Modeling was performed to estimate the maximum impacts that could occur from air toxics emissions generated by the existing Meeker Gas Plant. Potential maximum acute (short-term; 1-hour) air toxics concentrations are shown in Table 3.2-21 compared with the acute RELs (EPA, 2011). No RELs are available for ethyl benzene and n-hexane; instead, the available Immediately Dangerous to Life or Health divided by 10 (IDLH/10) values are used. These IDLH values are determined by the NIOSH and were obtained from EPA's Air Toxics Database (EPA, 2011). As shown in Table 3.2-21 the maximum predicted acute air toxics concentrations are below the threshold levels.

Table 3.2-21
Maximum Modeled 1-Hour Air Toxics Concentration Impacts from Existing Meeker Gas Plant Operations (µg/m^3)

Air Toxic	Existing Facility	REL
Benzene	74.1	1,300
Toluene	510.2	37,000
Ethyl benzene	3.3	350,000[1]
Xylene	648.7	22,000
n-Hexane	90.9	390,000[1]
Formaldehyde	46.2	94
Hydrogen Sulfide	2.3	42

[1] No REL available for these air toxics. Values shown are from Immediately Dangerous to Life or Health (IDLH/10), EPA Air Toxics Database, Table 2 (EPA, 2011).

Potential long-term (annual) air toxics concentrations are shown in Table 3.2-22 compared to non-carcinogenic Reference Concentrations for Chronic Inhalation (RfCs) (EPA, 2012). As shown in Table 3.2-22, the maximum modeled annual air toxics impacts are below the RfC levels.

Table 3.2-22
Maximum Modeled Annual Air Toxics Concentration
Impacts from Existing Meeker Gas Plant Operations (µg/m^3)

Air Toxic	Existing Facility	RfC
Benzene	4.14	30
Toluene	26.82	400
Ethylbenzene	0.21	1,000
Xylene	33.54	100
n-Hexane	6.00	200
Formaldehyde	0.02	9.8
Hydrogen Sulfide	0.05	2

Modeling was also performed to estimate the potential cancer risk at the nearest residence as a result of long-term exposures to concentrations of suspected carcinogens (benzene, ethyl benzene and formaldehyde) emitted from the existing Meeker Gas Plant (No Action Alternative). The modeled long-term risk from benzene, ethyl benzene, and formaldehyde emissions from the existing Meeker Gas Plant are shown in Table 3.2-23. Under the MLE scenario, the estimated incremental and combined cancer risk associated with long-term exposure to benzene, ethyl benzene, and formaldehyde is less than the acceptable range of 1 to 100 x 10^{-6}.

Table 3.2-23
Long-term Modeled MLE and MEI Cancer Risk Analyses for Existing Meeker Gas Plant

Analysis	Air Toxic	Modeled Concentration (µg/m^3)	Unit Risk Factor 1/(µg/m^3)	Exposure Adjustment Factor	Cancer Risk
MLE	Benzene	0.0149	7.8 x 10^{-6}	0.094	1.10 x 10^{-8}
	Ethyl benzene	0.0013	2.5 x 10^{-6}	0.094	3.13 x 10^{-10}
	Formaldehyde	0.0001	1.3 x 10^{-5}	0.094	1.36 x 10^{-10}
				Total Combined[1]	**1.15 x 10^{-8}**
MEI	Benzene	0.0149	7.8 x 10^{-6}	0.429	4.99 x 10^{-8}
	Ethyl benzene	0.0013	2.5 x 10^{-6}	0.429	1.42 x 10^{-9}
	Formaldehyde	0.0001	1.3 x 10^{-5}	0.429	6.15 x 10^{-10}
				Total Combined[1]	**5.19 x 10^{-8}**

[1] Total risk is calculated here; however, the additive effects of multiple chemicals are not fully understood and this should be taken into account when viewing these results.

Far-Field Modeling

Far-field modeling at Class I and sensitive Class II areas within 200 km of the project area using the CALPUFF model was performed to quantify potential air quality impacts to both ambient air concentrations and AQRVs from air pollutant emissions of NOx, SO_2, PM_{10}, and $PM_{2.5}$ expected to result from the existing facility. The Class I and sensitive Class II areas analyzed include the Class I Flat Tops Wilderness, Maroon Bells – Snowmass Wilderness, Mount Zirkel Wilderness, West Elk Wilderness, Black Canyon of the Gunnison Wilderness, Eagles Nest Wilderness, and

Arches National Park, and the Class II Dinosaur National Monument, and Colorado National Monument.

PSD Increment Comparison. The direct modeled concentrations of NO_2, SO_2, PM_{10}, and $PM_{2.5}$ at regional PSD Class I and sensitive PSD Class II areas are provided in Table 3.2-24 for comparison to applicable PSD Class I and Class II increments. As shown in Table 3.2-24, these values are below the PSD Class I and Class II increments.

Table 3.2-24
Maximum Modeled Pollutant Concentration Impacts from Existing Meeker Gas Plant Operations at PSD Class I and Sensitive Class II Areas (µg/m^3)

Location	Pollutant	Averaging Time	Direct Modeled Concentration	PSD Class I Increment[1]
Arches National Park	NO_2	Annual	0.0002	2.5
	SO_2	3-hour	0.053	25
		24-hour	0.016	5
		Annual	0.0004	2
	PM_{10}	24-hour	0.011	8
		Annual	0.0004	4
	$PM_{2.5}$	24-hour	0.011	2
		Annual	0.0004	1
Black Canyon of the Gunnison Wilderness Area	NO_2	Annual	0.0003	2.5
	SO_2	3-hour	0.052	25
		24-hour	0.016	5
		Annual	0.0006	2
	PM_{10}	24-hour	0.020	8
		Annual	0.0006	4
	$PM_{2.5}$	24-hour	0.020	2
		Annual	0.0006	1
Eagles Nest Wilderness Area	NO_2	Annual	0.0002	2
	SO_2	3-hour	0.034	25
		24-hour	0.007	5
		Annual	0.0005	2
	PM_{10}	24-hour	0.008	8
		Annual	0.0006	4
	$PM_{2.5}$	24-hour	0.008	2
		Annual	0.0006	1
Flat Tops Wilderness Area	NO_2	Annual	0.0007	2.5
	SO_2	3-hour	0.08	25
		24-hour	0.019	5
		Annual	0.0014	2
	PM_{10}	24-hour	0.020	8
		Annual	0.0011	4
	$PM_{2.5}$	24-hour	0.020	2
		Annual	0.0011	1
Maroon Bells/Snowmass Wilderness Area	NO_2	Annual	0.0002	2.5
	SO_2	3-hour	0.025	25
		24-hour	0.009	5
		Annual	0.00063	2
	PM_{10}	24-hour	0.01	8
		Annual	0.0006	4
	$PM_{2.5}$	24-hour	0.01	2
		Annual	0.0006	1
Mount Zirkel	NO_2	Annual	0.0003	2.5
	SO_2	3-hour	0.032	25
		24-hour	0.008	5
		Annual	0.0008	2
	PM_{10}	24-hour	0.006	8

Location	Pollutant	Averaging Time	Direct Modeled Concentration	PSD Class I Increment[1]
		Annual	0.0007	4
	$PM_{2.5}$	24-hour Annual	0.006 0.0007	2 1
West Elk Wilderness Area	NO_2	Annual	0.0002	2.5
	SO_2	3-hour 24-hour Annual	0.026 0.009 0.0004	25 5 2
	PM_{10}	24-hour Annual	0.010 0.0005	8 4
	$PM_{2.5}$	24-hour Annual	0.010 0.0005	2 1
Colorado National Monument	NO_2	Annual	0.0011	25
	SO_2	3-hour 24-hour Annual	0.13 0.051 0.002	25 5 2
	PM_{10}	24-hour Annual	0.023 0.001	30 17
	$PM_{2.5}$	24-hour Annual	0.023 0.001	9 4
Dinosaur National Monument	NO_2	Annual	0.006	25
	SO_2	3-hour 24-hour Annual	0.85 0.20 0.017	25 5 2
	PM_{10}	24-hour Annual	0.046 0.003	30 17
	$PM_{2.5}$	24-hour Annual	0.046 0.003	9 4

[1] The PSD demonstrations serve informational purposes only and do not constitute a regulatory PSD increment consumption analysis.

AQRV Impacts

Visibility Impacts. Visibility impacts estimated, calculated following the FLAG 2010 method, at Class I and sensitive Class II areas resulting from existing facility source emissions are shown in Table 3.2-25. The visibility analysis indicated that there are zero days above the 0.5 Δdv threshold at any of the Class I and sensitive Class II areas. A maximum predicted visibility impact was 0.18 Δdv, occurring at Dinosaur National Monument.

Table 3.2-25
Maximum Visibility Impacts from Existing Meeker Gas Plant Operations at Class I and Sensitive Class II Areas

Location	Maximum Impact (Δdv)
Arches National Park	0.03
Black Canyon of the Gunnison Wilderness Area	0.07
Eagles Nest Wilderness Area	0.03
Flat Tops Wilderness Area	0.08
Maroon Bells/Snowmass Wilderness Area	0.04
Mount Zirkel	0.02
West Elk Wilderness Area	0.04
Colorado National Monument	0.07
Dinosaur National Monument	0.18

Deposition Impacts. Potential direct atmospheric deposition impacts within Class I and PSD Class II sensitive areas were also calculated. At all Class I and sensitive Class II areas, the maximum N and S deposition during operation of the existing Meeker Gas Plant were predicted to be below the BLM thresholds of 3 kg/ha-yr for S and 1.5 kg/ha-yr for N. The predicted deposition values at each sensitive area are all below the DAT of 0.005 kg/ha-yr, except at Dinosaur National Monument where S deposition was predicted to be approximately 1.7 times greater than the DAT. Predicted N and S deposition impacts are shown in Table 3.2-26.

Table 3.2-26
Maximum N and S Deposition Impacts from Existing Meeker Gas Plant Operations at Class I and Sensitive Class II Areas

Location	Maximum N Deposition (kg/ha/yr)	Maximum S Deposition (kg/ha/yr)
Arches National Park	0.00006	0.00026
Black Canyon of the Gunnison Wilderness Area	0.00014	0.00063
Eagles Nest Wilderness Area	0.00032	0.00082
Flat Tops Wilderness Area	0.00066	0.0025
Maroon Bells/Snowmass Wilderness Area	0.00029	0.00089
Mount Zirkel	0.00041	0.0013
West Elk Wilderness Area	0.00018	0.00059
Colorado National Monument	0.00022	0.0010
Dinosaur National Monument	0.00059	0.0083

In addition, potential changes in ANC at four lakes within the Flat Tops Wilderness Area were all predicted to be less than the significance thresholds (Forest Service, 2000). The estimated change in ANC was 0.064 percent at Lower Packtrail Pothole, 0.039 percent at Upper Packtrail Pothole, and 0.048 percent at Ned Wilson Lake (compared to the 10 percent threshold), and a 0.02 μeq/l change at the more sensitive Upper Ned Wilson Lake (compared to a 1.0 μeq/l threshold for sensitive lakes).

Greenhouse Gas Emissions

The maximum GHG emissions resulting from the existing source emissions are estimated at 1.2 tg/yr of CO_2e emissions. To place the project GHG emissions in context, the GHG emissions from the top five emitting coal-fired power plants in Colorado range from 3.5-9.8 tg/year (EPA, 2012c).

3.2.4 Mitigation

CDPHE-APCD has the ultimate responsibility for reviewing and permitting this project prior to its construction and operation. Unlike the conceptual ‘reasonable, but conservative’ engineering designs used in NEPA analyses, any CDPHE-APCD air quality preconstruction permitting demonstrations required would be based on very site-specific, detailed engineering values, which would be assessed in the permit application review. Any facility developed under the Proposed Action which meets the requirements set forth under Colorado regulations would be subject to

CDPHE-APCD permitting and compliance processes. The BLM has identified the following protective/mitigation measure to minimize effects to air quality:

- Enterprise shall comply with all applicable local, state, and federal air quality laws, statutes, regulations, standards, and implementation plans. Enterprise shall provide documentation of this compliance to BLM, if requested.

3.3 GEOLOGY AND MINERALS

3.3.1 Affected Environment

The project area is located within Colorado Plateau physiographic province (Fenneman, 1931), and more specifically, the Piceance Basin, which is a broad, asymmetrical, southeast-northwest structural and topographic basin (BLM, 1999). The surficial geology of the expansion site is identified as the tertiary Unit 5 of the Uinta formations (Duncan, 1976). No outcrops occur at the gas plant expansion site.

The project area is not within known areas with active faults, seismic activity, or soil liquefaction. Near the project area are units of the Uinta Formation.

Mineral resources in the Piceance Basin include oil, gas, oil shale deposits, sodium minerals, and mineral materials. The Proposed Action is located in an area identified in the 1997 WRFO RMP/ROD as available for multi-mineral leasing (sodium and oil shale). It is encumbered by federal sodium lease COC-118329 for which American Soda currently holds an approved sodium mining plan. The project area is northwest of the identified mining well field in the approved mine plan. American Soda's solution mining operation has been idle since 2004. The expansion site area is also encumbered by federal oil and gas leases as shown in Table 3.3-1, below.

Table 3.3-1
Existing Oil and Gas Leases within the Project Area

Lease Number	Affected Location	Name	Expansion Area
COC70640	Section 17, W½, SW¼	XTO Energy Inc.	Gas Plant
COC70641	Section 18, NE¼SW¼, Lots 3	Encana Oil & Gas Inc.	Gas Plant & Power Line
COC72968	Section 18, Lot 4	XTO Energy Inc.	Power Line
COC61715	Section 19 Lot 1;	XTO Energy Inc.	Power Line
COC61712	Section 19 Lot 2	XTO Energy Inc.	Power Line

3.3.2 Environmental Consequences of the Proposed Action

Potential effects include loss of mineral access, and loss of revenues generated by future sodium mineral development. However, American Soda's approved mine plan does not include the area of the Proposed Action in their well field delineation. Implementation of directional drilling would allow for the recovery of the underlying natural gas resources beneath the Proposed Action.

Construction of the Meeker Gas Plant expansion would increase transportation and production capacity and could act as a stimulus to additional development of gas reserves in Northern Colorado depending on gas prices. Increased production would allow additional gas and natural gas liquids to enter the marketplace and help satisfy consumer demand.

3.3.3 Environmental Consequences of the No Action Alternative

Under the No Action Alternative, no effects to geology and minerals would occur.

3.3.4 Mitigation

The BLM has not identified any protective/mitigation measures to minimize effects to geology and mineral resources.

3.4 SOIL RESOURCES

3.4.1 Affected Environment

Soils within the project area were identified using the Natural Resources Conservation Service (NRCS) soil survey of Rio Blanco County Area, Colorado (Soil Conservation Service - SCS, 1982). Information in this survey was supplemented with the NRCS web-based data including both spatial and tabular data, as well as soil series descriptions (NRCS, 2010).

The project area is mainly used as rangeland. There is a trellislike network of drainageways within the Piceance Creek Basin, which has produced rows of nearly parallel ridges and valleys. In these drainages, flat narrow alluvial valleys are bounded by valley sides whose slopes commonly exceed 30 percent. Valleys are separated by wide, gently rolling divides. Two soil types, Yamac loam and Rentsac channery loam soils are present in the project area, of which Yamac loam is the predominant soil type.

Mapping Unit 104 Yamac loam, 2 to 15 percent slopes. This deep, well-drained soil is found on rolling uplands, terraces, and fans. It is formed in eolian and alluvial material, and the surface and subsurface textures are loam. The Yamac soil is non-saline and non-sodic, moderately alkaline in the lowest profile of 22 to 60 inches. Permeability is moderate and available water capacity is moderate to high. The potential for water and wind erosion is slight to moderate and compaction is severe.

Mapping Unit 73 Rentsac channery loam, 5 to 50 percent slopes. This shallow, well-drained soil is found on ridges, foothills, and side slopes. It is formed in residuum derived dominantly from calcareous sandstone, and the surface texture is channery loam and subsurface textures are channery loam and extremely flaggy light loam. The soil depth to sandstone bedrock ranges from 10 to 20 inches. Rentsac soils are non-saline and non-sodic, they are slightly alkaline and permeability is moderately rapid. Available water capacity is very low and effective rooting depth is 10 to 20 inches. It may contain up to 40 percent large stones below 5 inches. Potential for wind erosion is moderate and the hazard for water erosion is moderate to very high.

Table 3.4-1 lists the soil mapping units within the project area including limiting or sensitive characteristics.

Table 3.4-1
Sensitive Soils Characteristics for Soils within the Proposed Action

Mapping Unit	Water Erosion[1]	Wind Erosion[2]	Large Stones[3]	Restrictive Layer[4]	Low Reveg. Potential[5]	Saline/ Sodic[6]	Hydric[7]	Compaction[8]	Prime Farmland[9]	Flooding Hazard	Water Table[10]	pH	AASHTO
Rentsac Channery Loam (MU73) 5-15% slopes	Moderate to very high	Moderate	Yes	Bedrock (paratlithic) 10-20 inches	Yes	No	No	Severe	No	N/A	>6.0 feet	6.6-8.4	A-4 A-1
Yamac Loam (MU104) 2-15% slopes	Slight to moderate	Slight	No	> 60 inches	No	No	No	Severe	No	N/A	>6.0 feet	6.6-9.0	A-4

Soil group ratings are based on the dominant soil type for the soil map unit. Inclusions of sensitive soil types may be found within soil map units that do not receive sensitive ratings and would be identified in the field by the Enterprise's Environmental Monitor; the appropriate BMP would be implemented to mitigate sensitive soil features.

[1] Water Erosion – soils sensitive to water erosion have an NRCS rating of high or severe.

[2] Wind Erosion – soils sensitive to wind erosion are in the NRCS wind erodibility groups 1 and 2. Soil textures include very fine sand, fine sand, sand, coarse sand, loamy very fine sand, loamy fine sand, loamy sand, and loamy coarse sand; very fine sandy loam and silt loam with 5 percent or less clay and 25 or less percent very fine sand; and sapric soil materials (as defined in Soil Taxonomy); except Folists.

[3] Large Stones – soils with greater than 25 percent cobbles and/or stones in the soil profile can present problems with surface reclamation. Soil with large quantities of large stones hold less available water for plant growth and generally require broadcast seeding methods.

[4] Restrictive Soils – soils that have a lithic, paralithic, or other restrictive soil layer within 60 inches of the soil surface. These soils have shallow profiles and hold less available water for plant growth. Excavation of bedrock or cemented layers may generate substantial quantities of materials that are unsuitable for use as pipe bedding or plant growth medium.

[5] Low Reveg. Potential - having reclamation sensitivity is a combined rating for soils with high or severe erosion potential, steep slopes, large stones, shallow soils, and saline or sodic conditions and clayey soils (greater than 40 percent). This also includes soil map units with dominant amounts of rock outcrop. BMPs are generally required to reduce erosion and sedimentation potential in these soils. Restoration of these soils in most cases requires adaptive seed mixtures and implementation of revegetation practices (i.e., scarification, fertilization, proper seeding techniques, mulching, monitoring, etc.) to enhanced revegetation success. Revegetation of areas with extensive rock outcrop may not be possible.

[6] Saline/Sodic Soils – includes soils with an electrical conductivity of 8 mmhos/cm or greater and/or a Sodium Adsorption Ratio (SAR) of 13 or greater. Saline/sodic soils may require special handling of materials and/or special seed mixes.

[7] Hydric Soils – at least one major named map unit soil is included on the county hydric soil list.

[8] Soil Compaction – sensitive soils include those with an NRCS rating of high or severe. Ratings are based on depth to a water table, rock fragments on or below the surface, the Unified classification, depth to a restrictive layer, and slope.

[9] Prime Farmland – dominant map unit soil is included on either the state or county list of *farmland of importance.*

[10] High Water Table – NRCS ratings of soils which have a saturated zone in the soil profile within 60 inches of the surface in most years. A saturated zone that lasts for less than a month is not considered a water table.

3.4.2 Environmental Consequences of the Proposed Action

Construction associated with expansion of the Meeker Gas Plant could have the potential to affect soil resources including increased soil erosion rates due to loss of vegetation, and soil compaction and damage to soil structure resulting from grading and/or heavy construction equipment. These effects could accelerate the erosion process and could result in discharges of sediment to waterbodies. Soil productivity could be decreased, which in turn would decrease the reclamation potential of the soil. Soil productivity can also be decreased when noxious weeds invade disturbed areas.

Expansion of the gas plant would disturb a total of 8.1 acres of Rentsac Channery Loam (Mapping Unit - MU 73) in the long-term and 25.7 acres of Yamac Loam (MU 104) in the long-term for a total disturbance of 33.8 acres. An additional 7.1 acres of long-term disturbance proposed for the expansion was disturbed in 2007 for the temporary lay down yard on the north end of the existing Meeker Gas Plant. This area included 2.1 acres of Rentsac Channery Loam (Mapping Unit - MU 73) and 5.0 acres of Yamac Loam (MU 104). All available topsoil from areas of long-term disturbance at the Meeker Gas Plant would be salvaged and stored in topsoil stockpiles for use during final reclamation.

The proposed 138-kV power line would cross approximately 5,000 feet of the Yamac Loam (MU 104) and 1,562 feet of the Rentsac Channery Loam (MU 73) soil mapping units. Potential impacts to soils from installation of the power line would primarily be associated with potential soil compaction and rutting related to the equipment traffic necessary to install the power line. As indicated in Table 3.4-1, both of these mapping units are susceptible to compaction. Potential effects would be greatest at the 0.18-acre area (50-foot radius) cleared around each of the power line's estimated 10 poles (approximately 1.8 acres, total), where equipment and movement would be greater because of the multiple activities required to install and string the power line. Potential soil compaction and rutting could also occur along the power line right-of-way associated with cross-country equipment and truck traffic to access each pole location, but would be limited to the power line's 100-foot right-of-way. Potential soil effects from installation of the power line is expected to be incidental and minor, especially if installation occurs when soils are dry and soil strength is the highest. Further, any excessively disturbed areas could be mitigated in the short-term through restoration measures including soil scarification and reseeding.

3.4.3 Environmental Consequences of the No Action Alternative

Under the No Action Alternative, the BLM would deny the Proponent's Proposed Action to expand the Meeker Gas Plant and to construct the proposed 138-kV power line. Therefore, none of the effects located on BLM-administered lands described above would occur.

3.4.4 Mitigation

The BLM has identified the following protective/mitigation measures to further reduce potential effects to soils:

- Soil disturbing activities shall cease when winds exceed 30 mph or when dust cannot be controlled with water as a dust suppressant. If windy conditions warrant the suspension of construction activities, the Reality Specialist with the BLM shall be notified through the Environmental Monitor.

- All construction and travel on roads shall stop until soils dry if vehicles and equipment form ruts greater than 3 inches deep. Vegetation clearing and soil segregation activities shall also cease if ruts greater than 3 inches are observed in soils.
- To ensure successful final reclamation, topsoil salvaged from the facility shall be re-spread to the greatest degree practical prior to seeding. Topsoil should not be stored or spread more than 3 feet thick to retain its viability for final reclamation and protect it from erosion.

3.4.5 Finding on the Public Land Health Standard #1 for Upland Soils

No Land Health Assessment has been conducted for the Piceance Creek watershed. However, the BLM (2007a, page 2-29) reported that "there is no evidence of a trend in soil conditions that suggests that the current management in the planning area is causing a loss of or damage to the (soil) resource." The project would have no effect on Land Health Standard 1 (upland soils) with implementation of mitigation measures and successful revegetation.

3.5 SURFACE AND GROUNDWATER QUALITY

3.5.1 Affected Environment

3.5.1.1 Surface Water Quality

The project area is located within the Piceance-Yellow subbasin of the White River basin in the Upper Colorado region (U.S. Geological Survey - USGS Hydrologic Unit Code 14050006). One ephemeral drainage is located within the project area and drains to an unnamed intermittent and ephemeral tributary of Yellow Creek, approximately 0.5 miles to the west.

Drainage from the project area flows northwest toward Yellow Creek. It enters Yellow Creek approximately 14 miles upstream from its confluence with the White River, approximately 2 mile downstream from the confluence of Duck Creek with Yellow Creek. Yellow Creek, identified as stream segment 13b in the White River basin by the CDPHE, is approximately 1.5 miles from the project boundary. The CDPHE designated use classifications for segment 13b are Warm Water Aquatic Life Class 2, Recreation Class N, and Agriculture (CDPHE, 2012a).

> **Class 2 – Cold and Warm Water Aquatic Life.** These are waters that are not capable of sustaining a wide variety of cold or warm water biota, including sensitive species, due to physical habitat, water flows or levels, or uncorrectable water quality conditions that result in substantial impairment of the abundance and diversity of species.
>
> **Recreation Class N.** These surface waters are not suitable or intended to become suitable for primary contact recreation uses. This classification shall be applied only where a use attainability analysis demonstrates that there is not a reasonable likelihood that primary contact uses would occur in the water segment(s) in question within the next 20-year period.
>
> **Agriculture.** These surface waters are suitable or intended to become suitable for irrigation of crops usually grown in Colorado and which are not hazardous as drinking water for livestock.

The Clean Water Act requires states to compile a list of waterbodies, known as the 303(d) list, that do not fully support their designated uses. The CDPHE-Water Quality Control Commission

Regulation 93, Colorado's Section 303(d) list of impaired waters, indicates that Yellow Creek above the confluence with Barcus Creek, segment 13b, is not currently listed as an impaired waterbody requiring a Total Maximum Daily Load (TMDL) or identified for monitoring and evaluation (CDPHE, 2012b). Yellow Creek below the confluence with Barcus Creek (a stretch of approximately 5 miles from the confluence with the White River to Barcus Creek), segment 13c, is currently listed as impaired under Colorado's Section 303(d) list of impaired waters for iron and aquatic life (CDPHE, 2012b). Duck Creek, which flows into Yellow Creek from the west about 16 miles upstream from the confluence of Yellow Creek and White River is listed as under segment 13b under Colorado's Monitoring and Evaluation List for aquatic life (CDPHE, 2012b).

Tributaries to Yellow Creek have channels that 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, 1994). The USGS collected surface water quality data at gaging stations periodically since 1972.

USGS gaging stations were reviewed for water quality data. Table 3.5-1 provides a statistical summary of water quality records for Yellow Creek at the mouth (USGS, 2012a).

Table 3.5-1
Summary of USGS General Water Quality Parameters

Parameter	Number of Samples	Range	Mean
Yellow Creek near White River, Colorado, USGS gaging station 09306255 ***Period of record 1965-2012***			
specific conductance (µS/cm at 25°C)	326	460 to 5,200	3,428
pH (standard units)	179	7.6 to 9.1	8.6
temperature (°C)	586	0 to 31	11.5
dissolved oxygen (mg/l)	183	4.4 to 14.2	10.2
total hardness (mg/l as $CaCO_3$)	180	73 to 1,060	646
suspended solids (mg/l)	24	3 to 4,990	386
Source: USGS, 2012a.			

3.5.1.2 Groundwater Quality

Groundwater in the White River Basin occurs in both alluvial and bedrock aquifer systems. Alluvial aquifers are associated with streams, are often good sources of water, are recharged chiefly by stream flow, and often serve to recharge underlying bedrock aquifers (BLM, 1985). The alluvial aquifers range from 0 to 140 feet in depth (BLM, 1994).

The Uinta-Animas and the Mesaverde aquifers are the principal bedrock aquifers in the project area (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. In locations 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.

The project is located on a ridge top on sand and siltstones of the Uinta Formation (USGS, 2005). No alluvial aquifers exist at the project site. Depth to groundwater at the proposed expansion site is expected to be 350 to 450 feet below ground surface (bgs) (BLM, 1999). Enterprise has not drilled any groundwater wells for the Meeker Gas Plant (Mungas, 2011), but has conducted geotechnical analysis and borings for engineering purposes for deep foundations (Cordilleran Compliance Services, Inc. - Cordilleran, 2006). Six bore holes were drilled on site to support this analysis to depths of 40 feet and none encountered groundwater. Additionally, Cordilleran (2005) drilled 35 soil borings on site ranging between 30 and 50 feet in depth, none of these bore holes encountered groundwater. Cordilleran (2005) also reported that information on wells with a similar location in the project area registered with the Colorado Division of Water Resources indicates that the depth to water is likely 300 feet or more.

Groundwater systems are dynamic systems that store and transmit water. The Uinta Formation is part of a groundwater system commonly referred to as the upper aquifers in the Piceance watershed (Taylor, 1987). The principal natural recharge of the upper aquifers is from snowmelt in the higher elevations. Groundwater recharge follows a system of fractures and interconnected pores or porous sandstones and siltstones to springs and gaining reaches of streams. It is estimated that this natural recharge rate is 36,000 acre-feet per year (Taylor, 1987). The Uinta Formation is known to have specific zones that provide very good and reliable water sources depending on the location. Aquifers in the Uinta Formation are typically suitable as water sources can occur at shallower depths than 300 feet due to preferential flow paths or geological characteristics that allows for the accumulation and transportation of groundwater.

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, 2003). 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 Piceance 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).

3.5.2 Environmental Consequences of the Proposed Action

Effects to surface water quality could occur during construction from vegetation clearing, surface disturbance/grading, and during construction and operation from vehicle and equipment operation and maintenance and fueling. Surface water quality could also be impacted from spills of fuel, lubricants, solvents, and chemicals that might subsequently enter surface waters. The installation and maintenance of stormwater control BMPs during construction and operation and would minimize potential sediment yield from the construction site. For example, temporary silt

fences and erosion control blankets would be implemented to eliminate sediment transport during construction.

During construction and during operation, erosion and sedimentation from storm water runoff would be minimized by implementation of BMPs described in Enterprise's Storm Water Management Plan (SWMP) prepared in accordance with state regulations (Appendix C in Enterprise's POD). Permanent diversion ditches, sediment basins, and rock check dams would be installed to dissipate water flow energy at the plant expansion site.

Spills of fuel, lubricants, chemicals, and solvents would be promptly contained and cleaned up in accordance with Enterprise's Emergency Response Plan and Spill Prevention, Control, and Countermeasures (SPCC) Plan (Appendices D and E Enterprise's POD, respectively) both during construction and during plant operations. In the unlikely event a spill occurs at the gas plant, the response to the spill as outlined in the SPCC Plan and SWMP would be to immediately control and contain the spill to the smallest area possible and then to clean-up the spill and all contaminated soils. Enterprise would also conduct soil testing to ensure that all potential contaminated soils affected by a spill are properly cleaned up and removed so that the risk of contamination of surface or groundwater does not occur.

Stormwater from the interior of the gas plant expansion would be captured by a stand-alone system. The interior system would work similar to the Meeker I and Meeker II systems. Upon final grade all storm water would be directed via graveled/concrete ditches to storm drains. Water coming off of structures would be directed into storm drains. The storm drains (located at applicable locations) would then direct the water into scrubber boxes in order to remove hydrocarbons and other contaminates. After contaminants have been removed through scrubber boxes, cleaned water would be conducted to the internal retention basins where the water would evaporate and/or infiltrate into the ground. Ongoing maintenance and inspections of the scrubber boxes and other BMPs would ensure that stormwater runoff which may have had contact with contaminants is treated before entering the internal retention basins.

Internal retention basins are unlined and will allow infiltration to the shallow groundwater of stormwaters and potential contaminants. If a spill occurred during a severe storm when retention basins are filling, spills would likely enter retention ponds because stormwater would overwhelm scrubbers. Enterprise's SPCC Plan indicates oil from transformers would use retention basins for secondary containment (Appendix E of the POD). Also, normal plant operations are likely to result in small amounts of solvents and oils that could also be transported to retention ponds during storm events. There is a potential for this material to enter portions of the Uinta formation and the Upper Aquifer System. A pit liner on these retention ponds would afford an additional layer of protection for groundwater systems on public lands.

With implementation of the measures in Enterprise's SWMP, effects from erosion and the potential release of sediment would be minimal and short-term. Further, with design measures and implantation of the measures and BMPs specified in Enterprise's SPCC Plan, SWMP, and Emergency Response Plan, the potential risk associated with the possible release of other pollution sources would be reduced, and the potential effects to surface waters or groundwater from a spill would be unlikely.

3.5.3 Environmental Consequences of the No Action Alternative

Under the No Action Alternative, none of the effects described above would occur.

3.5.4 Mitigation

The BLM would require the following protective/mitigation measures to further reduce potential effects to surface and groundwater quality:

- The internal retention basins for Meeker III and IV shall be lined with a synthetic liner(s) with a minimum thickness of 24 mils and shall be of a high-density polyethylene, polypropylene, poly vinyl chloride, hypalon, or other synthetic material that is impervious, weather resistant, and resistant to deterioration when in contact with hydrocarbons, aqueous acids, alkali, fungi, or other substances. The synthetic liner(s) shall also be resistant to deterioration by ultraviolet light, punctures and tearing, and shall be designed for the life of the retention basins. The retention basins shall be padded with material if necessary to reduce potential damage to the liner by sharp rock edges.
- Retention basins for Meeker III and IV shall be constructed, monitored, and operated to provide for a minimum of two (2) feet of freeboard at all times and should not be breached (cut) when fluids are present. Any fluids or solids removed from the pit should be disposed of in an approved facility.

3.5.5 Finding on the Public Land Health Standard #5 for Water Quality

With proper sediment and erosion control measures, mitigation, and spill prevention practices, the Proposed Action would not likely contribute to current or future diminished groundwater or surface water quality.

3.6 VEGETATION

3.6.1 Affected Environment

Elevations in the project area range from 6,538 to 6,600 feet. There are two vegetation types in project area and vicinity: pinyon-juniper woodlands and big sagebrush shrublands (WestWater Engineering, 2008). Pinyon-juniper woodlands are dominated by pinyon pine and Utah juniper with characteristic understory components of big sagebrush, with pricklypear cactus, kochia, Russian thistle, and mixed bunch grasses including Indian ricegrass, beardless and western wheatgrass, junegrass, and cheatgrass. Species' scientific names are included in Appendix A.

Big sagebrush shrublands in the project area support a variety of shrubs including fringed sagebrush, Wyoming big sagebrush, antelope bitterbrush, shadscale, winterfat, and low rabbitbrush. Associated grasses and graminoides include bottlebrush squirreltail, Indian ricegrass, Idaho fescue, basin wildrye, salina wildrye, bluebunch wheatgrass, needle-and-thread grass, western wheatgrass, blue grama, and elk sedge. Forbs found on-site include sharpleaf twinpod, cushion phlox, draba milkvetch, and buckwheat. An ephemeral drainage passes through the Proposed Action location. Big sagebrush, black greasewood, and rubber rabbitbrush border the drainage along with rayless aster and sparse grasses.

3.6.2 Environmental Consequences of the Proposed Action

Construction and operation of the gas plant expansion would result in a long-term loss of approximately 13.1 acres of sagebrush shrubland and 20.7 acres of pinyon-juniper woodland. Also, 7.1 acres of land previously disturbed for the temporary lay down area would be included in the expansion; however, no additional vegetation would be disturbed. None of the vegetation

removed by construction of the gas plant expansion would be restored during the life of the project until final reclamation (see Table 3.6-1).

Construction of the WREA 138-kV power line would require clearing all vegetation within an assumed 50-foot radius of each power pole (an area of 0.18 acre), affecting approximately 1.80 acres (see Table 3.6-1). Vegetation around the power poles would be maintained for the life of the power line as a fire prevention strategy. Along the 100-foot wide power line right-of-way, vegetation could be crushed by the conductor stringer vehicles where access is necessary off the existing two-track road. The route for the power line would intercept big sagebrush shrubland for 4,306 feet, pinyon-juniper woodland for 2,171 feet, and 85 feet of previously disturbed lands for a total distance of 6,562 feet. Along the power line right-of-way, trees and some larger shrubs would be cleared to allow construction vehicle access and ensure larger trees would not encroach on the power line. An effect to grasses from construction of the power line would be short-term (3 to 5 years), while shrubs would become reestablished over a longer period of time (more than 20 years). Brush-hogging techniques along the power line right-of-way would leave big sagebrush roots intact and would help promote sagebrush revegetation. It is anticipated that pinyon-juniper woodlands would re-establish through natural succession from adjacent pinyon-juniper woodlands, although reestablishment would be limited to maintain the integrity of the power line.

Table 3.6-1
Amounts (acres) of Vegetation Removed (Cleared) by Construction of the Gas Plant Expansion and 138-kV Power Line

Vegetation	Gas Plant Expansion (acres)	138 kV Power Line [1] (acres)	Total Acres Affected
Big Sagebrush Shrubland	13.1	1.2	**14.3**
Pinyon-Juniper Woodland	20.7	0.6	**21.3**
Disturbed Surface	7.1	0.0	**7.1**
Total	**40.9**	**1.8**	**42.7**

[1] Considers vegetation cleared around each power line pole (50-foot radius).

No new direct effects to vegetation would be expected by upgrading or maintaining existing roads; however, possible indirect effects to plants may result from increased vehicular traffic associated with construction and operations along existing roads accessing the project area.

Indirect effects to vegetation may occur from changes in hydrology and soil characteristics, and an increase in noxious weeds, resulting in alteration of vegetation cover and species composition. Enterprise would implement their Integrated Noxious and Invasive Weed Management Plan (Appendix F in Enterprise's POD) that would control invasive, non-native species within the project area.

3.6.3 Environmental Consequences of the No Action Alternative

Under the No Action Alternative, none of the effects described above would occur.

3.6.4 Mitigation

The BLM has identified the following protective/mitigation measures to further reduce effects to vegetation resources:

- Surface disturbances associated with the gas plant expansion and power line right-of-way shall be clearly flagged prior to construction to minimize effects on vegetation adjacent to the project area.
- WREA shall flag an access route within the permitted power line right-of-way to minimize removal of trees and shrubs for access by construction vehicles.
- If possible, the topsoil and herbaceous vegetation shall not be cleared in the radius around the power poles. Vegetation shall be removed by brush-hogging.
- All disturbed areas shall be reseeded at the first appropriate seeding window. The BLM recommends using seed mix #2 outlined below. Final reclamation shall use the seed mix and reclamation practices approved by the BLM at that time.

Cultivar	**Common Name**	**Scientific Name**	**Application Rate (lbs PLS/acre)**
Arriba	Western Wheatgrass	*Pascopyrum smithii*	4
Rimrock	Indian Ricegrass	*Achnatherum hymenoides*	3.5
Whitmar	Bluebunch Wheatgrass	*Pseudoroegneria spicata ssp. inermis*	4
Lodorm	Green Needlegrass	*Nassella viridula*	2.5
Timp	Northern Sweetvetch	*Hedysarum boreale*	3
	Sulphur Flower Buckwheat	*Eriogonum umbellatum*	1.5

- If, after two growing seasons, the following success criteria are not achieved, then the steps will be reassessed in consultation with the BLM WRFO and additional seeding at an appropriate seeding window will occur. Success criteria to achieve:
    - Vegetation monitoring (method approved by the BLM) reveals that the total vegetative ground cover in the reseeded area is less than 80 percent of foliar cover of the desired plant community (as determined by the BLM).
    - The resulting plant community must have at least five desirable plant species, at least two of which must be a forb or shrub, each comprising at least three percent relative cover, none of which may exceed 70 percent relative cover individually.

3.6.5 Finding on the Public Land Health Standard #3 for Plant and Animal Communities

No Land Health Assessments have been conducted in the vicinity of the Proposed Action. However, in 1996, the BLM estimated that the area between Yellow Creek and Piceance Creek was considered “weed free” (BLM, 2007a); the project area was included. Since 1996, BLM (2007a) has recognized that there have been new populations of weeds developing in previously “weed free” areas, which would negatively affect habitat quality and native plant recruitment. There are scattered areas of cheatgrass in the project area and documented occurrence of kochia adjacent to the existing gas plant (see discussion in the Invasive, Non-native Species Section).

The Proposed Action has the potential to contribute to the weed infestations within the local landscape which, if not controlled, would contribute to the project area and vicinity not meeting Land Health Standard 3. New surface disturbances caused by the Proposed Action are potential areas for invasion by noxious weeds, including cheatgrass and kochia. With strict adherence to

Enterprise's Noxious and Invasive Weed Management Plan (Appendix F in Enterprise's POD), the Proposed Action would not further degrade plant communities in the project area and vicinity.

3.7 INVASIVE, NON-NATIVE SPECIES

3.7.1 Affected Environment

Noxious weeds are plants that are aggressive competitors non-native to an area, and are an increasingly serious problem in western Colorado. Most have come from Europe or Asia, either accidentally or as ornamentals that have escaped. Noxious weeds take advantage of any disturbance of the soil and are dispersed by wind, water, animals, people, and vehicles. Once established in a new environment they tend to spread quickly because normal biological controls, including competition, parasites and disease, and herbivores, are absent.

The State of Colorado and Rio Blanco County maintain a list of plants that are considered to be noxious weeds. There are three categories of noxious weeds that have been identified by the State of Colorado for various degrees of management within the state under the Colorado Noxious Weed Act (Title 35, Article 5.5). The "A" list includes species that are not known to occur in Colorado or that have very limited distribution and must be eradicated whenever detected (18 species); "B" listed species include weeds with populations of varying distributions and densities and weed management plans should be designed to stop the continued spread of these species (40 species); and "C" listed species are widespread and common in Colorado and may be required to be controlled (14 species) (Colorado Department of Agriculture, 2010a). The Rio Blanco County Weed Department (Colorado Department of Agriculture, 2010b) has designated 19 species (of the 72 species that occur on the Colorado State noxious weed lists) as noxious weeds that must be managed within the county (see Table 3.7-1). Species' scientific names are included in Appendix A.

Cheatgrass is the only state-listed weed species (List C) that has been observed within the project vicinity, and is included in Table 3.7-1; however, this weed does not occur on the Rio Blanco County weed list. Cheatgrass was scattered in open sagebrush shrubland areas at the southern end of the project site, but was not a dominant species within the project area. Another noxious weed not included on the state or county lists but documented within the project area is kochia. This weed was observed near the north fence line of the existing gas plant (WestWater Engineering, 2008). Both weed species typically occur in disturbed areas.

Table 3.7-1
Potential Occurrence and Observed Noxious Weed Locations in the Project Area

Common Name Scientific Name	Rio Blanco County Noxious Weed List	Location in Relation to Site
Colorado State B List		
Spiny Plumeless Thistle *Carduus acanthoides*	X	Within project vicinity Davis Gulch area next to RBC 5 [2]
Musk (Nodding Plumeless) thistle *Carduus nutans*	X	Within project vicinity Within Piceance Creek area [2]

Common Name Scientific Name	Rio Blanco County Noxious Weed List	Location in Relation to Site
Diffuse Knapweed *Centaurea diffusa*	X	Within project vicinity Approximately 2.4 miles SE of project area along Piceance Creek on RBCs 24 and 31[2]
Spotted knapweed *Centaurea maculosa*	X	Within project vicinity Occurs in several locations throughout Rio Blanco County[3]
Canada Thistle *Cirsium arvense*	X	Widely distributed in Rio Blanco County[2]
Houndstongue, Gypsyflower *Cynoglossum officinale*	X	Within project vicinity Occurs throughout Rio Blanco County[3]
Black Henbane *Hyoscyamus niger*	X	Within project vicinity At top of RBCs 3, 3A, and 76 around Magnolia Camp[2]
Dalmatian Toadflax, Broad-Leaved *Linaria dalmatica*	X	Within project vicinity Small infestation in Piceance Creek area on RBC 122 (MP 26)[2]
Yellow Toadflax *Linaria vulgaris*	X	Within project vicinity Occurs in several locations in the eastern portion of Rio Blanco County[3]
Colorado State C List		
Common (Lesser) Burdock *Arctium minus*	X	Widely distributed in Rio Blanco County[2]
Downy Brome (Cheatgrass) *Bromus tectorum*		Found on Site[1]
Field Bindweed *Convolvulus arvensiso*	X	Occurs in many locations throughout Rio Blanco County[3]
Common (Woolly) Mullein *Verbascum Thapsus*	X	Within project vicinity Widely distributed in Rio Blanco County; greatest concentrations in Piceance Creek area[2]
Sources: [1] WestWater Engineering, 2008. [2] Rio Blanco County, undated. [3] Taylor, 2012.		

3.7.2 Environmental Consequences of the Proposed Action

Surface disturbance, increased vehicle traffic, equipment placement and operation, foot traffic, and other activities associated with the Proposed Action could increase the distributions of established weed species (see Table 3.7-1) and/or could introduce new invasive species into areas that are not currently infested. Surface disturbance along the power line route revegetated within one growing season of construction would be less likely to be infested by weeds than if left as exposed soil for longer periods. If revegetation efforts are not successful, the likelihood of weed infestation would be much higher.

Implementing measures included in Enterprise's Integrated Noxious and Invasive Weed Management Plan (Appendix F in Enterprise's POD) would reduce or eliminate noxious weeds identified within the project area and prevent the spread of weeds into uninfested areas.

3.7.3 Environmental Consequences of the No Action Alternative

Under the No Action Alternative, none of the effects described above would occur.

3.7.4 Mitigation

The BLM would require the following protective/mitigation measures to further reduce effects from invasive, non-native species:

- Use of pesticides shall comply with the applicable Federal and state laws. Pesticides shall be used only in accordance with their registered uses and within limitations imposed by the Secretary of the Interior. Prior to the use of pesticides, Enterprise/WREA shall obtain from the AO written approval of a pesticide use proposal (PUP) showing the type and quantity of material to be used, pest(s) to be controlled, method of application, location of storage and disposal of containers, and any other information deemed necessary by the AO. Emergency use of pesticides shall be approved in writing by the AO officer prior to such use.
- Enterprise/WREA shall be responsible for weed control on disturbed areas within the project area through the life of the project and through final abandonment. Enterprise/WREA are responsible for consultation with the AO and/or local authorities for acceptable weed control methods (within limits imposed in the grant stipulations).

Additionally, the project area is within one of three weed-free zones designated in the White River ROD/RMP (BLM, 1997). As specified in the White River ROD/RMP, the following special conditions would be attached to use authorizations in weed-free zones (BLM, 1997; page 2-14):

- All construction equipment and vehicles would be cleaned prior to entering BLM Weed Free Zones.
- All hay, straw, unprocessed feed, and seed used in BLM Weed Free Zones would be certified free of specified noxious weeds listed in Colorado Weed Free Forage Certification Standards.
- All authorized users of disturbed areas would be required to inventory for noxious weeds in both the spring and fall.

3.8 SPECIAL STATUS ANIMAL SPECIES

3.8.1 Affected Environment

The U.S. Fish and Wildlife Service – (FWS) (2012) identified two vertebrate animal species that are listed as endangered or threatened under the Endangered Species Act (ESA) and potentially within Rio Blanco County: endangered black-footed ferret and threatened Canada lynx. These species are not expected to inhabit or derive important use from the project area and are not discussed further. Appendix B lists species with ESA status that could potentially occur in Rio Blanco County but are not expected within the project area. Aquatic species with ESA status are discussed in the Aquatic Wildlife section. Species' scientific names are included in Appendix A.

The BLM (2010), State of Colorado (Colorado Division of Wildlife - CDOW, 2010a), and Colorado Natural Heritage Program (CNHP) (1999; Culver et al., 2008) have identified 29 special status terrestrial animal species that may occur within the BLM WRFO area, including Rio Blanco County; however, available information from CDOW and the Natural Diversity Information Source (CDOW, 2009a) indicates that seven of the species could occur in the vicinity of the Proposed Action based on the species' characteristic habitat associations and defined distributions. Each species that may occur in the project area is addressed below. Special status terrestrial animal species not expected within the project area are not discussed further but are included in Appendix B. BLM sensitive aquatic species are discussed in the Aquatic Wildlife section.

Three species of bats could occur in the vicinity of the project area. Townsend's big-eared bat roosts in caves, tunnels, mines, and buildings, and can be found in lower elevation pinyon-juniper woodlands (Culver et al., 2008). Fringed myotis are known from western Rio Blanco County, including the vicinity of the project area (Fitzgerald et al., 1994). The species commonly occupies oak and pinyon woodlands, as well as Douglas-fir and ponderosa pine forests; mines, caves, and buildings providing roost sites (Adams, 2003). Spotted bats occur in ponderosa pine woodlands, pinyon-juniper woodlands, and open semi-desert shrublands (CDOW, 2009a).

Northern goshawks are a relatively rare resident in the White River Resource Area. In general, this species prefers to nest in contiguous aspen stands, or spruce-fir/aspen mix stands. Within the last several decades, approximately half a dozen nests have been found in low- to mid-elevation pinyon-juniper woodlands throughout the Piceance Basin. A raptor survey was conducted in May 2010 (WestWater Engineering, 2010). No northern goshawk nests structures or individuals were observed within the vicinity of the project area. The nearest known goshawk nest is approximately three miles from the project area (data in Colorado Oil and Gas Commission, 2009).

Bald eagles are no longer listed as threatened under the ESA, but are protected under the Bald and Golden Eagle Protection Act (BGEPA) (16 USC 668-668d) and the Migratory Bird Treaty Act (MBTA) (16 USC 703-712). The BGEPA prohibits "take" of bald and golden eagles, which includes pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb (50 CFR § 22.3). Bald eagles are listed as threatened by the State of Colorado and as a sensitive species by the BLM.

Bald eagles typically nest along the White River. There are three nest sites along the river between Meeker and Rio Blanco Lake, of which the closest is over 10 miles from the project area. CDOW (2009a) mapped a corridor along Piceance Creek that is winter range and winter foraging habitat for bald eagles, which is less than one mile from the project area. Bald eagles could be present in the vicinity of the project area, especially during winter. Midwinter bald eagle counts along the White River (Steenhof et al., 2008) indicate the number of wintering immature bald eagles has declined from 1986 to 2005.

Brewer's sparrows almost certainly nest in the project area and vicinity because they were observed in dense sagebrush throughout the project area (WestWater Engineering, 2010). They are a sagebrush-obligate species, occupying sagebrush steppe of Colorado and the Intermountain West (Knick and Rotenberry, 2002) and are relatively abundant in sagebrush of northwestern

Colorado (Boyle and Reeder, 2005). Data collected by the National Biological Survey (Sauer et al., 2008) for the Colorado Plateau and region surrounding the project area indicates that populations of Brewer's sparrows have been significantly declining since 1993.

The midget faded rattlesnake occurs solely within the Green River Formation of Wyoming, Utah, and Colorado and is typically associated with bedded sandstone outcrops and fallen midslope slabs on south to southeast facing exposures. In general, this species is found in high, cold deserts dominated by sagebrush with some greasewood, juniper, and other woody plants occurring as secondary vegetation and could occur within the project area. This species is listed as sensitive due to its limited distribution (Travsky and Beauvais, 2004).

3.8.2 Environmental Consequences of the Proposed Action

Effects of the Proposed Action are considered for the BLM sensitive animal species and State of Colorado Species of Special Concern that are known to be present in the vicinity of the project area (bald eagle, Brewer's sparrow, Townsend's big-eared bat, fringed myotis, spotted bat, and midget faded rattlesnake). See Aquatic Wildlife section for discussion on ESA-listed fish and BLM sensitive fish.

3.8.2.1 BLM Sensitive Animal Species and State of Colorado Species of Special Concern

Bald Eagle and Brewer's Sparrows. Bald eagles could be present in the project area, especially during winter. Bald eagles have been killed by vehicles during winter and at other times as they feed on roadside carrion (FWS, 1999). Increased vehicular traffic associated with the Proposed Action may increase the risk, because access to the project area along RBC 5 is within bald eagle winter range and bald eagle winter foraging habitat. Potential effects to bald eagles due to project-related traffic on RBC 5 could occur. However, observing speed limits, bussing workers (as described in Enterprise's Transportation Plan – Appendix A in the POD), taking precaution where wildlife crossing signs are placed along RBC 5, limiting construction traffic to daylight hours and supporting carrion pick-up on RBC 5 would minimize the potential for vehicle collisions with bald eagles on RBC 5.

Bald eagles and other raptors have been electrocuted on power lines (FWS, 1999; Lehman, 2001; Manville, 2005) and their collision with power lines is a possibility (see Avian Power Line Interaction Committee, 1994). The proposed 138-kV power line design conforms to separation distances between conductors (60-inch horizontal separation and 40-inch vertical separation), specified by the Avian Power Line Interaction Committee (2006) for protection of bald and golden eagles. The design would avoid potential effects to bald eagles due to electrocution by touching conductors.

Loss of sagebrush habitat and fragmentation of remaining habitats have adversely affected Brewer's sparrows and other sagebrush dependent species (Knick and Rotenberry, 1995; Knick et al., 2003). Fragmentation would continue to increase with expansion of the gas plant and installation of the power line. Because sagebrush can take up to 20 years to become reestablished (West, 1988), successful revegetation in reestablishing affected wildlife populations has not yet been demonstrated. Restricting vegetation clearing between May 15 and July 15 would avoid the main portion of the breeding season for Brewer's sparrow that extends to early August (Hansley and Beauvais, 2004). As discussed below under Migratory Birds, noise and activity associated with the gas plant expansion and power line construction may cause birds to avoid adjacent

functional habitats. Displacement/avoidance of these habitats could last for a part or entire 36-month long construction period (both trains) with birds returning once construction equipment has left the area.

Other Sensitive Animal Species. Construction of the Proposed Action would remove big sagebrush shrubland and pinyon-juniper woodlands (see Table 3.6-1, Vegetation). Removal of sagebrush shrubland and pinyon-juniper could adversely affect bat summer and/or winter roosts, hibernacula, and foraging habitats (Adams, 2003). Night lighting would likely occur during construction and be present during plant operations and could act as a barrier to bat movements (Kuijper et al., 2008) and reduce bat activity in the immediate vicinity (Stone et al., 2009). Enterprise would use down cast lighting which would minimize potential effects of night lighting on bats.

Construction of the Proposed Action would remove big sagebrush shrubland and pinyon-juniper woodlands and could affect the midget faded rattlesnake, which could occur in either habitat. If present, they could be killed during expansion of the gas plant, as well as by vehicles and machinery traveling along the power line right-of-way; however, this species was not seen during on-site surveys conducted in May 2010 (WestWater Engineering, 2010).

3.8.3 Environmental Consequences of the No Action Alternative

Under the No Action Alternative, the estimated effects to sensitive terrestrial animal species discussed above would not occur.

3.8.4 Mitigation

The BLM has identified the following protective/mitigation measures to further mitigate effect to special status animal species:

- Enterprise and their contractors shall observe all posted speed limits.
- Enterprise shall take precaution where wildlife crossing signs are placed along RBC 5.

3.8.5 Finding on the Public Land Health Standard for Threatened & Endangered Species

No designated critical habitats occur for ESA-listed animal species that would be affected by the Proposed Action and no ESA-listed animal species are expected in the project area. The BLM (2007a) anticipates that populations of species protected by the ESA would remain stable or increase because of recovery efforts. The BLM (2007a) notes however, that populations of sensitive species that are dependent on sagebrush and pinyon-juniper ecosystems – in particular the greater sage-grouse, native fish, amphibians, and midget faded rattlesnake - are most likely to be adversely affected by increasing resource extraction and industrial activities within the BLM WRFO. The Proposed Action would contribute to those effects, which may limit meeting Standard 4 for some species. In addition, the declining trend of wintering bald eagles in the White River corridor could be exacerbated by additional direct and indirect project-related mortality, which would not be consistent with Standard 4. With implementation of the project design features and protective/mitigation measures described above, the Proposed Action would have minimal effect on the land health status.

3.9 SPECIAL STATUS PLANT SPECIES

3.9.1 Affected Environment

The FWS (2012) identified two plant species that are listed as threatened under the ESA within Rio Blanco County: Dudley Bluffs bladderpod and Dudley Bluffs twinpod. Graham's beardtongue is currently listed by the FWS as a proposed threatened species (FWS, 2011a and 2012). The status and environmental baseline for each species is described, below. Species' scientific names are included in Appendix A.

The BLM (2010) and Colorado Natural Heritage Program (CNHP, 1999; Culver et al., 2008) have identified 13 other species of sensitive vascular plants that occur within the White River Field Office area, including Rio Blanco County, of which the Piceance bladderpod occurs or may occur within the project area, and is discussed below. Special status plant species not expected within the project area or vicinity are not discussed further but included in Appendix B.

3.9.1.1 ESA-Listed Plant Species

Dudley Bluffs Species. Dudley Bluffs bladderpod and Dudley Bluffs twinpod were listed as threatened in a final rule published in 1990 (FWS, 1990) and are protected under ESA. In the proposed rule, FWS (1989) noted that both species were known in Rio Blanco County and that both species grow on oil shale outcrops along two adjacent drainages formed by Piceance Creek and Yellow Creek and on Calamity Ridge, 12 miles west of the drainages. Both are endemic species to the Piceance Basin, confined to Rio Blanco County. No critical habitat for either species has been designated or proposed for either species.

The Dudley Bluffs twinpod is found on exposed Thirteenmile Creek Tongue and the Parachute Creek Member of the oil shale bearing Green River Formation (FWS, 2008), growing on steep sideslopes at elevations ranging from 5,900 to 7,500 feet. Dudley Bluffs bladderpod grows on the top and sides of level outcrops where the barren, white shale outcrops of the Thirteenmile Creek Tongue of the Green River Formation is exposed (FWS, 2008), limited to elevations between 6,000 and 6,700 feet (CNHP, 1999). The entire range of Dudley Bluffs bladderpod is limited to within 10 miles of the original type locality, while the range of Dudley Bluffs twinpod is slightly broader (FWS, 2008). The project area is between 6,540 and 6,600 feet elevation, within the elevational range for both species, and is located in the approximate center of the known and potential distributions for both species (CNHP, 1999; Decker et al., 2006).

Dudley Bluffs twinpod flowers in May and June and produces fruit from June through August. Pollinators include various genera of foraging bees (FWS, 2008). Dudley Bluffs bladderpod flowers somewhat earlier, during April and May with fruiting from late May through June (CNHP, 1999).

Specimens of both species were collected during the 1980s and are held in herbaria by the University of Colorado (CU) and Colorado State University (CSU). The closest record of Dudley Bluffs bladderpod to the project area is approximately 0.6 mile east of the Proposed Action, while the closest record of Dudley Bluffs twinpod is 1.2 miles south (Shanklin, 2012). Most of the records for both species are within three Areas of Critical Environmental Concern (ACEC) that BLM defined to protect and conserve both plant species: Dudley Bluffs, Ryan Gulch, and Duck Creek. The three ACECs combined amount to about 64 percent of total occupied habitats

on BLM-administered land for both species (FWS, 2008). At its closest point, the Dudley Bluffs ACEC is 3.2 miles away on the east side of Piceance Creek. Between 1985 and 2007, the Dudley Bluffs bladderpod population was stable or increasing in the ACEC. The Ryan Gulch ACEC is on the west side of Piceance Creek about one mile south of the project area. Numbers of Dudley Bluffs twinpod plants increased within the Ryan Gulch ACEC between 1993 and 2000, perhaps due to exclusion of cattle. Duck Creek ACEC is 1.4 miles northwest of the project area. Between 1996 and 2002, numbers of bladderpod plants decreased, perhaps due to expanding numbers of wild horses in the Piceance-East Douglas Herd Management Area (HMA CO161) in addition to low precipitation (FWS, 2008). A declining plant population in the Duck Creek ACEC has continued since 2002 even though numbers of wild horses have been reduced in the HMA (FWS, 2008).

The proposed gas plant expansion area and 200 meter buffer, which included the proposed power line route, was searched for Dudley Bluffs bladderpod and Dudley Bluffs twinpod on October 24, 2008. No occurrences and no suitable habitat for either species were found (WestWater Engineering, 2008). In 2010, BLM required surveys for Dudley Bluffs bladderpod and Dudley Bluffs twinpod to be conducted within 600 meters (1,969 feet) of the proposed expansion area. WestWater Engineering (2010) surveyed the area beyond the 2008 survey area and identified several outcrops of white shale in the Green River Formation as potential habitat for both species. Surveys were conducted in potential habitat on May 17 and 18, 2010 but neither species was observed. No pollinator nests or hives were observed during the survey. Known populations of Dudley Bluffs bladderpod and Dudley Bluffs twinpod were flowering at the time of the survey (WestWater Engineering, 2010).

Surveys for the Dudley Bluffs species were conducted again on July 16, 2012 within 600 meters of the project area (WestWater Engineering, 2012) in accordance with the WRFO Draft Standards for Contractors Inventories for Special Status Plants and Noxious Weeds (BLM, 2012a). Although surveys were conducted outside the typical bloom and flowering period for the Dudley Bluffs species, WestWater Engineering biologists verified at known locations that the Dudley Bluffs bladderpod and twinpod were still identifiable at the time of surveys, and survey transects within suitable habitat were narrowed in order to detect non-flowering plants. An outcrop (approximately 2.39 acres) of the Thirteen-mile Creek Tongue of the Green River Formation is present approximately 492 meters east of the project area and was determined to be highly suitable habitat for Dudley Bluffs bladderpod and twinpod; these species were not observed. In 2012, surveys were conducted again as survey protocol had changed and to capture as possible newly established populations since 2010 (WestWater Engineering, 2012). There were no new populations of either species found within 600 meter of the Proposed Action; however, 2.39 acres of suitable habitat was identified within 492 m of the Proposed Action.

Graham's Beardtongue. Graham's beardtongue was proposed for listing as threatened with proposed critical habitat in January 2006 (FWS, 2006). In December the same year, FWS (2006) withdrew the proposal for listing and critical habitat citing that available data did not indicate that there were threats to the species that would cause it to become threatened or endangered in the foreseeable future throughout all or a significant portion of its range. Subsequent to a lawsuit, U.S. District Court (Colorado) vacated (overruled) the December 2006 Final Rule in June 2011, finding that the FWS failed to consider the threats to Graham's beardtongue while ignoring available scientific information and relying on conservation measures that had not been

implemented or had not been shown to be effective. The court reinstated the proposed rule to list the species (U.S. District Court, 2011) and Graham's beardtongue is currently listed by FWS as a proposed threatened species (FWS, 2011a). The proposed rule to list Graham's beardtongue with critical habitat (FWS, 2006) identified five critical habitat units. Two subunits (C29, C30) in proposed Unit C and six subunits (E01 through E06) in proposed Unit E are within Rio Blanco County; the closest subunits (E04, E05, and E06) are over 34 miles northwest of the project area (FWS, 2006). Graham's beardtongue is also a BLM-listed sensitive plant species.

Graham's beardtongue is typically associated with sparse vegetation including pinyon-juniper woodlands and/or big sagebrush shrublands at elevations ranging from 4,600 feet to 6,700 feet (FWS, 2006). Graham's beardtongue is an oil shale endemic species; it grows directly on exposed, weathered oil shale strata of the Parachute Creek Member and Evacuation Creek Member of the Green River Formation (FWS, 2011b). This species typically flowers from late May through early June.

A botanical survey occurred within the proposed gas plant expansion area and 200-meter buffer on October 24, 2008, and within a 100-meter buffer along the power line route on May 17 and 18, 2010. Graham's beardtongue was not observed (WestWater Engineering, 2008 and 2010). Additional survey efforts occurred within 100 meters of the proposed project on July 16, 2012 in accordance with the WRFO draft survey standards (see BLM, 2012a). Although surveys occurred outside the typical flowering period for Graham's beardtongue, survey transects within suitable habitat were narrowed in order to detect non-flowering plants. No Graham's beardtongue plants were encountered (WestWater Engineering, 2012).

3.9.1.2 BLM Sensitive Plant Species

The Piceance bladderpod could occur within the project area and vicinity. This species grows on outcrops of the Green River Shale Formation and is associated with pinyon-juniper woodland and/or big sagebrush shrublands. Herbarium records indicate that Piceance bladderpod flowers from June through July.

The proposed gas plant expansion area and 200-meter buffer were searched for BLM-sensitive species on October 24, 2008; no sensitive plants were observed (WestWater Engineering, 2008). WestWater Engineering (2010) surveyed for sensitive plants species within a 100-meter buffer along the power line route on May 17 and 18, 2010; no sensitive plants were found (WestWater Engineering, 2010). Additional surveys were conducted for special status species on July 16, 2012 within 100 meters of the project area (WestWater Engineering, 2012) in accordance with the WRFO draft survey protocol for special status species (see BLM, 2012a). Although surveys were conducted outside the typical bloom and flowering period for most special status plants, survey transects within suitable habitat were narrowed in order to detect non-flowering plants. No special status plant species were encountered within the area surveyed, and it was determined that those species would be unlikely to occur in the project area due to distance from known occurrences and/or lack of potential habitat (WestWater Engineering, 2012).

3.9.2 Environmental Consequences of the Proposed Action

FWS (2010b) stated that disturbances within 600 meters of habitat occupied by the Dudley Bluffs bladderpod or Dudley Bluffs twinpod could be an adverse effect if pollinator and floral

resources necessary to support pollinators were removed. Potential suitable habitat for the Dudley Bluffs species is present within 600 meters of the project area, but no Dudley Bluff species were documented during surveys and no pollinator nests or hives were observed (WestWater Engineering, 2010 and 2012). There is the potential for the Dudley Bluffs species to expand into the suitable habitat in the future. The invasion of non-native species could potentially affect and encroach in the suitable habitat as a result of the disturbance generated by the Proposed Action. The Proposed Action is not expected to affect Dudley Bluffs plants.

Surveys conducted within 100 and/or 200 meters of the proposed project did not observe Graham's beadtongue or any other special status plants (WestWater Engineering, 2008, 2010, and 2012). The Proposed Action is not expected to affect BLM sensitive plant species.

3.9.3 Environmental Consequences of the No Action

There would be no effects to federally-listed or sensitive plant species under the No Action Alternative.

3.9.4 Mitigation

The BLM has not identified any protective/mitigation measures to protect special status plants. Using native species in the seed mix for reclamation (see *Conditions of Approval*) and controlling exotic species (see *Invasive, Non-Native Species*) would reduce potential invasion of non-native species on suitable habitat.

3.9.5 Finding on the Public Land Health Standard #4 for Threatened & Endangered Species

The BLM (2007a) noted the following general observations about sensitive species in the WRFO planning area (page 2-87, BLM, 2007a):

> "Populations and habitats of some of some sensitive species may be adversely affected by increasing resource extraction and industrial activity, and without appropriate attention could result in a trend toward listing as endangered or threatened. Existing protections may not be adequate to maintain some species in areas of more intensive development. Species associated with sagebrush and pinyon/juniper ecosystems may have the highest potential to be affected because these habitats occupy large portions of the planning area and much of the development will occur in them."

Threatened and endangered and special status plant species are not expected to be affected. This project would not contribute to the degradation of Land Health Standard 4.

3.10 MIGRATORY BIRDS

3.10.1 Affected Environment

Data compiled for 12 National Biological Survey Breeding Bird Survey (BBS) routes in the region of the project area reveal 177 neotropical migratory bird species have been observed on one or more routes since 1980 (Sauer et al., 2008), of which 17 species are listed as migratory Birds of Conservation Concern (BCC) but only four species are known to occur or have potential to occur within the project area based on suitable habitat present and observations. In addition to the bald eagle and Brewer's sparrow discussed, other BCC species that may be present within the

project area include pinyon jay, juniper titmouse, and black throated gray warbler (WestWater Engineering, 2008). Species' scientific names are included in Appendix A.

Passerine. With the exception of Brewer's sparrow that was addressed previously, the other migratory passerine BCC species – pinyon jay and juniper titmouse – are associated with pinyon-juniper woodlands and other coniferous forests (Andrews and Righter, 1992). Other migratory birds that are not BCC but may be within the project area and are closely associated with sagebrush shrub habitats and other shrublands include sage thrasher, green-tailed towhee, vesper sparrow, common nighthawk, and Brewer's blackbird. Migratory passerine species generally nest between April 1 and July 30 within this area (WestWater Engineering, 2010). Pinyon jays are considered early nesters, with nest initiation within the project area beginning in February or March. Pinyon jays and Brewer's sparrows may renest several times if a nest fails, but young pinyon jays have generally fledged by late-May or early June (Belmonte, 2011) and young of both species have fledged by mid-August (Kingery, 1998).

Raptors. Raptor species that could occur within the project area based on habitat associations include northern harrier, northern goshawk (Section 3.8), bald eagle (Section 3.8), golden eagle, prairie falcon, red-tailed hawk, Cooper's hawk, sharp-shinned hawk, American kestrel, long-eared owl, great horned owl, and common raven (WestWater Engineering, 2010; Smithers, 2010). Approximately 460 acres of suitable raptor nesting habitat was surveyed within 0.25 mile of the project area in May 2010; no raptors were observed (WestWater Engineering, 2010). During a previous survey effort conducted out of nesting season in October 2008, a small cavity nest was observed in a juniper tree, approximately 820 feet (250 meters) northwest of the project area, which may provide a nesting site for a small owl species such as the flammulated owl, northern saw-whet owl, or northern pygmy owl (WestWater Engineering, 2008).

3.10.2 Environmental Consequences of the Proposed Action

Passerine. Construction, if conducted during the core nesting season, would likely result in nest abandonment, displacement of birds and possible mortality of nestlings. Additionally, noise produced by machinery and other human activities may interfere with bird vocalizations used for territory establishment, mate attraction and selection, food begging, and predator alarms (Marler, 2004). Vegetation clearing scheduled outside core migratory bird nesting period, May 15 through July 15, would minimize affects to nesting migratory birds. Vegetation removal after July 15, though, may affect late or second nesting attempts, but in general would have little direct influence on nesting success.

It is suspected that birds would avoid adjacent functional habitats due to noise and activity associated with the gas plant expansion and power line construction. Displacement/avoidance of these habitats is expected to last 36 months (18-month construction period per train) with birds returning once construction equipment has left the area.

Expansion of the gas plant would have long-term effects on nesting habitat, removing big sagebrush shrubland and pinyon-juniper woodland (see Table 3.6-1, Vegetation). None of the sagebrush habitat or pinyon-juniper habitat removed during construction of the gas plant expansion would be restored during the life of the project. These habitats are expected to support nesting passerine migratory species including pinyon jay, sage thrasher, green-tailed towhee, Brewer's sparrow, and vesper sparrow. The expansion of the gas plant would be adjacent to the existing Meeker Gas Plant, which may affect the current use of habitat in the project area by migratory birds that would be removed by the Proposed Action. Construction of the proposed

power line would also affect pinyon-juniper woodlands and big sagebrush shrublands (see Table 3.6-1, Vegetation) that would be restored, to some extent, after power line construction. Under natural succession regimes it would take at least 20 years to replace a mature sagebrush stand and at a minimum, 250 years to replace mature pinyon-juniper habitat. Revegetation of the power line right-of-way is expected to occur within three growing seasons of construction disturbance, which should provide nesting and/or foraging habitat for some passerine migratory species.

Raptors. A raptor survey was conducted within 0.25 mile of the project area in May 2010; no raptors or raptor nests were observed (WestWater Engineering, 2010). It is unlikely that construction would affect nesting raptors. If subsequent raptor surveys observe nests within 0.25 mile or 0.5 mile of the Proposed Action, Enterprise would apply temporal and spatial buffers recommended by the BLM WRFO. The proposed 138-kV power line is designed to avoid electrocutions of raptors.

3.10.3 Environmental Consequences of the No Action

Under the No Action Alternative, none of the impacts described above would occur.

3.10.4 Mitigation

In addition to the protective measures described above, BLM has identified the following protective/mitigation measures to further mitigate effect to migratory birds:

- Enterprise/WREA shall avoid vegetation removal during the migratory bird nesting period, generally May 15 to July 15.
- WREA shall utilize brush-hogging techniques to clear vegetation within the power line right-of-way.
- If construction would commence within the raptor nesting season (May 15 to August 15), Enterprise/WREA would conduct additional raptor surveys and follow appropriate timing limitations.

3.11 AQUATIC WILDLIFE

3.11.1 Affected Environment

There are no aquatic systems that are known to support higher order aquatic vertebrate populations within the project area. The nearest system capable of supporting aquatic wildlife is Piceance Creek which is separated from the project area by nearly two miles of ephemeral channel. Species' scientific names are included in Appendix A.

3.11.1.1 ESA-Listed Aquatic Wildlife Species

The FWS (2012) identified four aquatic species that are listed as endangered under the ESA that could occur within Rio Blanco County – bonytail chub, humpback chub, Colorado pikeminnow, and razorback sucker.

Colorado Pikeminnow. Historically, the Colorado pikeminnow occurred in great numbers throughout the Colorado River system from Green River, Wyoming to the Gulf of California in Mexico. The species was included on the 1967 list of native fish and wildlife threatened with extinction under the Endangered Species Preservation Act of 1966 (FWS, 1967) and included in

Appendix D, the "United States List of Endangered Native Fish and Wildlife" (FWS, 1970) prior to enactment of the ESA of 1973. Occupied habitat includes the White River from Taylor Draw Dam at Rangely, downstream for 100 kilometers (62 miles) to the confluence with the Green River. Taylor Draw Dam, which was constructed in 1984 to form Kenney Reservoir on the White River, blocks pikeminnows' upstream distribution; fish have been found downstream of the dam apparently attempting to migrate upstream (FWS, 2002a). Prior to construction of the dam, Colorado pikeminnows were collected in the White River at or near the confluence with Piceance Creek (Everhart and May, 1973). The FWS (1994) designated critical habitat in the White River and its 100-year floodplain from Rio Blanco Lake Dam in Rio Blanco County to the confluence with the Green River in Uintah County, Utah. However, Taylor Draw Dam blocks Colorado pikeminnows from accessing the White River upstream from the dam (BLM, 2007a), and as a result, designated critical habitat from Rio Blanco Lake Dam to Kenney Reservoir is assumed to be unoccupied by pikeminnows.

Bonytail Chub. The bonytail is endemic to the Colorado River Basin. The species experienced a significant decline in abundance, starting around 1950, although the decline was poorly documented. At the time it was listed, threats to the species included physical alterations (impoundments and diversions) and chemical changes to habitats and introductions of non-native fish (FWS, 1980). FWS designated critical habitat for the bonytail chub in river channels and flooded, ponded, or inundated riverine habitats that would be suitable for adults and young (FWS, 1994). No critical habitat has been designated in Rio Blanco County.

Habitat loss has occurred from dam construction on the Colorado River, including the construction in 1987 of the Taylor Draw Dam that forms Kenney Reservoir on the White River near Rangely (FWS, 2002b). Prior to construction of the dam, the bonytail chub had been reported in the White River near the confluence with Piceance Creek and in Piceance Creek proper (Everhart and May, 1973). No known self-sustaining populations of bonytails occur in the Colorado River Basin and bonytail chub do not occur on BLM-administered lands within the BLM WRFO planning area (BLM, 2007a).

Humpback Chub. The humpback chub was included on the 1967 list of native fish and wildlife threatened with extinction under the Endangered Species Preservation Act of 1966 (FWS, 1967) and included in Appendix D, the "United States List of Endangered Native Fish and Wildlife" (FWS, 1970) prior to enactment of the ESA of 1973 and humpback chubs remain endangered under the ESA (FWS, 2012). Currently, there are six known humpback chub populations but humpback chub do not occur on BLM-administered lands within the BLM WRFO planning area (BLM, 2007a).

Razorback Sucker. The razorback sucker was listed as endangered by the FWS in 1991 because of limited numbers found throughout the Colorado River Basin and minimal evidence of natural recruitment (FWS, 1991). The FWS designated 1,724 miles of critical habitat including the White River and its 100-year floodplain from the Uintah and Ouray Indian Reservation in Utah to the confluence with the Green River, also in Utah (FWS, 1994). There is no critical habitat in the White River in Colorado. In Utah, critical habitat in the White River is over 40 miles downstream from the Colorado border. Razorback suckers do not occur on BLM-administered lands within the BLM WRFO planning area (BLM, 2007a).

3.11.1.2 BLM Sensitive Aquatic Wildlife Species

In addition to species listed as endangered under the ESA, there are several BLM sensitive species that occur or may occur within the project area or vicinity (BLM, 2010); however, based on available habitat and distribution, only the Great Basin spadefoot toad may be present within the project area. The other BLM sensitive aquatic wildlife species are not expected in the project area (Colorado River cutthroat trout, roundtail chub, boreal toad, and northern leopard frog) and are not discussed further but are included in Appendix B.

In the project vicinity, Great Basin spadefoot toads could breed in pools and stock ponds filled by precipitation in areas with sagebrush, semidesert shrubland, or pinyon-juniper woodland (CDOW, 2009b). Spadefoot toads spend most of their life buried in the soil but emerge after heavy rains in spring or summer to breed. Larvae develop quickly and metamorphose into small toads usually within a few weeks (Hammerson, 1986; CDOW, 2009b).

3.11.2 Environmental Consequences of the Proposed Action

An accidental release of diesel fuel or other petroleum products in the project area would be highly unlikely to affect any of the Colorado River endangered fishes or BLM sensitive fish species because there is no surface hydrologic connectivity between the project area, Piceance Creek, or Yellow Creek. Although unlikely, an accidental spill could occur on RBC 5, which parallels Piceance Creek for about 12.5 miles from SH 64 and White River City to the project area and crosses Piceance Creek twice in that interval.

Water required for process operations (67 barrels per day) and for dust control during construction would be considered a depletion within the Upper Colorado River Basin and is likely to adversely affect the four federally-listed Colorado River fishes and likely to adversely modify their designated critical habitats. The average annual depletion (3.15 acre-feet) for the Proposed Action is based on the water required for operations which, on average, would be more than that used during construction for dust control.

In May 2008, the BLM prepared a Programmatic Biological Assessment (PBA) that addresses water depleting activities associated with BLM's fluid minerals program in the Colorado River Basin in Colorado. In response to BLM's PBA, the FWS issued a Programmatic Biological Opinion (PBO)(ES/GJ-6-CO-08-F-0006) on December 19, 2008, which determined that BLM water depletions from the Colorado River Basin are not likely to jeopardize the continued existence of the Colorado pikeminnow, humpback chub, bonytail, or razorback sucker, and that BLM water depletions are not likely to destroy or adversely modify designated critical habitat.

A Recovery Implementation Program for Endangered Fish Species in the Upper Colorado River Basin was initiated in January 1988. The Recovery Program serves as the reasonable and prudent alternative to avoid jeopardy and provide recovery to the endangered fishes by depletions from the Colorado River Basin. The PBO addresses water depletions associated with fluid minerals development on BLM lands, including water used for well drilling, hydrostatic testing of pipelines, and dust abatement on roads. The PBO includes reasonable and prudent alternatives developed by the FWS which allow BLM to authorize oil and gas wells that result in water depletion while avoiding the likelihood of jeopardy to the endangered fishes and avoiding destruction or adverse modification of their critical habitat. As a reasonable and prudent alternative in the PBO, FWS authorized BLM to solicit a one-time contribution to the Recovery Implementation Program for Endangered Fish Species in the Upper Colorado River Basin

(Recovery Program) in the amount equal to the average annual acre-feet depleted by fluid minerals activities on BLM-administered lands.

This project has been entered into the WRFO fluid minerals water depletion log which will be submitted to the Colorado State Office at the end of the Fiscal Year.

Expansion of the Meeker Gas Plant would remove big sagebrush shrubland and pinyon-juniper woodlands (see Table 3.6-1, Vegetation), habitats that could support Great Basin spadefoot toads. If present, they would most likely be buried in soils and could be crushed and killed during expansion of the gas plant, as well as by vehicles and machinery traveling along the power line right-of-way. No Great Basin spadefoot toads were seen during on-site surveys conducted in May 2010 (WestWater Engineering, 2010).

3.11.3 Environmental Consequences of the No Action Alternative

Under the No Action Alternative, there would be no direct or indirect influence on aquatic wildlife species or important habitats.

3.11.4 Mitigation

The BLM has identified the following protective/mitigation measure to further mitigate impacts to aquatic wildlife species:

- Process water used for operations and dust abatement during construction is considered a depletion of the Colorado River Basin that jeopardizes the continued existence of four endangered fish species, including the Colorado pikeminnow. Enterprise and the BLM have agreed to put this project under the FWS' Programmatic Biological Opinion in order to streamline the consultation process with the FWS.

3.11.5 Finding on the Public Land health Standard for Plant and Animal Communities

Nearly all of Piceance Creek is privately owned and as such the Land Health Standards do not apply. The nearest BLM-administered portion of Piceance Creek is separated by two miles of ephemeral channel and roughly seven valley miles from the project area. BLM-administered portions of Piceance Creek are generally considered to be meeting the Land Health Standard. The Proposed Action would have no conceivable influence on continued meeting of the Land Health Standard for aquatic communities.

3.12 TERRESTRIAL WILDLIFE

3.12.1 Affected Environment:

Big Game. The project area coincides with vegetative communities that support big game throughout the year including pinyon-juniper woodlands and big sagebrush. Mule deer overall range and mule deer winter range coincide with the project area. Also, the project area is entirely within mule deer severe winter range, a specialized component of winter range that periodically supports virtually all an area's deer under the most severe winter conditions (i.e., extreme cold and heavy snow pack). These ranges typically receive the heaviest use from January through April.

The project area is also within a limited use area, occasionally inhabited by elk or an area that supports a small scattered population of elk (see elk metadata in CDOW, 2010b), on the upland divide between Piceance Creek-Ryan Gulch on the east and Yellow Creek on the west. Elk utilize the project area and vicinity as winter range but elk winter concentration areas are on the east side of Piceance Creek, two miles east of the project area.

CDOW post-hunt population estimates for mule deer Data Analysis Unit (DAU) D 7 and elk DAU E 10 indicate that the mule deer populations within the project area had declined from 2004 to 2009, whereas the elk population had increased during the same time (CDOW, 2010b).

There are dozens of other game and non-game species that could occur within the project area including but not limited to black bear, mountain lion, coyote, fox, desert and mountain cottontail, striped skunk, beaver, badger, and raccoon. Game and non-game bird species that may utilize habitats available within the project area include mourning dove, dusky (blue) grouse, and Merriam's turkey.

Small mammal populations are poorly documented. However, species that are likely to occur in this area and utilize big sagebrush and pinyon-juniper woodlands are widely distributed and display broad ecological tolerance throughout the Great Basin or Rocky Mountain regions. Based on small mammal sampling conducted in the area in 2010 (Belmonte, 2011), it is likely that the small mammal community associated with the project area is strongly represented by relatively few generalized species, such as deer mouse and least chipmunk. No narrowly distributed or highly specialized species or sub-specific populations are known to occur in the area.

3.12.2 Environmental Consequences of the Proposed Action

The Proposed Action would remove big sagebrush shrubland and pinyon-juniper woodlands (see Table 3.6-1, Vegetation), which provides important forage and cover resources for local wildlife populations. Habitat would be removed within mule deer severe winter range and elk winter range, and would contribute to the loss of habitat within these seasonal ranges from construction of the existing Meeker Plant in 2006 that removed approximately 50 acres within those big game winter ranges (BLM, 2005). To mitigate for the loss of 50 acres in 2006, a commitment was made to implement compensatory off-site mitigation that would improve 2.5 acres of habitat, off-site, for every acre of habitat physically disturbed by construction of the gas plant (see page 4-79 in BLM, 2005). Enterprise's one-time payment of $77,400.00 to Colorado Parks and Wildlife (CPW) for off-site compensatory mitigation for disturbance within mule deer severe winter range for construction of the existing gas plant and for expansion of the gas plant would mitigate potential effects to mule deer. Off-site habitat enhancements may take a variety of forms, those implemented would be determined through consultation between the BLM and CPW. It is the intent of CPW 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.

Removal of vegetated habitats by construction would indirectly affect big game by causing displacement and increased densities of animals on adjacent habitat. Such increased densities could lead to density-dependent effects including overcrowding and overutilization of remaining habitats, increased intraspecific competition, and increased prevalence of disease, predation, and physiological stress. Density-dependent effects (e.g., decreased survivorship, decreased

fecundity) from construction of the gas plant would be long-term, lasting for the life of the project, whereas density-dependent effects from construction of the power line would be short-term, until the disturbed areas are revegetated.

Expansion of the Meeker Gas Plant is expected to take approximately three years to complete. Mule deer and elk could be present on winter ranges during expansion of the gas plant. The effects of project construction could alter mule deer and elk distributions on winter ranges some distance from the project area boundary, similar to effects associated with construction of new roads and/or oil and gas activities within winter because mule deer and elk generally avoid roads. Indirect effects to wintering big game due to some "zone of effect" caused by operation of the proposed project could occur for the life of the project.

The Proposed Action could affect small game and non-game wildlife if species actually inhabit the project area. Non-game wildlife species would potentially be displaced from habitats that are cleared of vegetation. Displacement from adjacent habitats would most likely be a long-term effect once construction of the gas plant expansion ends and operation begins.

Additionally, increased project-related traffic could result in wildlife mortalities, especially for local wildlife populations. Observing speed limits, bussing workers (as described in Enterprise's Transportation Plan – Appendix A in the POD), taking precaution where wildlife crossing signs are placed along RBC 5, and supporting carrion pick-up on RBC 5 would minimize the potential for vehicle collisions with terrestrial wildlife on RBC 5.

3.12.3 Environmental Consequences of the No Action Alternative

Under the No Action Alternative, the estimated effects to terrestrial wildlife and associated habitats discussed above would not occur.

3.12.4 Mitigation

In addition to measures specified above, the BLM has identified the following protective/mitigation measures to further mitigate affects to terrestrial wildlife:

- Construction of the power line and any construction activities associated with the expansion of the gas plant shall be prohibited in mule deer and elk severe winter range between December 1 and April 30. An exception may be granted by the Field Manager if, after consultation with Colorado Parks and Wildlife, it is determined that the Proposed Action would not interfere with habitat function or compromise animal condition within the project vicinity.
- The power line route shall be revegetated with species that are palatable for wildlife. Weeds shall be controlled to maintain native vegetation.

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

The project area is generally considered to be meeting Land Health Standards for terrestrial wildlife communities although there are inclusions of annual dominated areas. The Proposed Action would contribute to the localized, long-term loss of mule deer severe winter range, however this heavily industrialized area is currently compromised to a certain degree in its ability to support terrestrial wildlife, particularly big game populations. The Proposed Action, as mitigated, would not have any substantial impacts on terrestrial habitat condition, utility, or

function, nor have any discernible effect on animal abundance or distribution at any landscape scale.

3.13 CULTURAL RESOURCES

3.13.1 Affected Environment

The BLM manages cultural resources on public lands in accordance with the Antiquities Act of 1906, National Historic Preservation Act of 1966, Native American Graves Protection and Repatriation Act, the Archaeological Resources Protection Act of 1979, and various other codes and Executive Orders. The management process is also governed by Colorado BLM's Protocol with the state's Historical Society Office of Archaeology and Historic Preservation. Under projects such as the Proposed Action, unexpected discoveries of and damage to cultural resources are often the result of surface disturbing activities.

Cultural resources in the region include historic Euro-American sheepherding camps, cattle camps, range and homesteading locations, historic stage and wagon roads, Proto-historic campsites, trails, and lithic scatters and quarries (BLM, 1994). Concentrations of previously recorded sites are directly correlated with energy development. Pre-development inventory requirements have resulted in extensive location and evaluation of cultural resources in the area (BLM, 1994). In the Piceance Basin, archaeological site placement has also been correlated with distance to reliable water, the seasonal movement of mule deer, and the seasonal availability of vegetal food resources (Grady, 1980). The project area is relatively open and may have provided ample potential as hunting grounds for prehistoric peoples (Cultural Resource Analysts, Inc. - CRAI, 2009). Detailed overviews of the prehistory and history of the area are provided in the Colorado Council of Professional Archaeologists context documents for the region (Reed and Metcalf, 1999 and Church, et al., 2007).

Several cultural resource inventories have been conducted in recent decades in the vicinity of the project area. Many isolated artifacts and features have been identified in the region, along with a few sites or camps. Most recently, CRAI conducted a file search and Class III cultural resource inventory for the project area (CRAI, 2009). Based on file search results, there were no known cultural resources in the project area and any resources expected to be found would consist of small prehistoric lithic scatters and isolated finds. Further, elevation and proximity to reliable water may not have been adequate to support sustained settlement in the project area, and almost no such resources have been identified in the vicinity of the project area (CRAI, 2009). A 50-acre block around the proposed gas plant expansion (84.8 acres, total) and a 200-foot corridor along the proposed power line right-of-way were surveyed. CRAI (2009) identified one isolated find (5RB6540); no additional cultural resources were observed.

3.13.2 Environmental Consequences of the Proposed Action

The CRAI survey determined that surface disturbance from the Proposed Action would not affect any known surface sites (CRAI, 2009). Therefore, construction of the gas plant expansion and proposed power line right-of-way would not affect any known cultural resources.

3.13.3 Environmental Consequences of the No Action Alternative

No surface disturbing activities would take place under the No Action Alternative and therefore no known cultural resources would be affected.

3.13.4 Mitigation

The BLM has identified the following protective/mitigation measures to mitigate unanticipated effects to cultural resources:

- Enterprise is responsible for informing all persons who are associated with the project that they will be subject to prosecution for knowingly disturbing archaeological sites or for collecting artifacts.
- If any archaeological materials are discovered as a result of operations under this authorization, activity in the vicinity of the discovery will cease, and the BLM WRFO Archaeologist will be notified immediately. Work may not resume at that location until approved by the AO. Enterprise will make every effort to protect the site from further impacts including looting, erosion, or other human or natural damage until BLM determines a treatment approach, and the treatment is completed. Unless previously determined in treatment plans or agreements, the BLM will evaluate the cultural resources and, in consultation with the State Historic Preservation Office (SHPO), select the appropriate mitigation option within 48 hours of the discovery. Enterprise, under guidance of the BLM, will implement the mitigation in a timely manner. The process will be fully documented in reports, site forms, maps, drawings, and photographs. The BLM will forward documentation to the SHPO for review and concurrence.
- Pursuant to 43 CFR 10.4(g), Enterprise must notify the AO, by telephone and written confirmation, immediately upon the discovery of human remains, funerary items, sacred objects, or objects of cultural patrimony. Further, pursuant to 43 CFR 10.4(c) and (d), Enterprise must stop activities in the vicinity of the discovery and protect it for 30 days or until notified to proceed by the AO.

3.14 PALEONTOLOGICAL RESOURCES

3.14.1 Affected Environment

Paleontological resources include the remains or traces of any prehistoric organism that has been preserved by natural processes in the earth's crust. The BLM manages these paleontological resources for their scientific, educational, and recreational values in compliance with the Antiquities Act of 1906 and the Paleontological Resources Preservation Act (PRPA) of 2009. The PRPA affirms the authority for many policies the BLM already has in place for the management of these resources, such as issuing permits for collecting, curation of paleontological resources, and confidentiality of locality data. The law also defines prohibited acts, such as damaging or defacing paleontological resources, and establishes both criminal and civil penalties for those acts.

The BLM classifies geologic formations to indicate the likelihood of significant fossil occurrence according to the Potential Fossil Yield Classification System (PFYC) for Paleontological Resources on Public Lands (BLM, 2007c). These classifications determine the procedures to be followed prior to the granting of a paleontological clearance to proceed with a project. The

PFYC system serves as a guide to the possibility that fossils would be discovered in specific geologic strata. Scientifically significant fossils are relatively rare and geologic strata are rarely, if ever, fossil rich over their entire outcrop distribution (Erathem-Vanir Geological - EVG, 2009a).

The project area is underlain by Uinta Formation (Tu) bedrock. The BLM considers the Uinta Formation to have a high sensitivity for paleontological resources and has assigned a PFYC of 4 or 5, depending on the nature of bedrock present. The formation is assigned a 4 if bedrock is poorly exposed and a 5 if bedrock is well exposed. PFYC Class 4/Class 5 formations have a high to very high potential of producing scientifically significant fossils. As a result, BLM requested a paleontological evaluation of the project area. EVG conducted the evaluation in August 2009 and no fossils were discovered.

The Uinta Formation in much of the project area is covered by a varying thickness of colluvium, gravels, and deeply weathered regolith derived from in-place weathering of the formation. Most of the area is heavily vegetated and bedrock outcrops are for the most part not well exposed. Throughout its extent, the Uinta Formation has produced a variety of vertebrate and plant fossils of middle- to late-Eocene age and is considered to be a classic collecting ground for vertebrates of that age in western Colorado and northeastern Utah (EVG, 2009b). Duncan (1976) mapped the project area as being underlain by Tu5, an unnamed part of the Uinta Formation that is predominantly brown and buff colored sandstone with minor siltstones.

However, in comparison to the Uinta Basin, few fossils have been reported from the formation in the Piceance Creek Basin. Surveys thus far have demonstrated that the lower part of the Uinta Formation is not very fossiliferous, producing primarily plant fragments and sparse vertebrate material. The upper part of Uinta Formation has proven to be more fossiliferous, particularly where it interfingers with the Green River Formation, and in the highest levels of the formation (EVG, 2009b).

In the general vicinity of the project area, EVG (1998) documented seven fossil localities thought to be from Tu5 along the Dark Canyon Pipeline, which traversed the Square S Ranch and Greasewood Gulch 7.5 minute topographic quadrangles (Township 2 South, Range 96-97 West). Six of these localities yielded plant fossils including leaf impressions, fossil wood, and twig and stem impressions. One locality produced vertebrate bone fragments which could not be identified beyond being mammalian in origin. Bilbey (2001) discovered four sites where fossil vertebrate material was preserved in the rocky soils during a survey for the nearby American Soda Yankee Gulch Project pipeline. Paleontological surveys for the Meeker Pipeline Project and Gas Plant by EVG in 2004 and 2005 resulted in the discovery of vertebrate and plant fossil material at several locations in the upper parts of the Uinta Formation in Tu5 (EVG, 2004). During monitoring of excavation of the Mallard Trunk Pipeline, EVG (2005) discovered the partial lower jaw of a small species of horse about a mile northwest of the Meeker Gas Plant in the same unit. Monitoring of the CHUB pipeline Willow Creek projects by EVG in the winter of 2008 and summer of 2009 revealed abundant leaf fossils in the upper levels of the Uinta Formation to the east and south of the Meeker Gas Plant (EVG, 2009b).

3.14.2 Environmental Consequences of the Proposed Action

Construction of the Meeker Gas Plant expansion and power line right-of-way could potentially impact scientifically noteworthy fossil resources depending on the depth of soil in the construction area and how deep excavations are for settling basins, footers for structures, or how deep excavations must be to construct the suitably level areas required for the plant expansion.

3.14.3 Environmental Consequences of the No Action Alternative

No surface disturbing activities or construction would take place under the No Action Alternative and therefore, no paleontological resources would be affected.

3.14.4 Mitigation

The following mitigation measures would reduce potential impacts to paleontological resources:

- Enterprise would be responsible for informing all persons who are associated with the project operations that they will be subject to prosecution for disturbing or collecting vertebrate fossils, collecting large amounts of petrified wood (over 25 lbs./day, up to 250 lbs./year), or collecting fossils for commercial purposes on public lands.
- If any paleontological resources are discovered as a result of operations under this authorization, Enterprise or any of his agents must stop work immediately at that site, immediately contact the BLM Paleontology Coordinator, and make every effort to protect the site from further impacts, including looting, erosion, or other human or natural damage. Work may not resume at that location until approved by the AO. The BLM or designated paleontologist will evaluate the discovery and take action to protect or remove the resource within 10 working days. Within 10 days, the operator will be allowed to continue construction through the site, or will be given the choice of either (a) following the Paleontology Coordinator's instructions for stabilizing the fossil resource in place and avoiding further disturbance to the fossil resource, or (b) following the Paleontology Coordinator's instructions for mitigating impacts to the fossil resource prior to continuing construction through the project area.
- Any excavations into the underlying native sedimentary stone must be monitored by a permitted paleontologist. The monitoring paleontologist must be present before the start of excavations that may impact bedrock.

3.15 VISUAL RESOURCES AND SCENIC BYWAYS

3.15.1 Affected Environment

Visual resources are the visible physical features of a landscape that convey scenic value. Scenic values in the BLM White River Resource Area have been classified according to the Visual Resource Management (VRM) system, and VRM objectives were established in the White River ROD/RMP (BLM, 1997). The VRM system describes and evaluates landscapes by using the basic design elements of form, line, color, and texture (BLM, 2009). Visual resource management provides a way to inventory and classify visual resources, describe characteristic landscapes, determine contrasts from proposed actions, and present mitigation for scenic value effects.

The Proposed Action would be located in a BLM-designated VRM Class III area. Class III lands are intended to partially retain the existing characteristics of the landscape. The level of change to the characteristic landscape could be moderate. Management activities may attract attention, but they should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape. The landscape in the project area possess a combination of characteristics ranging from low scenic quality and low visual sensitivity, and remain relatively unseen by the public due to accessibility or obstructed views (BLM, 2007a).

Adjacent to the project area, the existing 50-acre Meeker Gas Plant and Yankee Gulch Substation dominate the foreground views for casual observers in the area and together create an industrial setting.

3.15.2 Environmental Consequences of the Proposed Action

Expansion of the existing Meeker Gas Plant and installation of the power line would compound the existing visual effects to the landscape and add to the industrialized setting. Additional plant facilities would increase man-made structures and would draw attention to their size, color, and shape. Additional nighttime lighting would increase the present light pollution at the existing Meeker Gas Plant. Visibility of these changes would vary according to viewer location, orientation, and cloud cover. During project construction, visual resources would be temporarily affected by surface disturbing activities, fugitive dust, and increased vehicular traffic. The proposed power line would create additional visual effects for observers along Yellow Creek Jeep Trail. Users of the Trail would be visually drawn to the gas plant and power line, and the facilities would dominate the viewshed, but the duration would be brief as travelers pass by the plant.

The project area is located on the plateau above the Piceance Creek valley floor, which creates topographic and vegetative screening of the existing and proposed gas plant expansion from viewpoints along RBC 5. The expanded gas plant would not be visible from the roadway and would not dominate the viewshed from key observation points. RBC 83 (Yellow Creek Jeep Trail) is located on the top of the plateau and is adjacent to the southeastern edge of the existing Meeker Gas Plant. This road is used mostly by local ranchers, workers involved in oil and gas extraction, and hunters (BLM, 1999a). Travelers on this road would not likely have the same sensitivity to development of the site and the accompanying effect to the scenic resource as would recreationists and other people involved in activities where visual quality is an important component of their outdoor enjoyment.

Sensitivity of the road is considered low due to minimal use, type of user, and current existing industrial facilities. Because of these factors, the Proposed Action would not conflict with VRM Class III management objectives in this particular setting.

3.15.3 Environmental Consequences of the No Action Alternative

No further development would occur under the No Action Alternative and therefore, no additional effects to visual resources described above would occur.

3.15.4 Mitigation

BLM has identified the following protective/mitigation measures to reduce potential effects to visual resources:

- To the extent practicable and safe, aboveground facilities shall be painted to blend with the surrounding landscape characteristics with an appropriate color selected from the BLM Standard Environmental Colors chart.
- Disturbed areas within the power line right-of-way shall be re-contoured and re-vegetated to blend with the natural topography as soon as possible after disturbance, where practicable.
- Fences would be coated or painted with non-reflective surfacing, or an appropriate color from the BLM Standard Environmental Colors chart would be used to paint them.

3.16 WASTES, HAZARDOUS OR SOLID

3.16.1 Affected Environment

The BLM Instruction Memoranda numbers WO-93-344 and CO-97-023 require that all NEPA documents list and describe any hazardous and/or extremely hazardous materials that would be produced, used, stored, transported, or disposed of as a result of a proposed project. These practices are dictated by various federal and state laws and regulations, and the BLM standard terms and stipulations, which would accompany any authorization resulting from this analysis.

Hazardous materials are defined within 43 CFR 2801.5 as any substance or material defined as hazardous, a 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 (2) any regulated substance contained in or released from underground storage tanks, as defined by the Resource Conservation and Recovery Act at 42 U.S. C. 6991; (3) Oil, as defined by the Clean Water Act at 33 U.S.C. 1321(a) and the Oil Pollution Act at 33 U.S.C. 2701(23); (4) other substances applicable Federal, state, tribal, or local law define and regulate as “hazardous.” Hazardous or solid wastes are known to be present in the project area, and hazardous materials are known to have been used, stored, or disposed onsite.

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 affected.

3.16.2 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 Proposed Action. The Proposed Action would increase contributions to solid waste landfills. Solid waste construction effects for the gas plant expansion operation would occur for the life of the project. The severity of potential effects 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. These

effects would be minimized by implantation of Enterprise's SPCC Plan (Appendix E in Enterprise's POD). However, the SPCC Plan also relies heavily on unlined secondary containment for a number of proposed pieces of equipment.

3.16.3 Environmental Consequences of the No Action Alternative

Under the No Action Alternative, none of the effects located on BLM-administered lands described above would occur.

3.16.4 Mitigation

BLM has identified the following protective/mitigation measures to further mitigate effects from solid and hazardous wastes:

- The release of any chemical, oil, petroleum product, produced water, or sewage, etc., (regardless of quantity) must be reported to the BLM WRFO Hazardous Materials Coordinator at (970) 878-3800.
- There shall not be any traces of oil or solvents in the water used as a dust suppressant. Only water needed for abating dust shall be applied; dust abatement shall not be used as a water disposal option under any circumstances.

3.17 FIRE MANAGEMENT

3.17.1 Affected Environment

The BLM WRFO manages wildland fire in accordance with the goals and procedures set forth in the BLM WRFO Fire Management Plan (BLM, 1999b) and the Northwest Colorado Fire Management Unit (NWCFMU) Fire Management Plan (NWCFMU, 2009). Public lands are managed under four fire management units, which define the appropriate management response. The project area is located in BLM WRFO Fire Management Unit (FMU) Polygon B6 Yellow Creek.

Wildland fire is not desired in category B polygon 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 (BLM, 1999b).

3.17.2 Environmental Consequences of the Proposed Action

Construction of the Proposed Action could restrict use of wildland fires to achieve land or resource management objectives for the vegetation communities in and around the project area. The Proposed Action would directly affect FMU Polygon B6, in which a total of approximately 41 acres would be converted to industrial use for the life of the project. However, because of the proximity of the existing Meeker Gas Plant that was designed with defensible space, the Proposed Action would not likely affect fire management goals. During initial surface disturbance and subsequent operation, ignition threats from heavy equipment, vehicles, and workers could pose the greatest risk, especially in dry conditions during summer months. Trees

on the site would be purchased and harvested. Smaller, non-commercial valued trees, slash, and other woody debris would be removed from the site to avoid fire danger.

The power line route follows existing road and fence lines, and minimal surface disturbance is expected. Where necessary, brush, shrubs, and small trees along the right-of-way would be mown to allow for conductor stringing and vehicle travel. Larger trees that may affect future electrical clearances would be discriminately cut and either be used to block the right-of-way from future public use, or scattered. Disturbance including grading and cutting would not occur other than specifically where the ten poles would be placed.

The Proposed Action does not include fire or fuels treatment practices for vegetation control or removal. The gas plant expansion would be designed with sufficient defensible space, similar to the existing Meeker Gas Plant, and would not likely affect any fire management goals.

3.17.3 Environmental Consequences of the No Action Alternative

Current fire management strategies would not be affected under the No Action Alternative.

3.17.4 Mitigation

BLM has identified the following protective/mitigation measures to further mitigate effects to fire management:

- Enterprise shall notify the Craig Interagency Dispatch Center of any fires during construction.
    - The reporting party would inform the dispatch center of fire location, size, status, smoke color, aspect, fuel type, and provide their contact information.
    - The reporting party, or a representative of should remain nearby, in a safe location, in order to make contact with incoming fire resources to expedite actions taken towards an appropriate management response.
    - The applicant and contractors will not engage in any fire suppression activities outside the approved project area. Accidental ignitions caused by welding, cutting, grinding, etc. would be suppressed by the applicant only if employee safety is not endangered and if the fire can be safely contained using hand tools and portable hand pumps. If chemical fire extinguishers are used the applicant must notify incoming fire resources on extinguisher type and the location of use.
    - Natural ignitions caused by lightning will be managed by Federal fire personnel. If a natural ignition occurs within the approved project area, the fire may be initially contained by the applicant only if employee safety is not endangered. The use of heavy equipment for fire suppression is prohibited, unless authorized by the Field Office Manager.

3.18 SOCIAL AND ECONOMIC CONDITIONS

3.18.1 Affected Environment

Overview. The project area is located in central Rio Blanco County, in northwest Colorado. The region has experienced rapid growth over the past decade, due largely to natural gas development in the Piceance Basin. Historically, Rio Blanco County has had an economy based

on agriculture, outdoor recreation-based tourism, and mineral development. Over the next two decades, the focus of new oil and gas development in the Piceance Basin is expected to shift northward into Rio Blanco County (BBC Research and Consulting, 2008).

Lying along Rio Blanco County's southern border, Garfield County accounted for 80 percent of the drilling activity in northwest Colorado between 2000 and 2011 (Colorado Oil and Gas Conservation Commission, 2012). Most of this drilling has been in the western portion of the county. Towns lying along the Interstate-70 corridor in west-central Garfield County, including Rifle, Parachute, and Silt, have developed much of the infrastructure to accommodate the transient workforces associated with drilling. A portion of the construction workforce associated with the Proposed Action would be likely to stay at motels and other short-term housing accommodations in Garfield County, and some new operational workers could be expected to live in Garfield County.

The Project Area is adjacent to the Meeker Gas Plant, approximately 25 miles from the town of Meeker, 41 miles from the town of Rifle, and 46 miles from the town of Rangely. There are currently approximately 40 workers at the Meeker Plant, all of whom live within an hour drive-in radius of the plant. Most employees live in Meeker, Rifle, Rangely, Parachute, or Silt (Brennan, 2012).

Population. With 3,228 square miles and 6,666 residents, Rio Blanco County is one of the most sparsely populated counties in Colorado, with 2.1 persons per square mile. Rio Blanco County gained 680 residents between 2000 and 2010 (see Table 3.18-1). At 11.4 percent, its growth rate was below the statewide growth rate of 16.9 percent. Garfield County covers 2,956 square miles and has 56,389 residents, for a population density of 19.1 persons per square mile. Between 2000 and 2010, Garfield County's population increased by 12,598, for a 28.8 percent growth rate.

The Colorado Department of Local Affairs (CDOLA) projects that population growth rates in Rio Blanco and Garfield counties will exceed the statewide average through 2020. Between 2010 and 2020, CDOLA projects that populations will increase by 2,447 in Rio Blanco County and 21,707 in Garfield County, for respective growth rates of 35.9 and 41.8 percent (CDOLA, 2012).

Table 3.18-1
Population Estimates and Projections

	Population			Growth Rate	
Area	**2000[1]**	**2010[2]**	**2020[3]**	**2000 – 2010**	**2010 - 2020**
Colorado	4,301,261	5,029,196	5,999,989	16.9%	19.3%
Rio Blanco County	5,986	6,666	9,056	11.4%	35.9%
Garfield County	43,791	56,389	79,939	28.8%	41.8%

[1] Source: Census Bureau, 2010.
[2] Source: Census Bureau, 2011.
[3] Source: CDOLA, 2012.

Income and Employment. Personal income measures the income that individuals receive through earnings, asset ownership, and transfer receipts (i.e. income received for services not currently rendered). Earnings, which include proprietor, self-employment, and wage income, typically comprise a large portion of personal income. In 2010, earnings contributed 68.6 percent

to per-capita personal income in Colorado, 72.6 percent in Rio Blanco County and 67.9 percent in Garfield County (see Table 3.18-2). Investment income, or dividends, interest, and rent, accounted for 18.0 percent of per-capita personal income in Colorado, 13.7 percent in Rio Blanco County and 20.2 percent in Garfield County. Transfer receipts, which include retirement and pension benefits, disability and unemployment insurance benefits, medical payments, and veterans benefits, accounted for 13.4 percent of per-capita personal income in Colorado, 13.7 percent in Rio Blanco County and 11.9 percent in Garfield County (Bureau of Economic Analysis - BEA, 2012).

Between 2000 and 2010, per-capita personal income grew more rapidly in Rio Blanco and Garfield counties than Colorado as a whole. During this time, per-capita personal income increased from $33,977 to $42,451 in Colorado (24.9 percent increase), from $26,823 to $40,235 (50.0 percent increase) in Rio Blanco County, and from $29,080 to $37,112 (27.6 percent increase in Garfield County (BEA, 2012).

Table 3.18-2
Per-Capita Personal Income in Colorado,
Rio Blanco and Garfield Counties, 2000 and 2010[1]

Source of Personal Income	Colorado		Rio Blanco County		Garfield County	
	2000	2010	2000	2010	2000	2010
Net Earnings[2]	$24,989	$29,135	$19,087	$29,195	$21,716	$25,182
Dividends, Interest, Rent	$6,218	$7,629	$4,655	$5,526	$5,210	$7,513
Transfer Receipts[3]	$2,770	$5,687	$3,081	$5,513	$2,153	$4,417
Total Personal Income	$33,977	$42,451	$26,823	$40,235	$29,080	$37,112

[1] Source: BEA, 2012.
[2] Total earnings less deductions for government social insurance.
[3] Includes retirement and pension benefits, disability insurance benefits, medical payments, income maintenance benefits, unemployment insurance benefits, and veterans benefits.

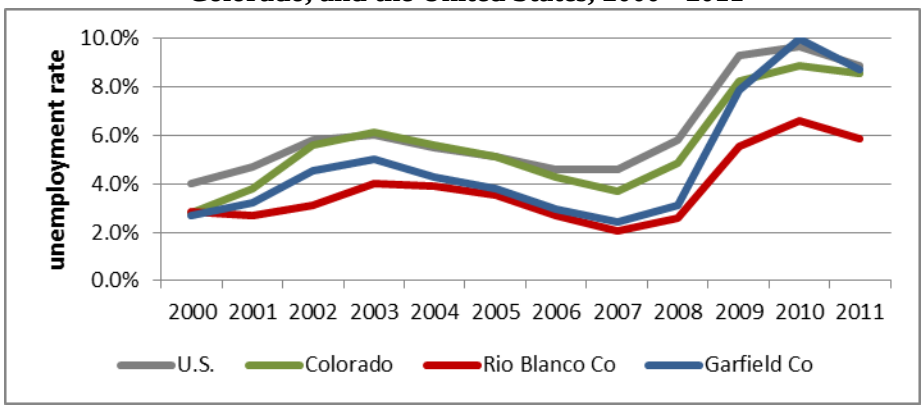
Stimulated by expanding natural gas development in northwest Colorado, employment in Rio Blanco County increased nearly 54 percent between 2000 and 2008, from 2,609 to 4,005 wage-paying jobs. Eighty-three percent of the jobs created during this period were in the Construction (644 new jobs) and Mining (514 new jobs) sectors. Impacted by the national economic recession, wage and salary employment in Rio Blanco County fell 22 percent (888 lost jobs) between 2008 and 2010. The greatest losses were in the Construction (588 lost jobs) and Mining (150 lost jobs) sectors. The largest sources of employment in Rio Blanco County are the Mining, Public Administration, and Educational Services sectors; combined, these three sectors account for approximately half of the county's wage and salary employment. In 2010, average annual wages in Rio Blanco County averaged $40,629, and were highest in the Mining ($76,752) and Utilities ($76,440) sectors and lowest in the Retail ($22,776) and Arts, Entertainment and Recreation ($18,876) sectors (Colorado Department of Labor and Employment - CDLE, 2012).

Garfield County has a larger and more diversified labor market than Rio Blanco County. The number of jobs in Garfield County increased from 19,190 in 2000 to 28,648 in 2008, for a 49 percent increase in wage and salary employment. The Mining and Construction sectors accounted for 42 percent of the jobs created between 2000 and 2008, with 2,603 new mining jobs and 1,361 new construction jobs. Overall, wage and salary employment in Garfield County fell

19 percent between 2008 and 2010. The greatest job losses were in the Construction (2,290 lost jobs) and Mining (925 lost jobs) sectors. Approximately 60 percent of the wage and salary jobs in Garfield County are in the Retail Trade, Construction, Health Care and Social Assistance, Accommodation and Food Services, and Educational Services sectors. In 2010, annual wages averaged $43,310 in Garfield County, and were highest in the Mining ($78,176) and Utilities ($73,682) sectors and lowest in the Arts, Entertainment, and Recreation ($19,259) and Accommodation and Food Services ($18,103) sectors (CDLE, 2012).

Between 2000 and 2008 unemployment rates in Rio Blanco and Garfield counties tended to be lower than statewide and national unemployment rates (see Figure 3.18-1). During this time, unemployment rates ranged between 2.0 percent and 4.0 percent in Rio Blanco County, 2.4 percent and 5.0 percent in Garfield County, 2.8 percent and 6.1 percent in Colorado, and 4.0 percent and 6.0 percent in the United States. Between 2008 and 2011, unemployment increased in all jurisdictions, peaking at 6.6 percent in Rio Blanco County, 10.0 percent in Garfield County, 8.9 percent in Colorado, and 9.7 percent in the United States in 2010 (Bureau of Labor Statistics - BLS, 2012a).

Figure 3.18-1
Unemployment Rates in Rio Blanco County, Garfield County, Colorado, and the United States, 2000 - 2011



Source: BLS, 2012a.

Short-term Housing. An internet search of local Chambers of Commerce, other lodging directories and recreational vehicle (RV) campgrounds found 25 hotels and motels with 1,254 rooms and 11 RV parks with 535 RV sites with hook-ups within 60 miles of the project area (see Table 3.18-3). Hotel occupancy rates increase when major construction projects are underway and during hunting season. RV parks tend to be fully occupied during the hunting season, but have available spaces at other times of the year (RRC Associates & Rees Consulting, 2010).

Table 3.18-3
Short-Term Housing Accommodations in the Vicinity of the Project Area

Town	Distance to Project Area	Motels	Motel Rooms	RV Parks	RV Sites
Meeker	25 miles	8	181	6	226
New Castle	56 miles	1	48	1	67
Parachute	58 miles	2	137	0	0
Rangely	46 miles	3	130	2	77
Rifle	41 miles	9	632	1	89
Silt	49 miles	2	126	1	76
	Total	**25**	**1,254**	**11**	**535**

Public Safety and Emergency Services. Physicians and other medical practitioners in Meeker, Rangely, and Rifle provide medical services to individuals living or working in the vicinity of the project area. The nearest hospital, Pioneers Medical Center (PMC) is in Meeker. PMC is a 15 bed critical access hospital with a Level 4 emergency/trauma center. PMC runs the Meeker Family Health Center, a primary care rural health clinic five days per week; and the Piceance Creek Clinic, located approximately 2 miles from the project area. The Piceance Creek Clinic offers injury treatment and primary care one day a week. PMC arranges life flight services to hospitals in Grand Junction, Denver, and Salt Lake City. In Rifle, the Grand River Medical Center and Hospital provide a full range of family health, internal medicine, and surgical services. The hospital has 25 beds and includes a Level 4 Trauma Center with life-flight services to Denver and Salt Lake City.

The Rio Blanco County Sheriff's Office provides first-call police services in the project area. The Sheriff's Office also provides 24-hour dispatch services for its own staff and the Meeker police and fire departments and ambulance service. The Sheriff's Office has 35 employees, with 14 deputies located in Meeker, 10 deputies assigned to the Meeker Detention Center, four deputies in Rangely, and one deputy assigned to the Piceance Creek Substation, which covers a 500 square mile area that includes the project area.

Between 2005 and 2011, the Sheriff's Office responded to between 660 and 1,587 calls per year in the Piceance Creek Area (see Table 3.18-4). Annual response calls in the area have declined since peaking in 2007 and 2008. Non-accident traffic-related calls account for 75 percent of the response calls between 2005 and 2011 (Joos, 2012).

The Garfield County Sheriff's Office provides law enforcement services along SH 13 from Interstate-70 to the Rio Blanco County line. The Sheriff's Office has 147 employees, including 43 law enforcement officers who rotate between the Sheriff's Office in Glenwood Springs and Sheriff's Annex in Rifle. Although the Colorado State Patrol provides coverage on SH 13, the Garfield County Sheriff's Office-Rifle Annex also responds to complaints, incidents, and accidents on SH 13 between Rifle and the Rio Blanco County line. The Garfield County Sheriff's Office responded to 45 incidents along SH 13 in 2010 and 57 incidents in 2011 (Horsey, 2012).

Under the authority of the Rio Blanco Fire Protection District, the Meeker Volunteer Fire and Rescue Department provides fire protection and emergency medical services (EMS) in the

project area. In early 2012, the department's fire division had 20 volunteer members and the EMS division had 20 volunteers. The number of current volunteers is relatively low; the department typically has around 25 volunteer firefighters. The department anticipates adding a full-time EMS staff member in mid-2012 (Allen, 2012). The department's equipment includes two pumpers, one 3,500 gallon tender, one 1,000 gallon wild-land tender, three wild-land trucks, one light-rescue vehicle, and four ambulances. The department's vehicle fleet and equipment are adequate to meet the department's current needs. In 2011 the department responded to 88 emergency calls and 222 ambulance calls (Allen, 2012).

Table 3.18-4
Rio Blanco County Sheriff's Office Response Calls in the Piceance Creek Area[1,2]

Response Call Classification	2005	2006	2007	2008	2009	2010	2011
Accidents[3]	31	38	71	79	39	31	23
Assaults, including Sexual	2	2	5	1	0	0	2
Assisting Other Agencies[4]	41	82	94	118	83	110	68
Burglary and Thefts	12	10	20	10	13	11	13
Criminal Mischief and Disturbances	4	7	4	7	5	8	5
Fires	10	9	21	22	17	17	4
Harassment	1	1	4	1	1	1	3
Homicide	1	0	0	0	0	0	0
Liquor and Narcotic Violations	6	3	7	6	3	5	2
Suspicious Incidents	22	26	16	25	23	8	9
Traffic Related (non-accident)[5]	452	416	1,259	1,268	1,037	475	485
Trespass	7	5	11	7	2	7	0
Other[6]	71	100	132	122	97	96	97
Total Response Calls	**660**	**661**	**1,573**	**1,587**	**1,281**	**738**	**688**

[1] Source: Joos, 2012.
[2] The Sheriff's Office identifies the Piceance Creek Area as including RBCs 3, 3A, 5, 20, 22, 24, 24X, 26, 29, 31, 66, 68, 69, 76, 83, 85, 86, 87, 88, 90, 91, 103, 122, 127, and 129.
[3] Includes non-injury, hit and run, injury, and property damage accidents.
[4] Calls to assist other agencies include Meeker Ambulance, Colorado State Patrol, and all other agencies.
[5] Includes traffic arrests, traffic complaints, traffic hazards, traffic contacts, and motorist assist.
[6] Alarm responses (fire and burglar), citizen assist, animal calls, and VIN Inspections accounted for 65 percent of all "other" calls between 2005 and 2011. The remainder of "other" calls include abandoned vehicles, arson, jail transports, search and rescue, civil situation, wildlife violations, truancy, unattended deaths, lost and found property, juvenile problems, fraud/forgery, domestic violence, warrant arrests, and weapons violations.

The Rifle Fire Protection District provides emergency response services between Rifle and the Rio Blanco County border. The District has 24 full-time fire and EMS personnel, 19 part-time employees, and 6 volunteer fire fighters (Rifle Fire Protection District, 2012).

Fiscal Conditions. Rio Blanco County government revenues increased from $24.2 million in 2006 to $35.6 million in 2011. The county's 2012 budgeted revenues of $48.2 million include $13 million in aviation grants to extend the Meeker airport runway. Excluding dedicated airport funds, budgeted 2012 revenues total $32 million (see Table 3.18-5). Rio Blanco County has become increasingly reliant on property tax to finance its services; property tax revenues

increased from $3.7 in 2006 (15 percent of total revenues) to $12.4 in 2012 (39 percent of budgeted revenues net of aviation grants). Increasing property tax revenues are due primarily to higher assessed valuations in the oil and gas industry (Rio Blanco County, 2011).

Sales and use taxes paid to Rio Blanco County increased from $4.8 million in 2006 to $10.3 million in 2008, and fell to $4.0 million in 2011. Most of the decrease in sales and use tax revenue is due to a 2008 Colorado State Supreme Court decision relating to the industrial application of use tax. The remainder is due to a decrease in the sale of goods within the county and declining use tax on motor vehicles, reflective of the national economic downturn (Rio Blanco County, 2010). The county expects that sales and use tax revenues in 2012 will be lower than 2011 revenues.

Table 3.18-5
Rio Blanco County Revenues, 2006 – 2012 (million dollars)

Revenue Source	2006 Actual[1]	2007 Actual[1]	2008 Actual[1]	2009 Actual[2]	2010 Actual[2]	2011 Estimate[2]	2012 Budget[2]
Property Tax	$3.7	$5.1	$6.5	$7.8	$11.3	$10.6	$12.4
Sales & Use Tax	$4.8	$5.0	$10.3	$6.4	$5.1	$4.0	$3.1
Other Taxes[3]	$2.8	$2.9	$3.0	$2.9	$3.0	$3.2	$3.0
Impact Fees	$0.2	$0.3	$2.6	$3.0	$1.9	$0.9	$1.1
Charges for Services	$0.9	$0.9	$1.4	$2.1	$1.9	$1.9	$1.0
Licenses, Fees, Permits	$3.3	$4.1	$4.0	$2.8	$3.0	$2.9	$2.7
Intergov't Transfers	$7.3	$6.3	$5.4	$6.5	$6.5	$4.0	$3.9
Capital Grants &Donations	--	--	$0.8	$1.5	$1.4	$2.5	$15.9[4]
Other[5]	$1.3	$2.1	$4.2	$3.7	$6.1	$5.6	$5.1
Total	**$24.2**	**$26.7**	**$38.1**	**$36.8**	**$40.2**	**$33.4**	**$48.2**
Total without Airport Project Funds	**$24.2**	**$26.7**	**$38.1**	**$35.6**	**$37.9**	**$32.5**	**$32.0**

[1] Source: Rio Blanco County, 2010.
[2] Source: Rio Blanco County, 2011.
[3] Includes highway users tax and specific ownership tax.
[4] Includes $13 million in aviation grants for a Meeker airport runway reconstruction project.
[5] Includes investment earnings, interfund charges, and miscellaneous.

Due to an increase in the demands on county roads and other county infrastructure caused by expanding natural gas development, in 2006 Rio Blanco County began imposing a one-time impact fee on new oil and gas wells drilled in the county. In 2008, the county expanded its impact fees to apply to all new construction and development occurring in unincorporated areas of the county. Impact fees are based primarily on the "ESAL" (equivalent single axle load) estimate, which is based on the estimated number of road trips by vehicle type needed to complete a project. Ninety-six percent of impact fees finance road improvements on impacted roads and the remainder is used to finance the county's justice and detention center, and administrative facilities (Morlan, D., 2012). Revenue from impact fees increased from $243,000 in 2006 to $3 million in 2009 and fell to $907,279 in 2011. The county expects that 2012 impact fee revenues will be slightly higher than 2011 revenues.

The Meeker Gas Plant affects Rio Blanco County's fiscal status largely through its impact on the ad valorem, or property tax, base. Property taxes are based on the assessed value of property and

mineral production in a county. In Colorado, industrial property is assessed at 29 percent of its actual value. Although oil and gas production account for the majority of total assessed valuation in Rio Blanco County, the contribution of industrial property, much of which supports oil and gas activities, has risen dramatically over the past several years. The assessed value of industrial property increased from $27.6 million in 2006 to $324.8 million in 2011(see Table 3.18-6). This increase accounts for 54 percent of the total increase in assessed valuations during the period.

Table 3.18-6
Rio Blanco County Assessed Valuations
By Property Type, 2006 – 2011 (million dollars)

Type of Property	2006[1]	2007[1]	2008[1]	2009[1]	2010[1]	2011[2]
Vacant	$7.1	$5.4	$7.9	$17.8	$7.1	$6.2
Residential	$23.9	$23.0	$30.3	$42.3	$43.4	$42.5
Commercial	$16.6	$20.2	$22.7	$30.8	$29.0	$29.8
Industrial	$27.6	$23.5	$84.8	$126.4	$326.6	$324.8
Agricultural	$7.3	$7.1	$7.2	$7.6	$13.0	$13.2
Natural Resources	$27.0	$27.6	$28.4	$39.1	$34.1	$35.6
Oil and Gas	$433.6	$548.3	$576.7	$821.7	$568.2	$740.5
State Assessed	$34.7	$59.6	$63.5	$82.5	$109.4	$111.4
Total Assessed Value	**$577.7**	**$720.8**	**$821.4**	**$1,168.3**	**$1,130.7**	**$1,304.0**

Sources:
[1] CDOLA, 2011.
[2] Rio Blanco County, 2012.

In 2011, Enterprise paid $7,789,783 in 2010 property taxes on real and personal property at the Meeker Gas Plant (Neilson, 2012). These taxes financed a wide range of county services including Meeker School District RE-1, Pioneers Medical Center, parks and recreation, and Rio Blanco County government (see Table 3.18-7).

Table 3.18-7
Meeker Gas Plant - 2010 Property Tax Distribution

Taxing Entity (Tax District 8)	2010 Property Taxes
Cemetery	$166,924
Colorado River Water Conservancy	$43,897
Rio Blanco County	$1,742,401
Fire General	$447,248
Library	$391,222
Parks and Recreation	$1,446,289
Piceance Creek Pest Control	$385,061
Hospitals	$1,401,622
Meeker School District RE 1	$1,712,174
White River Soil Conservation District	$52,946
Total	**$7,789,783**

3.18.2 Environmental Consequences of the Proposed Action

Most socioeconomic impacts would result from the size of the workforce associated with expansion of the Meeker Gas Plant and the duration of project activities. Short-term impacts would include construction-related employment gains and potential increases in lodging rates and the demand for emergency services. Long term impacts would include 10 new permanent jobs and an increase in public sector revenues.

Population. Enterprise expects that approximately 25 percent of the construction workforce would consist of current residents of Rio Blanco County or western Garfield County, and that approximately 75 percent would travel to the project area from outside the region (Brennan, 2012). The workforce needed to construct a gas processing plant is transitory, with specialized construction crews travelling to different projects for relatively short periods of time. Therefore, the construction workforce is not expected to impact regional population trends. Nor is the small incremental operational workforce likely to affect regional population patterns.

Income and Employment. Most employment associated with the gas plant expansion would be short-term. Direct employment benefits would include between 50 and 150 construction jobs during the 18 month construction phase of each train. Construction of Meeker III and IV would require a wide range of specialized construction occupations. In 2011, median hourly wages in Colorado's construction industry ranged from $31.02 for boilermakers, $30.43 for construction supervisors, $27.76 for construction and building inspectors, $23.63 for electricians, $23.00 for plumbers, pipefitters and steamfitters, $21.57 for sheet metal workers, $20.94 for structural iron and steel workers, $20.67 for operating engineers and construction equipment operators, to $16.66 for pipe layers and $14.58 for construction laborers (BLS, 2012b). Construction-related employment would extend over 3 years. Long-term employment benefits would include 10 new jobs at the Meeker Gas Plant. New hires would supplement the plant's current operating and maintenance workforce. In 2011 annual wages in Colorado averaged $56,480 for gas plant operators and $38,770 for maintenance workers (BLS, 2012b).

Expansion would also generate indirect economic benefits to local and regional businesses through the purchase of goods and services associated with the construction and operation of Meeker III and IV. Most of these benefits would be likely to occur in Grand Junction, Rifle, Parachute, and Meeker, where most oil and gas service businesses are located. Businesses providing consumer goods and services would also benefit from the increased demand of Meeker III and IV workers. This "induced" demand for goods and services would be further stimulated by purchases made by people employed by businesses that support the expansion and its workers.

Short-term Housing. The expected non-local workforce would result in a potential short-term housing need for between 38 and 113 workers. The potential peak demand corresponds to 9 percent of the motel accommodations, and 6 percent of the motel accommodations and RV sites, within a one hour drive of the project area. Although regional capacity exists to accommodate the non-local workforce, there could be localized upward pressures on motel rates during construction, especially if the peak construction workforce were to coincide with the hunting season.

Public Safety and Emergency Services. The construction workforce could place additional demands on medical service providers near the project area. Because the Piceance Creek Clinic (the closest medical facility) is currently open one day a week, the Meeker Family Health Center could experience an increase in emergency and non-emergency visits. These impacts would be short-term because construction of Meeker III and IV is scheduled for completion within 3 years. Due to the small size of the incremental operational workforce, operation of the gas plant expansion would not be likely to impose additional demands on local medical service providers.

Construction would result in traffic increases that are likely to be accompanied by an increase in traffic-related incidents reported to local law enforcement agencies. The Rio Blanco County Sheriff's Office would be the likely responder to most of these calls. The potential for additional responses by the Rio Blanco County Sheriff's Office is likely to remain below peak response levels in the Piceance Creek area in 2007 and 2008. The Colorado State Patrol and Garfield County Sheriff's Office could also be required to respond to more traffic-related calls. Operation of the gas plant expansion would not be likely to impose additional demands on local law enforcement agencies.

Construction and operation are not likely to place additional demands on the Meeker Volunteer Rescue and Fire Department. Enterprise minimizes opportunities for construction-related accidents by requiring its staff and contractors to follow Enterprise's Emergency Response Plan (Appendix D in Enterprise's POD) and monitoring contractor safety performance throughout construction. Operation of the gas plant expansion would follow the safe work practices, accident prevention program, and the Emergency Response Plan that are currently in place at the Meeker Gas Plant. Enterprise personnel include trained emergency responders, and all Enterprise employees are required to be trained on the Emergency Response Plan, which describes the procedures for responding to suspected or actual emergencies. Enterprise would provide copies of its Emergency Response Plan to local emergency responders, including the Rio Blanco County Sheriff's Office, 911 Call Center, Meeker Volunteer Fire and Rescue Department, Colorado State Patrol, and Office of Emergency Management.

Fiscal Conditions. Enterprise estimates that material costs for each train would approximate $225 million, for total estimated material costs of $450 million for the plant expansion (Brennan, 2012). Based on 2011 mill levies for each tax entity in Rio Blanco County Tax District 8 (where the Meeker Gas Plant is located), the Proposed Action would generate approximately $5.3 million in annual property tax revenues to Rio Blanco County. Property tax revenues would vary from year to year due to depreciation and any new capital improvements. The primary recipients of property tax revenues would include Meeker School District RE 1, Pioneer Medical Center, parks and recreation, and Rio Blanco County government (see Table 3.18-8).

The Proposed Action would also generate revenues to Rio Blanco County through the taxable purchases of goods within the county (sales tax) or elsewhere and imported into the county (use tax). Most sales and use tax revenues would result from retail expenditures by Enterprise's direct employees, contractors, and those whose jobs would be supported by the gas plant expansion. Sales and use tax receipts would be highest during construction. Garfield County could also expect some sales tax revenue during construction.

The Proposed Action would be subject to Rio Blanco County impact fees. The county's Planning and Development Department would determine the impact fee associated with each train based on the project's ESAL and negotiations with Enterprise (Morlan, D., 2012). The majority of the impact fees would be used to finance improvement to county roads in the Piceance Creek area.

Table 3.18-8
Estimated Property Taxes Associated with the Gas Plant Expansion (Meeker III and IV)

Taxing Entity (Tax District 8)	Estimated Property Taxes
Cemetery	$113,144
Colorado River Water Conservancy	$29,754
Rio Blanco County	$1,181,025
Fire General	$303,152
Library	$265,176
Parks and Recreation	$980,316
Piceance Creek Pest Control	$261,000
Hospitals	$950,040
Meeker School District RE 1	$1,160,537
White River Soil Conservation District	$35,888
Total	**$5,280,030**

3.18.3 Environmental Consequences of the No Action Alternative

Under the No Action Alternative, expansion of the Meeker Gas Plant through the construction of Meeker III and IV as described in the Proposed Action would not take place. The direct and indirect employment benefits associated with the Proposed Action would not occur, nor would an influx of non-local workers stimulate the demand for short-term housing or law enforcement services. There would be no increase in Rio Blanco County revenues from impact fees or property taxes, but property taxes would continue to be paid on the Meeker Gas Plant. Sales and use tax revenues from direct and indirect purchases associated with the Proposed Action would not occur.

3.18.4 Mitigation

The BLM has not identified any protective/mitigation measures to minimize effects to social and economic resources.

3.19 FOREST MANAGEMENT

3.19.1 Affected Environment

Forest Management in the BLM WRFO is divided into Timberland Management and Woodland Management (BLM, 1997). Pinyon-juniper woodlands in the project area are typically harvested for firewood, Christmas trees, and fence posts.

3.19.2 Environmental Consequences of the Proposed Action

Construction associated with the gas plant expansion would remove 20.7 acres classified as Woodland Management (pinyon-juniper woodland; see Table 3.6-1, Vegetation), potentially affecting wildlife and nesting habitat (as discussed in the Threatened, Endangered, and Sensitive Species, Wildlife and Wildlife, Terrestrial sections) and potential fencepost and firewood harvest areas. Effects would be long-term.

3.19.3 Environmental Consequences of the No Action Alternative

No surface disturbance or woodland removal would occur in the project area under the No Action Alternative; therefore, no effects would occur under this alternative.

3.19.4 Mitigation

BLM has identified the following additional protective/mitigation measures to further reduce effects to forest resources:

- In accordance with the 1997 White River RMP/ROD, all trees removed in the process of construction shall be purchased from the BLM. Trees should first be used in reclamation efforts and then any excess material made available for firewood or other uses.
- First, woody material will be chipped and stockpiled for later use in reclamation. Woods chips can be incorporated into the topsoil layer to add an organic component to the soil to aid in reclamation success.
- Woody materials, not used for woods chips, required for reclamation shall be removed in whole with limbs intact and shall be stockpiled along the margins of the authorized use area separate from the topsoil piles. Once the disturbance has been recontoured and reseeded, stockpiled woody material shall be scattered across the reclaimed area where the material originated. Redistribution of woody debris will not exceed 20-30% ground cover. Limbed material shall be scattered across reclaimed areas in a manner that avoids the development of a mulch layer that suppresses growth or reproduction of desirable vegetation. Woody material will be distributed in such a way to avoid large concentrations of heavy fuels and to effectively deter vehicle use.
- Trees that must be removed for construction and are not required for reclamation shall be cut down to a stump height of 6 inches or less prior to other heavy equipment operation. These trees shall be cut in four foot lengths (down to 4 inches diameter) and placed in manageable stacks immediately adjacent to a public road to facilitate removal for company use or removal by the public.
- Timberland and Woodland inventories must be completed prior to proposed action construction to estimate timber volume removal for billing purposes, and determine the presence of old growth. An inventory for Douglas-fir will be the first priority, and must be sent to the BLM Forester. If old growth is present, additional mitigation measures may be required.
- Enterprise/WREA shall purchase trees removed according to the inventoried volume, prior to forest product removal resulting from the Proposed Action.

3.20 RANGELAND MANAGEMENT

3.20.1 Affected Environment

Other than natural gas-related activities, livestock grazing is the dominant land use in the vicinity of the Proposed Action. The project area would be located in the Horse Draw pasture of the Square S allotment (#06027), which includes approximately 64,050 acres of BLM land (BLM, 1997), currently grazed by cattle. A total of 3,519 animal unit months (AUMs) are currently permitted for the allotment. An AUM is the amount of forage necessary for sustaining one cow/calf pair or its equivalent for a period of one month (CFR 4100.0-5). Table 3.20-1 summarizes the permitted AUMs and scheduled livestock use of the affected allotment.

Table 3.20-1
Summary of Square S Grazing Allotment

Square S Allotment (6027) Permittees	AUMs	Number of Livestock	Period of Use
Mantle Ranch	256	190	4/15 to 6/15
	92	46	4/15 to 7/15
	124	75	5/1 to 7/15
	237	140	7/16 to 10/1
	108	250	10/2 to 10/21
	264	80	11/30 to 4/30
LOV Ranch	410	500	5/16 to 6/10
	178	600	6/11 to 07/30
	578	300	10/16 to 12/15
	477	100	12/16 to 5/15
	795	110	5/1 to 12/15
Total	**3,519**	**2,391**	—

3.20.2 Environmental Consequences of the Proposed Action

Effects to grazing resources under the Proposed Action would be mostly in the form of forage removal. Construction and operation of the gas plant expansion would result in a loss of an additional 33.8 acres (0.05 percent) of potential grazing lands within allotment Square S for the life of the project. Construction within the power line right-of-way would result in the temporary loss of 1.8 acres of potential forage for livestock. After an estimated two to three growing seasons, forage levels would return to pre-construction levels within the power line right-of-way. Estimating an average of one AUM per 15 acres would result in the long-term loss of approximately 2 AUMs in the Horse Draw pasture of the Square S allotment on BLM-administered lands. The Horse Draw pasture is generally grazed by Mantle owned livestock in late spring/early summer. In addition to the loss of forage, increased vehicle traffic could increase the risk of injury or death to grazing cattle in the area as a result of vehicular collision, and could increase the potential for spread of invasive, non-native species. An increase in other human activity related to the Proposed Action could cause cattle to avoid areas of intense activities during construction.

3.20.3 Environmental Consequences of the No Action Alternative

Under the No Action Alternative, no effects to range management would occur.

3.20.4 Mitigation

BLM has identified the following protective/mitigation measures to further reduce potential effects to range management:

- Livestock operators shall be provided adequate notification of construction schedules and locations to allow them to make necessary adjustments in their livestock grazing plans.
- Enterprise shall ensure that heavy equipment does not exceed the GVW (gross vehicle weight) limits of cattle guards.
- Any range improvement projects affected by this action shall be repaired to BLM standards.

3.21 FLOODPLAINS, HYDROLOGY, AND WATER RIGHTS

3.21.1 Affected Environment

The project area is located in Piceance-Yellow sub-basin (HUC 14050006) of the White-Yampa Basin in the Upper Colorado Region. The project is located on a ridge which forms the drainage divide between Piceance Creek and Yellow Creek, at an elevation of 6,600 feet. RBC 83 runs along the top of the ridge, right on top of the divide. The project site is located on the west side of the road and drains into the Yellow Creek drainage through ephemeral and intermittent unnamed tributaries to Yellow Creek. A small ephemeral arm of the unnamed tributary is located within the project area. Yellow Creek eventually drains into the White River, more than 10 miles downstream. Drainage area of the small ephemeral arm of the unnamed tributary is 0.27 square miles (173 acres), drainage area of the unnamed tributary is 10 square miles (6,464 acres), and the drainage area of Yellow Creek just below the confluence with the unnamed tributary is 157 square miles (100,000 acres).

Average annual precipitation at the project site is 15.2 inches (USGS, 2012b).

Tributaries to Yellow Creek are ephemeral and flow only in direct response to snowmelt (April through May) and intense summer storms (BLM, 1994). The USGS collected surface water quantity at a gaging station on the Yellow River above its confluence with the White River since 1972. The drainage area, average discharge, range of annual peak discharge, and period of record are presented in the Table 3.21-1 (USGS, 2012c).

Table 3.21-1
Annual Surface Water Quantity Data [1]

USGS Gaging Station and ID Number	Drainage Area (square miles)	Average Annual Discharge (cfs)	Range of Peak Discharge (cfs)	Period of Record
Yellow Creek near White River, CO. 09306255	262	2.71	8.3 (1996) to 6,800 (1978)	10/1972 to 9/1982 and 5/1988 to 9/2011

[1] Source: USGS, 2012c.

Flow in the unnamed tributary occurs only in response to rainfall or snowmelt. Peak storm flow discharge in the unnamed tributary at the confluence with the Yellow River for a 100-year storm event is estimated at 4,200 cubic feet per second (cfs) (USGS 2012b).

No mapped floodplains exist in or near the project area. There are no springs within 0.5 mile of the project area. One groundwater well (Natrona Well #2) was located in the SE SE quarter of Section 18, within the proposed action project area; however, the well was abandoned in 1989 (Colorado Decision Support Systems – CDSS, 2012).

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

3.21.2 Environmental Consequences of the Proposed Action

Direct effects of the Proposed Action on surface water hydrology would be caused by construction and permanent re-contouring at the project site. Construction would disturb approximately 41 acres and change the surface water hydrology at the project site. Activities associated with construction of the project that would affect hydrology and runoff include clearing and grading; access road modifications; and construction of diversion ditches. The construction site would be cleared and grubbed, as applicable. Topsoil and/or other materials would be salvaged and stockpiled during construction and used at the end of the project life for reclamation. All stockpiles would have storm water BMPs implemented to reduce sediment transport and erosion of topsoil as applicable to the location. Sediment basins, rock check dams, diversion ditches and water bars would be implemented where applicable. Check dams may be used in ditches to dissipate water flow velocity.

After construction, the surface water hydrology would be permanently altered at the site. Diversion ditches would surround the project site and capture any rain or snow melt runoff from outside the plant site, which originally would have entered the ephemeral arm or the unnamed tributary of Yellow Creek located in the project site. Water captured in the diversion ditches would be conducted to the northern corner of the project site, where it would be discharged through an armored sediment basin and armored rundown in the ephemeral arm of the unnamed tributary of Yellow Creek below the project site. Because the project site is located at the very top of the drainage divide, only small amounts of runoff are expected to enter the diversion ditches and be discharged in the ephemeral arm or the unnamed tributary of Yellow Creek.

Ponds and diversion ditches 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. Precipitation falling in the interior of the Meeker Expansion project site would be captured by a stand-alone system from the storm water BMPs. The interior system would work similar to the Meeker I and Meeker II system. Upon final grade, all storm water would be directed via graveled/concrete ditches to storm drains. Water coming off of structures would be directed into storm drains. The storm drains (located at applicable locations) would then direct the water through scrubber boxes into the large interior retention pond(s) where the water would evaporate and/or percolate into the ground. These ponds would also be designed, at a minimum, to accommodate a 100-year, 6-hour storm event and would have a minimum design life of 25 years. Because water from inside the project area would not be discharged, total flow in the ephemeral arm would decrease compared to the No Action Alternative.

No environmental consequences to water rights are expected as a result of the Proposed Action.

3.21.3 Environmental Consequences of the No Action Alternative

Under the No Action Alternative, no effects to hydrology and water rights would occur.

3.21.4 Mitigation

BLM has not identified any additional protective/mitigation measures to further mitigate potential impacts to hydrology and water rights.

3.22 REALTY AUTHORIZATIONS

3.22.1 Affected Environment

The Proposed Action would be located on federal lands administered by the BLM WRFO. The rights-of-way that could be affected by the Proposed Action are as follows:

COC015822	BLM White River Field Office, Road #1098
COC49117	GS – Federal water monitoring facility
COC50047	White River Electric Association – Power Tran FLPMA
COC61921	White River Electric Association – Power Tran FLPMA
COC60332	Rocky Mountain Natural Gas Co, 6” pipeline, block valve
COC62884	Encana Oil and Gas Inc., oil and gas pipeline meter station
COC62899	White River Electric Association – Power Tran FLPMA
COC063478	Encana Oil and Gas Inc., Roads
COC65453	Encana Oil and Gas Inc., oil and gas pipeline
COC67003	BOPCO LP, roads
COC67991	Bargath Inc., oil and gas pipeline
COC67980	Enterprise Products Operation LP, oil and gas pipeline
COC68450	Encana Oil and Gas Inc., pipeline
COC69548	Enterprise Products Operation LP, oil and gas pipeline
COC069581	White River Electric Association – Power Tran FLPMA
COC070128	Enterprise Products Operation LP, roads
COC070129	Enterprise Products Operation LP, oil and gas pipeline
COC070648	Enterprise Products Operation LP, Temporary Use Permits
COC070654	Qwest, Tel, Teleg, FLPMA
COC070863	White River Electric Association – Power Tran FLPMA
COC071058	Enterprise Products Operation LP, oil and gas pipeline
COC071400	Exxon Mobil, roads
COC072181	Williams Northwest Pipeline, oil and gas pipeline
COC072191	Williams Northwest Pipeline, oil and gas Temporary Use Permits
COC073180	Bargarth Inc., water facility
COC073604	Enterprise Products Operation LP, water facility
COC073815	White River Hub, LLC., oil and gas pipeline
COC073830	Rio Blanco County R&B, roads
COC073833	Williams Production RMT, roads
COC073840	White River Hub, LLC., oil and gas pipeline
COC073844	Bargath Inc., oil and gas pipeline
COC07384401	Bargath Inc., salt water disposal-MLA
COC073845	Bargarth Inc., water facility

COC073901	Enterprise Products Operation LP, oil and gas facility sites
COC074122	Bargath Inc., oil and gas pipeline
COC074123	Bargarth Inc., water facility
COC074147	White River Hub, LLC., oil and gas pipeline
COC074154	Bargath Inc., oil and gas pipeline
COC074155	Bargarth Inc., water facility
COC074532	Bargath Inc., oil and gas pipeline
COC074533	Bargath Inc., water facility

3.22.2 Environmental Consequences of the Proposed Action

Existing utilities could be accidentally damaged during construction activities. However, the Proposed Action should avoid existing rights-of-way and no environmental effects are expected.

3.22.3 Environmental Consequences of the No Action Alternative

Under the No Action Alternative, no effects to realty authorizations would occur.

3.22.4 Mitigation

BLM has identified the following protective/mitigation measures to mitigate potential damage to existing utilities:

- Enterprise/WREA shall construct, operate, and maintain the facilities, improvements, and structures within this right-of-way in strict conformity with the plan(s) of development which was (were) approved and made part of the grant. Any relocation, additional construction, or use that is not in accord with the approved plan(s) of development, shall not be initiated without the prior written approval of the authorized officer. A copy of the complete right-of-way grant, including all stipulations and approved plans(s) of development, shall be made available on the right-of-way area during construction, operation, and termination. Noncompliance with the above will be grounds for an immediate temporary suspension of activities if it constitutes a threat to public health and safety or the environment.
- Enterprise/WREA shall contact the authorized officer at least five days prior to the anticipated start of construction and/or any surface disturbing activities. The authorized officer may require and schedule a preconstruction conference with the holder prior to the holder's commencing construction and/or surface disturbing activities on the right-of-way. The holder and/or his representative shall attend this conference. The holder's contractor, or agents involved with construction and/or any surface disturbing activities associated with the right-of-way, shall also attend this conference to review the stipulations of the grant including the plans(s) of development.
- Enterprise/WREA shall submit a plan of development that describes in detail the construction, operation, maintenance, and termination of the right-of-way and its associated improvements and/or facilities. The plan shall include drawings in sufficient detail to enable a complete evaluation of all proposed structures, facilities, and landscaping to ensure compliance with the requirements of the grant and to ensure visual compatibility with the site. These drawings shall be the construction documents and must show dimensions, materials, finishes, etc. to demonstrate compliance with all requirements. The plans will be reviewed and, if appropriate, modified and approved by

the authorized officer. An approved plan of development shall be made a part of the right-of-way grant.

- Enterprise/WREA shall protect all survey monuments found within the right-of-way. Survey monuments include, but are not limited to, General Land Office and Bureau of Land Management Cadastral Survey Corners, reference corners, witness points, U.S. Coastal and Geodetic benchmarks and triangulation stations, military control monuments, and recognizable civil (both public and private) survey monuments. In the event of obliteration or disturbance of any of the above, the holder shall immediately report the incident, in writing, to the authorized officer and the respective installing authority if known. Where General Land Office or Bureau of Land Management right-of-way monuments or references are obliterated during operations, the holder shall secure the services of a registered land surveyor or a Bureau cadastral surveyor to restore the disturbed monuments and references using surveying procedures found in the Manual of Surveying Instructions for the Survey of the Public Lands in the United States, latest edition. The holder shall record such survey in the appropriate county and send a copy to the authorized officer. If the Bureau cadastral surveyors or other Federal surveyors are used to restore the disturbed survey monument, the holder shall be responsible for the survey cost.
- Enterprise/WREA shall contact existing rights-of-way holders prior to construction and coordinate activities to avoid impacts to existing natural gas pipeline, water line, power line, and roads.

3.23 RECREATION

3.23.1 Affected Environment

The project area is located on BLM-administered lands designated as an Extensive Recreation Management Area (ERMA). Management in ERMAs is limited to custodial actions. ERMAs emphasize the traditional dispersed recreation use of public lands and have an undeveloped character that allows visitors to escape crowds, to rely on their own skills and equipment, and find freedom from stricter regulations (BLM, 1990). ERMAs can provide for activities such as hunting, camping, hiking, horseback riding, wildlife viewing, and off-highway vehicle (OHV) use. The Proposed Action is also located in a Recreation Opportunity Spectrum (ROS) Semi-Primitive Motorized (SPM) area. These areas are managed to provide a natural appearing environment. Natural resource use and motor vehicles are permitted. The primary recreational use in the vicinity of the project area is big game hunting, mainly occurring during the big game rifle seasons in the fall. No developed BLM recreational facilities, such as campgrounds or picnic areas, occur within or near the project area.

The Square S Ranch unit of the Piceance Creek State Wildlife Area covers the bottomlands along Piceance Creek, just north of the Hatch Creek confluence and less than 2 miles east of the proposed gas plant expansion. CPW manages the area for wildlife and habitat protection, and to provide access for hunting, fishing, and wildlife viewing.

3.23.2 Environmental Consequences of the Proposed Action

Effects to recreation would result from increased vehicle traffic on area roads, human activity, noise, dust, and a further decrease in the overall solitude and scenic integrity of the general area.

Construction and operation activities could also displace game species, depending on forage and cover opportunities, and both hunters and game would be displaced to other locations within or outside of the project area.

Because of the current industrial setting with both the existing Meeker Gas Plant and adjacent Yankee Gulch Substation, it is not likely that the area would be a sought-after hunting location. Current conditions and the Proposed Action would combine to disrupt the experience sought by recreationists (hunters), but it is likely that hunters are familiar with the industrial site and can find relatively undisturbed settings on public lands adjacent to the project area. The proposed expansion of the gas plant will not interfere with the SPM recreation objectives for the greater area.

3.23.3 Environmental Consequences of the No Action Alternative

Under the No Action Alternative, no effects to recreational resources would occur.

3.23.4 Mitigation

BLM has identified the following protective/mitigation measures to further reduce effects to recreation resources:

- Enterprise/WREA shall post signs on access roads to inform recreationists of development activities and construction schedules and promote the avoidance of accidents, especially during hunting season.

3.24 ACCESS AND TRANSPORTATION

3.24.1 Affected Environment

Access to the project area would be via SH 13 and SH 64 and RBC 5. The transport of most heavy equipment would originate at the Enterprise storage yard off SH 64, approximately 2.5 miles west of Meeker, and travel 16.5 miles west on SH 64 to the RBC 5 junction, and 13.5 miles south on RBC 5. Traffic originating in Meeker would travel 2 miles west on SH 13 to the SH 64 junction, continue past the Enterprise yard and follow the heavy equipment route on SH 64 and RBC 5 to access the project area. Traffic from Rifle and nearby communities along the Interstate 70 corridor would travel 18 miles north on SH 13 to the RBC 5 junction, and 28.5 miles northwest on RBC 5. Traffic from Rangely would travel 29 miles east on SH 64 and 13.5 miles south on RBC 5.

Gas Plant Road provides access to the project area from RBC 5. Gas Plant Road exits RBC 5 near milepost 28, and proceeds 2.1 miles to the Meeker Gas Plant, which is located at the junction of Gas Plant Road and RBC 83. All access road surfaces are paved (see Map 3.24-1).

Table 3.24-1 shows 2010 and 2011 annual average daily traffic (AADT) volumes for all vehicles and trucks on SH 13 between Rifle and Meeker, and on SH 64 between Meeker and Rangely. During this time, traffic on affected segments of SH 13 decreased by an average of 7 percent. Traffic on SH 64 increased by 17 percent between the SH 13 junction and RBC 5, and remained stable between RBC 5 and Rangely (Colorado Department of Transportation - CDOT, 2011, 2012).

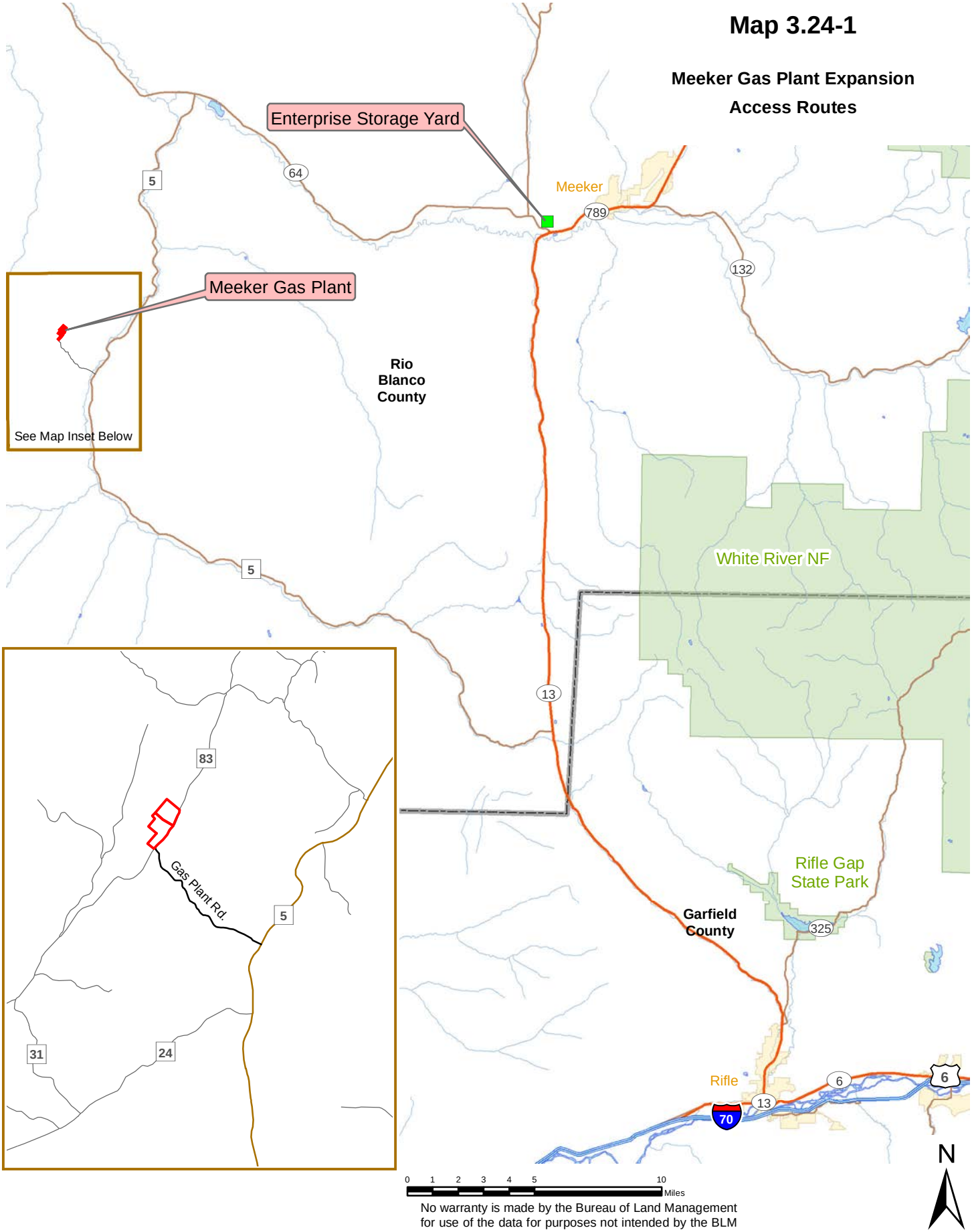

Map 3.24-1
Meeker Gas Plant Expansion
Access Routes
Enterprise Storage Yard
Meeker Gas Plant
See Map Inset Below
Meeker
Rio
Blanco
County
White River NF
Rifle Gap
State Park
Garfield
County
Rifle
Gas Plant Rd.
5
64
789
132
13
83
325
6
70
31
24
0 1 2 3 4 5 10
Miles
N
No warranty is made by the Bureau of Land Management
for use of the data for purposes not intended by the BLM

Table 3.24-1
Annual Average Daily Traffic on State Highway 13 and State Highway 64 in the Vicinity of the Proposed Action, All Vehicles and Trucks, 2010 and 2011

Highway Segment	Milepost		2010 AADT[1]		2011 AADT[2]	
	Start	End	All Vehicles	Trucks	All Vehicles	Trucks
State Highway 13						
Airport Rd to Taugenbaugh Ave in Rifle	0.00	0.55	17,000	1,070	17,000	1,070
Taugenbaugh Ave to Jct SH 6 in Rifle	0.55	0.97	5,500	770	3,700	680
SH 6 to U.S. 6 West	0.97	1.99	5,400	780	5,300	770
U.S. 6 West to Railroad Ave.	1.99	2.69	15,000	820	13,000	710
Railroad Ave. to White River Ave.	2.69	3.14	11,000	690	9,100	570
White River Ave. to Junction SH 325	3.14	4.11	4,700	590	4,400	580
Junction SH 325 to Rio Blanco CR 5	4.11	18.27	3,300	460	3,500	490
County Road 5 to Junction SH 64	18.27	39.01	2,700	610	2,800	550
Jct SH 64 to 10th Street in Meeker	39.01	41.42	3,800	650	3,800	650
10th Street to 3rd Street in Meeker	41.42	41.95	7,700	740	6,200	470
State Highway 64						
Rangely to RBC 5	27.31	56.24	2,100	350	2,100	350
RBC 5 to RBC 7 (Strawberry Creek Rd.)	56.24	72.55	1,400	280	1,400	280
RBC 7 to SH 13	72.55	73.71	2,100	280	2,700	340

Sources:
[1] CDOT, 2011.
[2] CDOT, 2012.

Table 3.24-2 shows 2009, 2010 and 2011 average daily traffic volumes for all vehicles and heavy trucks on RBC 5. Traffic volumes are based on traffic counts over 22 days in 2009, 6 days in 2010, and 6 days in 2011 (Morlan, J., 2012). Traffic increased at all milepost monitors between 2009 and 2010, and decreased between 2010 and 2011. The highest traffic volumes occur on southern segments of RBC 5, between the SH 13 junction (Milepost - MP 0) and RBC 26 (near MP 23).

In 2008 Rio Blanco County initiated plans to upgrade RBC 5 to address substandard roadway conditions and increased traffic and industry development needs. The first improvements will be constructed between mileposts 27 and 31, and include adding dedicated left-hand turn lanes at the intersection of RBC 5 and RBC 24 (MP 27) to create a “full movement intersection,” realigning RBC 5 near MP 31 to eliminate a sharp curve that currently limits drivers’ sight distance, and adding 8 foot shoulders to each side of RBC 5. Construction of these upgrades began in May 2012 and paving is scheduled for completion in November 2012 (Pilaud, 2012). Further road improvements are planned to continue through 2022 and will occur on a “pay as you go” basis.

Table 3.24-2
Average Daily Traffic on RBC 5
All Vehicles, 2009, 2010 and 2011[1]

RBC 5 Mile Post	CR 5 Milepost Location	2009		2010		2011	
		All Vehicles	Heavy Trucks	All Vehicles	Heavy Trucks	All Vehicles	Heavy Trucks
0	SH 13 junction	1,287	473	1,600	653	1,113	536
5	2 miles NW of Cow Creek Rd.	1,754	1,146	NA[2]	NA[2]	NA[2]	NA[2]
17	1 mile East of RBC 3	NA[2]	NA[2]	1,527	1,027	1,104	504
19	1 mile West of RBC 3	1,376	678	1,594	1,026	1,185	505
23	0.5 miles SE of RBC 26	1,561	644	1,587	843	1,089	530
24	0.5 miles North of RBC 26	1,369	612	1,374	681	1,020	544
26	1 mile South of RBC 24	1,248	670	1,303	662	697	352
28	1 mile North of RBC 24	NA[2]	NA[2]	946	481	549	268
32	1.5 miles South of RBC 76	NA[2]	NA[2]	NA[2]	NA[2]	508	279
42	SH 64 junction	882	429	945	684	590	315

[1] Source: Morlan, J., 2012.
[2] NA = Not Available.

The Colorado State Patrol (CSP) responds to approximately half of the traffic crashes in Rio Blanco and Garfield counties. According Captain Jack Cowart, Commander for CSP District 4B, which covers northwest Colorado, in 2010 the CSP responded to 90 crashes on SH 13 between Rifle and Meeker, and 37 crashes on SH 64 between Meeker and Rangely. The CSP responded to 17 crashes on RBC 5 (see Table 3.24-3). The leading causes of crashes included speeding, lane violations and animals on state highways 13 and 64; and inattentive driving, lane violations and animals on RBC 5 (Cowart, 2012).

Table 3.24-3
Vehicular Crashes by Type of Crash, 2010[1]

Road	Roadway Segment	Miles	Type of Crash			
			Property Damage	Injury	Fatal	Total
SH 13	Rifle – Rio Blanco County line	16	47	2	1	50
SH 13	Rio Blanco County line – Meeker	21	35	3	2	40
SH 64	Meeker – RBC 5	17	13	2	0	15
SH 64	RBC 5 – Rangely	29	20	1	1	22
RBC 5	SH 13 – SH 64	42	15	2	0	17

[1] Source: Cowart, 2012.

3.24.2 Environmental Consequences of the Proposed Action

The Proposed Action could have direct impacts on transportation in the project area and vicinity by increasing traffic volumes; and have indirect impacts through increasing opportunities for vehicle collisions with wildlife and other vehicles, and contributing to roadway deterioration.

Transportation impacts would be highest during construction of the Proposed Action. The number of daily round-trips is highly variable and depends on the specific construction phase underway. Traffic during construction is expected to peak during initial material and supply

deliveries. As much as possible, busses would be used as primary worker transportation to minimize additional traffic loads.

Based on the assumptions that 1) the majority of construction workers would travel to and from the project area in 30 passenger busses collecting workers at Enterprise's yard and a central Rifle location, 2) non-local construction workers would be divided fairly equally between short-term accommodations in Meeker and Rifle, and 3) heavy truck traffic would originate at the Enterprise yard on SH 64, estimated peak traffic associated with construction of each train would be likely to result in less than a 1 percent increase in traffic compared to 2011 AADT on affected portions of SH 13 and a 3 percent traffic increase on SH 64 between the SH 13 and RBC 5 junctions. On RBC 5, project-related construction traffic could lead to a 10 percent increase in traffic above 2011 traffic levels between MP 31 and MP 42, and a 6 percent increase in traffic between MP 0 and MP 31.

Following construction, traffic associated with operation of the Proposed Action would fall noticeably and include an estimated 10 light vehicles per day transporting plant personnel, one water supply truck every other day, and one truck hauling wastewater to an approved disposal facility approximately every four days. Compared to 2011 traffic levels, traffic associated with operation of Meeker III and IV would be likely to result in less than a 1 percent increase in traffic on SH 13 and SH 64, a 1.5 percent increase in traffic on RBC 5 between MP 0 and MP 31, and a 2 percent increase in traffic on RBC 5 between MP 31 and MP 42.

CDOT is responsible for maintaining SH 13 and SH 64. Rio Blanco County maintains RBC 5. Enterprise has a right-of-way (COC70128) for Gas Plant Road, and has a road maintenance permit from the county to maintain RBC 83 between Gas Plant Road and the plant's southern boundary (Chappell, 2012).

3.24.3 Environmental Consequences of the No Action Alternative

Under the No Action Alternative, the Meeker Gas Plant would not be expanded through the construction of Meeker III and IV as described in the Proposed Action. There would be no project-related traffic on state highways 13 and 64, RBC 5, or other public and private roads. Traffic associated with on-going operation of the Meeker Gas Plant would continue at current levels.

3.24.4 Mitigation

BLM has identified the following protective/mitigation measures to further reduce potential effects to transportation:

- Enterprise/WREA and their contractors shall follow posted speed limits and implement a speed limit of 30 miles per hour where speeds are not posted and on unpaved roads.

4.0 CUMULATIVE EFFECTS ANALYSIS

4.1 Introduction

Cumulative effects are defined in the Council on Environmental Quality (CEQ) regulations (40 CFR 1508.7) as "...the impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions." Cumulative impacts can result from individually minor, but collectively significant, actions taking place over a period of time. The cumulative effects analysis considers the geographic scope of the cumulative effects and past, present, and reasonably foreseeable actions. Table 4.1-1 lists the past, present, and reasonably foreseeable future actions within the area that might be affected by the Proposed Action. For this analysis, future actions are considered to be limited to those for which some formal notice or permit application has been made and does not include potential developments which are speculative.

Impacts resulting from the Proposed Action could add incrementally to impacts from the other activities listed in Table 4.1-1. As analyzed above, the effects of the Proposed Action to all resources, excluding air quality, are minor, occurring during construction of the plant expansion. The activities listed in Table 4.1-1 would continue to affect the various resources.

Table 4.1-1
Past, Present, and Reasonably Foreseeable Actions

Action Description	STATUS		
	Past	Present	Future
Livestock Grazing	X	X	X
Wild Horse Gathers	X	X	X
Recreation	X	X	X
Invasive Weed Inventory and Treatments	X	X	X
Range Improvement Projects: Water Developments Fences & Cattleguards	X	X	X
Wildfire and Emergency Stabilization and Rehabilitation	X	X	X
Wind Energy Met Towers			X
Oil and Gas Development: Well Pads Access Roads Pipelines Gas Plants Facilities	X	X	X
Power Lines	X	X	X
Oil Shale	X	X	X
Seismic	X	X	X
Vegetation Treatments	X	X	X

For this EA, BLM examined various files and GIS information and determined that livestock grazing, wild horse gathers, recreation usage, invasive weed treatments, range improvements, wildfire reclamation, and seismic projects would either continue at historical levels into the future and/or resulted in minimal impacts to the human environment and have not been further considered in this document, apart from how their effects are represented by description of the Affected Environment. Wind energy meteorological towers have been proposed for the area. While wind energy developments may occur in the future, no specific applications for such projects have been made and they have not been considered in this EA. The analysis areas selected for each analyzed resource, and the rationale for their selections, are indicated in Table 4.1-2. Surface disturbance estimated from GIS data for different types of projects for the different cumulative effects analysis areas (CEAAs) is indicated in Table 4.1-3. Map 4.1-1 shows the CEAAs.

4.2 Analysis Specifications

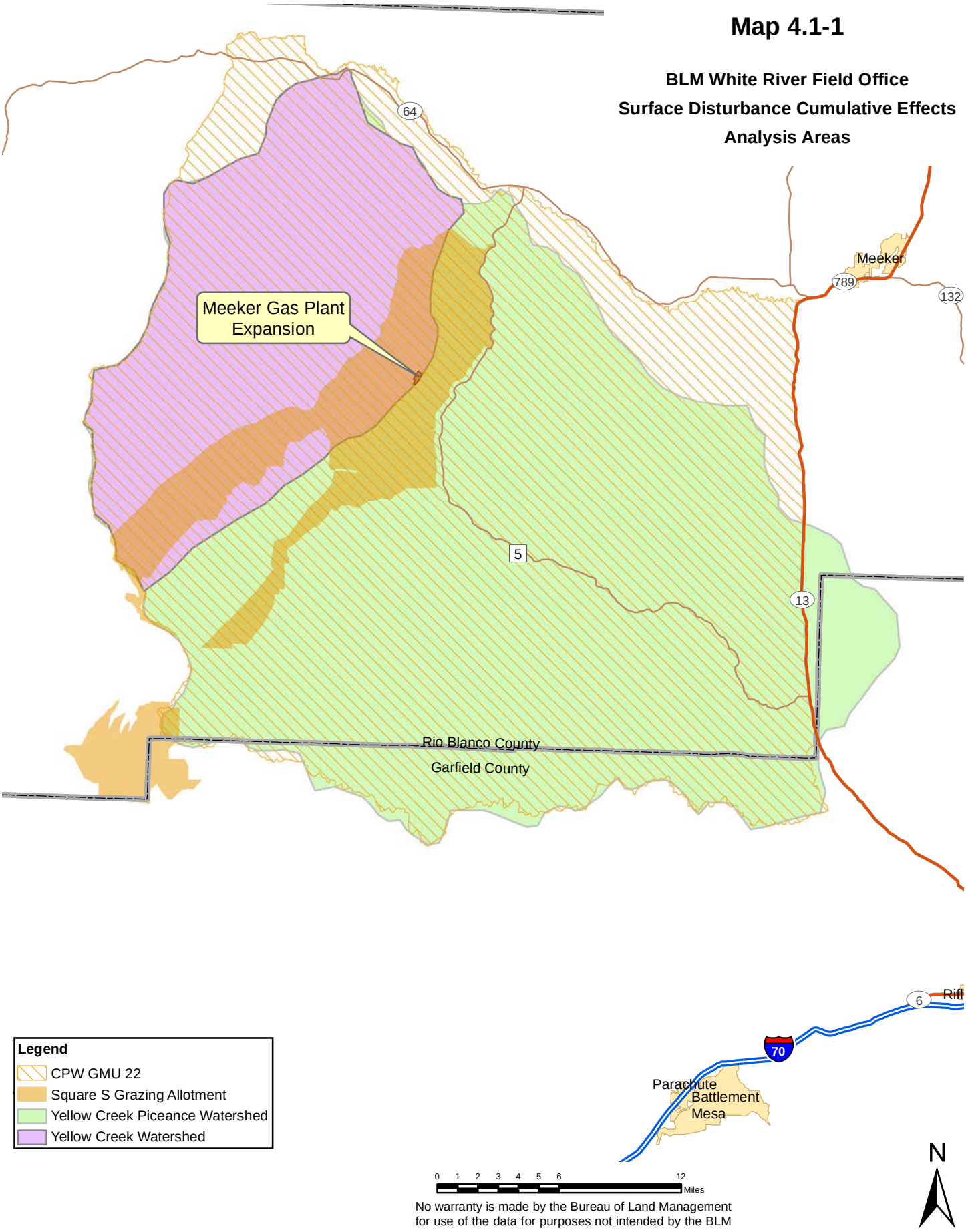
Data for the cumulative impacts analysis included a number of GIS files that were obtained from the WRFO covering areal disturbance (principally oil and gas or other industrial facilities), roads, pipelines, power lines, and vegetation treatments. Coverage included public, state, and private lands. Data were clipped to the area of CPW GMU 22. The area of GMU 22 is the largest CEAA of those selected for surface disturbing activities and largely contains the other, smaller, CEAAs. Oil and gas well data were obtained from the Colorado Oil and Gas Conservation Commission (COGCC). The COGCC data were individually clipped to each of the four CEAAs.

The BLM data were examined and gas plants and facilities, sodium mining operations, and oil shale RD&D lease tracts were located for each CEAA. For the other disturbance sources (roads, pipelines, and vegetation treatments), disturbance was estimated proportional to the size of the CEAA in comparison to the area of GMU 22.

Past and present wells were determined to have an average disturbance of approximately 4.9 acres. For foreseeable wells, which are those for which an APD has been issued by COGCC but for which no operations have been conducted, the average disturbance per well is only 1.2 acres. This is because most of the foreseeable wells would be drilled on existing well pads containing multiple wells. Past (pre-2011) pipeline and power line disturbance was assumed to be reclaimed. Disturbance widths for pipelines and power lines were estimated to be 100 feet and 25 feet, respectively. Because many pipelines overlap in the same ROW, the average pipeline disturbance width is approximately 88 feet. A 25-foot disturbance for power lines was assumed, but life-of-project disturbance would only be where support poles are placed.

Map 4.1-1

BLM White River Field Office
Surface Disturbance Cumulative Effects
Analysis Areas



No warranty is made by the Bureau of Land Management for use of the data for purposes not intended by the BLM

Table 4.1-2
Cumulative Effects Analysis Areas

Resource	Cumulative Effects Analysis Area	CEAA Area (Acres)	Rationale
Air Quality	Eastern Utah, Colorado Western Slope	N/A	Air quality modeling domain used for the WRFO Draft RMP Amendment and Environmental Impacts Statement for Oil and Gas Development cumulative air quality analyses.
Geology and Minerals	Yellow Creek - Piceance Creek Watershed	589,825	The CEAA encompasses most of the local oil and gas development and is somewhat aerially separated from other oil and gas development to the west and south. It also overlaps the highest potential oil shale and sodium development areas.
Soil Resources*	Yellow Creek Watershed	168,931	All project disturbances would occur within the upper reaches of this watershed. Soil transport would be downstream within the watershed.
Surface and Groundwater Quality*	Yellow Creek Watershed (surface water) Yellow Creek - Piceance Watershed (groundwater)	168,931 589,825	All project surface water flow would be to the Yellow Creek watershed. The combined Yellow Creek-Piceance watershed overlies much of the local Uinta-Animas aquifer and the project facilities are located within the watershed.
Vegetation*	Yellow Creek - Piceance Creek Watershed	589,825	The combined watershed is of sufficient size to contain most local cumulative impacts to vegetation and the project facilities are located near the center of the combined watershed.
Invasive, Non-native Species	Yellow Creek - Piceance Creek Watershed	589,825	Dispersal of invasive seeds from the project and transport into the project area would cross both watersheds.
Special Status Plant Species	Not Selected	NA	No special status plants have been located within the project area. Therefore, no direct, indirect, or cumulative impacts would occur.
Special Status Animal Species	Yellow Creek - Piceance Creek Watershed	589,825	The combined watershed represents the principal area of local water withdrawals potentially affecting the endangered Colorado River fish.

Resource	Cumulative Effects Analysis Area	CEAA Area (Acres)	Rationale
Migratory Birds	Colorado Parks & Wildlife Game Management Unit 22	632,894	The CEAA is sufficiently large to account for most potential cumulative impacts to local migratory species.
Terrestrial Wildlife*	Colorado Parks & Wildlife Game Management Unit 22	632,894	The CEAA includes the range of local big game species and encompasses the local range of smaller, less mobile, species.
Aquatic Wildlife	Upper Colorado River Basin	11,392,000	The Programmatic Biological Opinion for Oil and Gas is within the Upper Colorado River Basin.
Cultural Resources	Not Selected	NA	Cultural resource sites would be avoided, and therefore, there would be no direct, indirect, or cumulative impacts.
Paleontological Resources	Yellow Creek - Piceance Watershed	589,825	Surface-disturbing activities would be confined to the Uinta Formation. The CEAA covers the majority of the Uinta Formation exposed in the center of the Piceance Basin.
Visual Resources	Yellow Creek - Piceance Watershed	589,825	Facilities and construction or production traffic would be largely confined within the combined watershed area.
Wastes, Hazardous or Solid	Yellow Creek - Piceance Watershed	589,825	Hazardous waste generators in the vicinity are expected to be largely associated with oil and gas development. The CEAA encompasses most of the local oil and gas development and is somewhat aerially separated from other oil and gas development to the west and south.
Fire Management	Yellow Creek - Piceance Creek Watershed	589,825	The CEAA encompasses portions of seven Fire Management Zones and the bulk of historic fires in the Basin east of Parachute Creek and south of the White River. The project facilities are centrally located within the CEAA.
Social and Economic Conditions	Rio Blanco County	2,062,720	Social and economic impacts would occur within Rio Blanco County.

Resource	Cumulative Effects Analysis Area	CEAA Area (Acres)	Rationale
Forest Management	Colorado Parks & Wildlife Game Management Unit 22	632,894	The combined watershed is of sufficient size to contain most local cumulative impacts to forest vegetation and the project facilities are located near the center of the combined watershed. The CEAA contains approximately 337,000 acres of PJ forest.
Rangeland	Square S Allotment	79,550	The allotment is of sufficient size and logical extent to serve as the CEAA for rangeland management.
Floodplains, Hydrology, and Water Rights	Yellow Creek - Piceance Creek Watershed	589,825	The combined Yellow Creek-Piceance watershed overlies much of the local Uinta-Animas aquifer and the project facilities are located within the watershed.
Realty Authorizations	Yellow Creek - Piceance Creek Watershed	589,825	The CEAA encompasses most of the local oil and gas development and is somewhat aerially separated from other oil and gas development to the west and south. Much past, present, and foreseeable realty actions are oil and gas related.
Recreation	Colorado Parks & Wildlife Game Management Unit 22	632,894	The project facilities are centrally located within the GMU and the principal impact to recreation in the area would be to hunting.
Access and Transportation	Yellow Creek - Piceance Creek Watershed	589,825	All local roads which would potentially be used to serve the project area are contained within the CEAA.

Table 4.1-3
Disturbance Associated with Cumulative Effects Analysis Areas

Facility Type and Cumulative Effects Analysis Area (CEAA)	Count or Miles	Facility Dist. (acs.) or ROW (ft.)	Total Dist. (acs.)	Count or Miles	Facility Dist. (acs.) or ROW (ft.)	Total Dist. (acs.)
	Past and Present Activities			Reasonably Foreseeable Activities		
CPW Game Management Unit 22 – Total			16,771			3,740
Industry – Total			5,909			2,478
Oil & Gas Wells	742	4.7	3,487	455	1.3	586
Gas Plants & Facilities	5	86.6	433	1	56.2	56
Sodium Mining & Processing	2	34.0	68	0	0	0
Oil Shale RD&D	5	5.2	26	7	87.1	610
Electric Transmission	128.9	0.0	0	5.3	25	16
Pipelines – Reclaimed	782.9	0.0	0	0	0	0
Pipelines – Unreclaimed	190.8	81.9	1,895	113.9	88	1,210
Roads – Total			6,416			8
Highways	33.6	60.0	244	0	0	0
County Roads	328.5	40.0	1,593	0	0	0
Other Roads	1,888.9	20.0	4,579	3.1	20	8
Vegetation Treatments – Total	194	22.9	4,446	NA	NA	1,254
Yellow Creek-Piceance Watershed			15,810			3,553
Industry – Total			5,686			2,378
Oil & Gas Wells	722	4.7	3,393	438	1.3	564
Gas Plants & Facilities	5	86.6	433	1	56.2	56
Sodium Mining & Processing	2	34.0	68	0	0	0
Oil Shale RD&D	5	5.2	26	7	87.1	610
Electric Transmission	120.1	0.0	0	4.9	25	15
Pipelines – Reclaimed	729.6	0.0	0	0.0	0	0
Pipelines – Unreclaimed	177.8	76.4	1,766	106.1	88	1,132
Roads – Total			5,980			7
Highways	31.3	55.9	228	0	0	0
County Roads	306.1	37.3	1,484	0	0	0
Other Roads	1,760.4	18.6	4,268	2.9	20	7
Vegetation Treatments – Total	181	21.4	4,143	NA	NA	1,169
Yellow Creek Watershed			4,098			1,223

Facility Type and Cumulative Effects Analysis Area (CEAA)	Count or Miles	Facility Dist. (acs.) or ROW (ft.)	Total Dist. (acs.)	Count or Miles	Facility Dist. (acs.) or ROW (ft.)	Total Dist. (acs.)
Industry – Total			1,198			886
Oil & Gas Wells	122	4.7	573	51	1.3	66
Gas Plants & Facilities	1	86.6	87	1	56.2	56
Sodium Mining & Processing	1	17.0	17	0	0	0
Oil Shale RD&D	3	5.2	16	5	87.1	436
Electric Transmission	34.4	0.0	0	1.4	25	4
Pipelines – Reclaimed	209.0	0.0	0	0.0	0	0
Pipelines – Unreclaimed	50.9	21.9	506	30.4	88	324
Roads – Total			1,713			2
Highways	9.0	16.0	65	0	0	0
County Roads	87.7	10.7	425	0	0	0
Other Roads	504.2	5.3	1,222	0.8	20	2
Vegetation Treatments – Total	52	6.1	1,187	NA	NA	335
Square S Allotment			2,445			779
Industry – Total			1,079			620
Oil & Gas Wells	145	4.7	682	115	1.3	148
Gas Plants & Facilities	1	86.6	87	1	56.2	56
Sodium Mining & Processing	2	34.0	68	0	0	0
Oil Shale RD&D	1	5.2	5	3	87.1	261
Electric Transmission	16.2	0.0	0	0.7	25	2
Pipelines – Reclaimed	98.4	0.0	0	0.0	0	0
Pipelines – Unreclaimed	24.0	10.3	238	14.3	88	153
Roads – Total			806			1
Highways	4.2	7.5	31	0	0	0
County Roads	41.3	5.0	200	0	0	0
Other Roads	237.4	2.5	576	0.4	20	1
Vegetation Treatments – Total	24	2.9	559	NA	NA	158

4.2.1 Air Quality

A cumulative air pollutant dispersion modeling study was recently performed by the BLM to quantify potential NO_2, SO_2, VOC, PM_{10}, and $PM_{2.5}$ impacts for the WRFO Draft Resource Management Plan Amendment and Environmental Impact Statement for Oil and Gas Development (BLM, 2012b). The modeling analysis used the CALPUFF and CAMx dispersion models to assess cumulative air quality impacts including those from regional existing and proposed sources within the study area extending from eastern Utah to the Colorado western slope surrounding the WRFO planning area. The analysis included WRFO project alternative reasonably foreseeable development (RFD) emissions from proposed gas processing facilities within the planning area ranging from 965.7 to 2339.0 tpy of NOx, 3,189.4 to 6,912.7 tpy of VOCs, up to 10.5 tpy of SO_2 and 258.2 tpy of $PM_{10}/PM_{2.5}$. These modeled cumulative emissions are sufficient to account for the Meeker Proposed Action emissions which are 95.1 tpy of NO_x, 87.2 tpy of SO_2, 28.1 tpy of $PM_{10}/PM_{2.5}$, and 71.3 tpy of VOCs.

The study evaluated potential maximum cumulative NO_2, SO_2, PM_{10}, $PM_{2.5}$, and ozone air quality concentrations throughout the modeling domain. The analysis included modeling of NO_2, SO_2, PM_{10}, and O_3 concentration impacts, atmospheric deposition (including potential lake acidification), and visibility impacts at several Class I areas and sensitive Class II areas within the study area including Class I areas; Arches National Park, Eagles Nest Wilderness, Flat Tops Wilderness, Maroon Bells-Snowmass Wilderness, Mount Zirkel Wilderness and West Elk Wilderness, and the Class II sensitive areas and scenic views; Colorado National Monument, Dinosaur National Monument, Big Mountain View, Holy Cross View, Holy Cross Wilderness View, Rabbit's Ear View and Roan Cliffs View. Lakes that were evaluated for potential lake acidification include: Avalanche Lake, Moon Lake, Ned Wilson Lake, Upper Ned Wilson Lake, Seven Lakes, Summit Lake, and Trappers Lake.

The WRFO modeling analysis findings were:

- Ozone impacts attributable to the WRFO alternatives and cumulative emissions are not expected to cause or contribute to violations of the ozone NAAQS for any of the alternatives.

- Cumulative impacts under each of the alternatives do not show any exceedances of the CO or SO_2 NAAQS and CAAQS. Annual nitrogen dioxide concentrations would be below NAAQS and CAAQS. However, modeling indicated exceedances of the following standards in localized areas: NO_2 1-hour NAAQS, PM_{10} and $PM_{2.5}$ 24-hour and annual NAAQS and CAAQS. However given the lack of facility-specific data used for this modeling analysis this modeling analysis could overpredict impacts near large sources.

- Predicted concentrations would be well below PSD increments for all pollutants and averaging times at Class I and sensitive Class II area receptors. PSD increment comparisons performed under NEPA are provided for informational purposes only, and are not regulatory PSD increment consumption analyses.

- Cumulative modeling for each of the alternatives predicted visibility impacts above the 1.0 dv threshold at each of the Class I and sensitive Class II areas. The maximum number of days with predicted cumulative visibility impacts of 1.0 dv or more at any Class I area would be 68 days at the Flat Tops Wilderness. Although visibility impacts at sensitive Class II areas and scenic views are not required to be modeled, they are provided for disclosure purposes only. Roan Cliffs View is predicted to have as many as 350 days with a visibility change of 1.0 dv or more from natural conditions.

- Modeling for cumulative emissions for each of the alternative indicates that nitrogen and sulfur deposition rates would be below the Levels of Concern at all modeled Class I and sensitive Class II areas.

- For the seven lakes included in the analysis modeled changes in ANC would be below the thresholds of concern.

- The maximum cumulative GHG emissions resulting from WRFO alternative oil and gas activities are estimated at 5.3 tg/yr of CO_2 equivalent emissions. To place these GHG emissions in context, the GHG emissions from the top five emitting coal-fired power plants in Colorado range from 3.5 to 9.8 tg/year (EPA, 2012c). Compared to the statewide annual 2005 Colorado GHG emissions, which are estimated as 117.7 tg/year (Center for Climate Strategies - CCS, 2007), maximum projected alternative emissions are approximately 4.5 percent of the total Colorado GHG emissions inventory for 2005.

4.2.2 Geology and Minerals

The cumulative impacts analysis area for geology and minerals is the Yellow Creek-Piceance Creek watershed, an area of 589,825 acres. The proposed gas plant expansion would increase acres of surface area unavailable multimineral leasing. This could require additional lengths in horizontal drilling for the recovery of the oil and gas resources underlying the proposed gas plant expansion.

4.2.3 Soil Resources

The cumulative effects analysis area is the Yellow Creek watershed, an area of 168,931 acres. Past and present analyzed surface disturbing activities within the CEAA are estimated to equal 4,098 acres (2.4 percent). Disturbance from foreseeable actions is estimated to be 1,223 additional acres (0.7 percent) (Table 4.1-3). In general, approximately 49.1 acres of direct soil disturbance likely to reduce soil productivity and may lead to temporary accelerated soil erosion and instability of soils in localized areas until effective reclamation BMPs for soil stabilization and revegetation are applied.

4.2.4 Surface and Groundwater Quality

For surface water, the cumulative effects analysis area is the Yellow Creek watershed, an area of 168,931 acres. Past and present analyzed surface disturbing activities (DOI-BLM-CO-110-2011-0177-EA Page 87) within the CEAA are estimated to equal 4,098 acres (2.4 percent). Disturbance from foreseeable actions is estimated to be 1,223 additional acres (0.7 percent). For groundwater, the CEAA is the combined Yellow Creek-Piceance Creek watershed, an area of 589,825 acres. Past and present analyzed surface disturbing activities within the CEAA are

estimated to equal 15,810 acres (2.6 percent). Disturbance from foreseeable actions is estimated to be 3,553 additional acres (0.7 percent) (Table 4.1-3). Impacts to surface water from the Proposed Action are not anticipated. The principal mitigation for sediment transport would be compliance with the project SWMP. Impacts to groundwater resources extending beyond the boundaries of gas plant expansion are not anticipated.

4.2.5 Vegetation

The CEAA is the combined Yellow Creek-Piceance Creek watershed, an area of 589,825 acres. Past and present analyzed surface disturbing activities within the CEAA are estimated to equal 15,810 acres (2.6 percent). Disturbance from foreseeable actions is (DOI-BLM-CO-110-2011-0177-EA Page 92) estimated to be 3,553 additional acres (0.7 percent) (Table 4.1-3). Implementation of the Proposed Action would incrementally result in additive cumulative effects to vegetation. Anticipated effects would be similar to those cumulative effects described for soils.

4.2.6 Invasive, Non-native Species

The CEAA is the combined Yellow Creek-Piceance Creek watershed, an area of 589,825 acres. Past and present analyzed surface disturbing activities within the CEAA are estimated to equal 15,810 acres (2.6 percent). Disturbance from foreseeable actions is estimated to be 3,553 additional acres (0.7 percent) (Table 4.1-3). Noxious weeds in the project area have been and would continue to be treated. The extent of infestation and persistence would be dependent on monitoring and treatment.

4.2.7 Special Status Animal Species

The CEAA is the combined Yellow Creek-Piceance Creek watershed, an area of 589,825 acres. Past and present analyzed surface disturbing activities within the CEAA (DOI-BLM-CO-110-2011-0177-EA Page 103) are estimated to equal 15,810 acres (2.6 percent). Disturbance from foreseeable actions is estimated to be 3,553 additional acres (0.7 percent) (Table 4.1-3). Implementation of the Proposed Action would incrementally result in additional impacts to special status animal species proportional to the direct and indirect effects.

4.2.8 Special Status Plant Species

No CEAA has been determined for special status plant species. There are no direct or indirect effects from the Proposed Action, and therefore, there would be no cumulative effects.

4.2.9 Migratory Birds

The CEAA is CPW Game Management Unit 22, an area of 632,894 acres. Past and present analyzed surface disturbing activities within the CEAA are estimated to equal 16,771 acres (2.6 percent). Disturbance from foreseeable actions is estimated to be 3,740 additional acres (0.6 percent) (Table 4.1-3). Implementation of the Proposed Action would incrementally result in additive impacts to migratory bird species.

4.2.10 Aquatic Wildlife

The CEAA is the Upper Colorado River Basin which is addressed in the PBO for water depleting activities associated with BLM's fluid minerals program. The average annual depletion of 3.15

acre-feet per year would incrementally add to other water depletions in the Upper Colorado River Basin.

4.2.11 Cultural Resources

No CEAA has been determined for cultural resources. All effects to cultural resources would be avoided by relocating project disturbance, as necessary. Because there are no direct or indirect effects from the Proposed Action, there would be no cumulative effects.

4.2.12 Paleontological Resources

The CEAA is the combined Yellow Creek-Piceance Creek watershed, an area of 589,825 acres. Past and present analyzed surface disturbing activities within the CEAA are estimated to equal 15,810 acres (2.6 percent). Disturbance from foreseeable actions is estimated to be 3,553 additional acres (0.7 percent) (Table 4.1-3). Disturbance of up to 42.7 acres to the Uinta Formation from direct surface disturbance, as well as indirect effects to local fossils from collection, would incrementally and proportionally add to cumulative effects within the CEAA, which encompasses the bulk of the formation extent within the Piceance Basin.

4.2.13 Terrestrial Wildlife

The CEAA is CPW Game Management Unit 22, an area of 632,894 acres. Past and present analyzed surface disturbing activities within the CEAA are estimated to equal 16,771 acres (2.6 percent). Disturbance from foreseeable actions is estimated to be 3,740 additional acres (0.6 percent) (Table 4.1-3). Implementation of the Proposed Action would incrementally result in impacts to terrestrial wildlife species proportional to the approximately 42.7 acres of direct, as well as indirect effects of the project.

4.2.14 Visual Resources

The CEAA is the combined Yellow Creek-Piceance Creek watershed, an area of 589,825 acres. Past and present analyzed surface disturbing activities within the CEAA are estimated to equal 15,810 acres (2.6 percent). Disturbance from foreseeable actions is estimated to be 3,553 additional acres (0.7 percent) (Table 4.1-3). The increased human activity in the project area combined with ongoing oil and gas development, nahcolite extraction, livestock grazing, and recreation (hunting) would incrementally add to the sources of contrast to the casual observer looking into the project area. Project-associated traffic would temporarily alter the local visual environment within the CEAA.

4.2.15 Wastes, Hazardous or Solid

The CEAA is the combined Yellow Creek-Piceance Creek watershed, an area of 589,825 acres. Past and present analyzed surface disturbing activities within the CEAA are estimated to equal 15,810 acres (2.6 percent). Disturbance from foreseeable actions is estimated to be 3,553 additional acres (0.7 percent) (Table 4.1-3). Wastes generated by the Proposed Action would incrementally add to the wastes generated by other activities in the CEAA, mostly oil and gas development.

4.2.16 Fire Management

The CEAA is the combined Yellow Creek-Piceance Creek watershed, an area of 589,825 acres. Past and present analyzed surface disturbing activities within the CEAA are estimated to equal

15,810 acres (2.6 percent). Disturbance from foreseeable actions is estimated to be 3,740 additional acres (0.7 percent) (Table 4.1-3). The increased human activity in the project area combined with ongoing oil and gas, nahcolite extraction, livestock grazing, and recreation (hunting) would incrementally add to the risk for accidental fire and increase the presence of facilities that would cause an aggressive fire-fighting response to both accidental fires and wildfires. The increased human presence and activity would not alter the existing planned response of suppression in the project area.

4.2.17 Social and Economic Conditions

The CEAA is Rio Blanco County, an area of 2,062,720 acres (3,223 square miles). Implementation of the Proposed Action would incrementally add to public sector revenues. During construction, there would be a temporary incremental increase in the demand for workers, housing, and emergency services.

4.2.18 Forest Management

The CEAA is CPW Game Management Unit 22, an area of 632,894 acres. Past and present analyzed surface disturbing activities within the CEAA are estimated to equal 16,771 acres (2.6 percent). Disturbance from foreseeable actions is estimated to be 3,740 additional acres (0.6 percent) (Table 4.1-3). Removal of PJ forest in the project area would incrementally add to existing disturbed/reclaimed areas described in the Vegetation section. Within the CEAA are approximately 337,000 acres of PJ forest (Colorado Division of Water Resources, 2011). In addition to net loss of forest, the effects of fragmentation are important to consider as development increases. Removal or thinning of PJ forest leads to increased edge effects, and a loss of continuous core forest habitat.

4.2.19 Rangeland Management

The CEAA is the Square S Allotment, an area of 79,550 acres. Past and present analyzed surface disturbing activities within the CEAA are estimated to equal 2,445 acres (3.0 percent). Disturbance from foreseeable actions is estimated to be 779 additional acres (0.9 percent) (Table 4.1-3). Implementation of the Proposed Action would incrementally result in additional disturbance of 42.7 acres to regional range.

4.2.20 Floodplains, Hydrology, and Water Rights

The CEAA is the combined Yellow Creek-Piceance Creek watershed, an area of 589,825 acres. Past and present analyzed surface disturbing activities within the CEAA are estimated to equal 15,810 acres (2.6 percent). Disturbance from foreseeable actions is estimated to be 3,553 additional acres (0.7 percent) (Table 4.1-3). Impacts to floodplains, hydrology and water rights from the proposed action are not anticipated.

4.2.21 Realty Authorizations

The CEAA is the combined Yellow Creek-Piceance Creek watershed, an area of 589,825 acres. Past and present analyzed surface disturbing activities within the CEAA are estimated to equal 15,810 acres (2.6 percent). Disturbance from foreseeable actions is estimated to be 3,553 additional acres (0.7 percent) (Table 4.1-3). Implementation of the Proposed Action would incrementally result in additional effects to acreage contained within federal ROW grants in the CEAA.

4.2.22 Recreation

The CEAA is CPW Game Management Unit 22, an area of 632,894 acres. Past and present analyzed surface disturbing activities within the CEAA are estimated to equal 16,771 acres (2.6 percent). Disturbance from foreseeable actions is estimated to be 3,740 additional acres (0.6 percent) (Table 4.1-3). Implementation of the Proposed Action would incrementally result in a decrease in recreational attractiveness and opportunity within the project area for the 30-year life-of-project.

4.2.23 Access and Transportation

The CEAA is the combined Yellow Creek-Piceance Creek watershed, an area of 589,825 acres. Past and present analyzed surface disturbing activities within the CEAA are estimated to equal 15,810 acres (2.6 percent). Disturbance from foreseeable actions is estimated to be 3,553 additional acres (0.7 percent) (Table 4.1-3). Implementation of the Proposed Action would incrementally result in increased traffic loads for approximately 2,100 miles of State, BLM, and county roads within the CEAA.

5.0 CONSULTATION AND COORDINATION

5.1 Tribes, Individuals, Organizations, or Agencies Consulted

The BLM consulted with the Colorado State Historic Preservation Office. No Native American Religious Concerns are known in the area, and none have been noted by Northern Ute tribal authorities. Should recommended inventories or future consultations with Tribal authorities reveal the existence of such sensitive properties, appropriate mitigation and/or protection measures may be undertaken.

5.2 Interdisciplinary Review

Edge Environmental, Inc., an environmental consulting firm, with the guidance, participation, and independent evaluation of the BLM prepared this document. The BLM, in accordance with 40 CFR 1506.5 (a) and (c), is in agreement with the findings of the analysis and approves and takes responsibility for the scope and content of this document.

Bureau of Land Management White River Field Office

Name	Title	Area of Responsibility	Date Signed
Bob Lange	Hydrologist	Air Quality, Wastes (Hazardous or Solids), Water Quality (Surface and Ground), Hydrology and Water Rights, and Soils	8/2/2012
Amber Shanklin/Zoe Miller	Biological Technician-Plants/Ecologist	Areas of Critical Environmental Concern, Threatened and Endangered Plant Species	7/18/2012/ 9/20/2012
Michael Selle	Archeologist	Cultural Resources, Paleontological Resources	6/15/2012
Mary Taylor	Rangeland Management Specialist	Invasive, Non-Native Species, Vegetation, Rangeland Management	6/14/2012
Lisa Belmonte	Wildlife Biologist	Migratory Birds, Threatened, Endangered and Sensitive Animal Species, Terrestrial and Aquatic Wildlife, Wetlands and Riparian Zones	8/1/2012
James Roberts	Natural Resource Specialist/HazMat Coordinator	Wastes, Hazardous or Solid	8/1/2012
C. Schneckenburger	Outdoor Recreation Planner	Wilderness, Access and Transportation, Recreation,	7/10/2012
Jimmy Michels	Forester /Fire / Fuels Technician	Fire Management, Forest Management	7/16/2012
Paul Daggett	Mining Engineer	Geology and Minerals	7/17/2012
Janet Doll	Realty Specialist	Realty Authorizations	7/20/2012
Heather Sauls	Planning & Environmental Planner	NEPA Compliance	10/17/2012

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Name	Resource/Responsibility
Mary Bloomstran	Project Manager, Wastes, Hazardous or Solid, Geologic Resources
Carolyn Last	Document Control and Review
Jim Zapert (Carter Lake Consulting)	Air Quality and Climate
Dan Duce	Soils, Prime or Unique Farmlands
Nikie Gagnon	Water Resources, Land Tenure, ROW, Other Uses Mineral Resources
Rebecca Buseck	Invasive, Non-Native Species Vegetation Wetlands and Riparian Zones Special Status Plants
Archie Reeve	Migratory Birds Wildlife (Fish, Aquatic, and Terrestrial) Special Status Animal Species
Josh Moro	Cultural Resources, Paleontological Resources, Visual Resources, Recreation, Special Designations, Wild and Scenic Rivers, Range Management, Wild Horse and Burro, Forest Management, Fire and Fuels
Sandra Goodman	Socioeconomics Environmental Justice Transportation/Access
Dan Duce	Prime or Unique Farm Lands
Gabriele Walser (HydroGeo, Inc.)	Surface Water, Groundwater, Floodplains, Wetlands
Joe Fetzer (Petros Environmental)	Cumulative Impacts

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Appendix A

Common Names and Scientific Names for Animal and Plant Species

Appendix A
Common Names and Scientific Names for Animal and Plant Species

Mammals (in taxonomic order):
Townsend's big-eared bat, *Corynorhinus townsendii*
Fringed myotis, *Myotis thysanodes*
Spotted bat, *Euderma maculatum*
Deer mouse, *Peromyscus maniculatus*
Least chipmunk, *Tamias minimus*
Desert cottontail, *Sylvilagus audubonii*
Mountain cottontail, *Sylvilagus nuttallii*
Beaver, *Castor Canadensis*
Coyote, *Canis latrans*
Red fox, *Vulpes vulpes*
Black bear, *Ursus americanus*
Striped skunk, *Mephitis mephitis*
Badger, *Taxadea taxus*
Black-footed ferret, *Mustela nigripes*
Raccoon, *Procyon lotor*
Cougar (Mountain lion), *Felis concolor*
Canada lynx, *Lynx canadensis*
Elk, *Cervus elaphus*
Mule deer, *Odocoileus hemionus*

Birds (in taxonomic order):
Ring-necked pheasant, *Phasianus colchicus*
Blue (dusky) grouse, *Dendragapus obscurus*
Greater sage-grouse, Ce*ntrocercus urophasianus*
Columbian sharp-tailed grouse, *Tympanuchus phasianellus columbianus*
Merriam's turkey, *Meleagris gallopavo*
Bald eagle, *Haliaeetus leucocephalus*
Northern harrier, *Circus cyaneus*
Sharp-shinned hawk, *Accipiter striatus*
Cooper's hawk, *Accipiter cooperii*
Northern goshawk, *Accipter gentilis*
Red-tailed hawk, *Buteo jamaicensis*
Golden eagle, *Aquila chrysaetos*
American kestrel, *Falco sparvarius*
Prairie falcon, *Falco mexicanus*
Mourning dove, *Zenaida macroura*
Long-eared owl, *Asio otus*
Flammulated owl, *Otus flammeolus*
Great horned owl, *Bubo virginianus*
Northern pygmy owl, *Glaucidium californicum*
Northern saw-whet owl, *Aegolius acadicus*
Common nighthawk, *Chordelies minor*
Pinyon jay, *Gymnorhinus cyanocephalus*
Common raven, *Corvus corax*
Juniper titmouse, *Baeolophus griseus*
Sage thrasher, *Oreoscoptes montanus*
Green-tailed towhee, *Pipilo chlorurus*

Brewer's sparrow, *Spizella breweri*
Vesper sparrow, *Pooecetes gramineus*
Sage sparrow, *Amphispiza belli*
Brewer's blackbird, *Euphagus cyanocephalus*

Reptiles (in taxonomic order):
Midget faded rattlesnake, *Crotalus viridis concolor*

Amphibians (in taxonomic order):
Boreal toad, *Bufo boreas boreas*
Great Basin spadefoot, *Spea intermontana*
Northern leopard frog, *Rana pipiens*

Fish (in taxonomic order):
Colorado River cutthroat trout, *Oncorhynchus clarkii pleuriticus*
Colorado pikeminnow, *Ptychocheilus lucius*
Roundtail chub, *Giia robusta*
Humpback chub, *Gila cypha*
Bonytail chub, *Gila elegans*
Razorback sucker, *Xyrauchen texanus*

Plants (in alphabetical order):
Indian ricegrass, *Achnatherum hymenoides*
Common burdock, *Arctium minus*
Fringed sagebrush, *Artemisia frigida*
Big sagebrush, *Artemisia tridentata*
Wyoming big sagebrush, *Artemisia tridentate wyomingensis*
Draba milkvetch, *Astragalus spatulatus*
Shadscale, *Atriplex confertifolia*
Blue grama, *Bouteloua gracilis*
Downy brome (Cheatgrass), *Bromus tectorum*
Musk thistle, *Carduus nutans*
Elk sedge, *Carex geyeri*
Diffuse knapweed, *Centaurea diffusa*
Spotted knapweed, *Centaurea maculosa*
Rubber rabbitbrush, *Chrysothamnus nauseosus*
Low (green) rabbitbrush, *Chrysothamnus viscidiforus*
Canada thistle, *Cirsium arvense*
Houndstongue (field bindweed), *Cynoglossum officinale*
Bottlebrush squirreltail. *Elymus elymoides*
Buckwheat, *Eriogonum* sp.
Idaho fescue, *Festuca idahoensis*
Black henbane, *Hyoscyamus niger*
Utah juniper, *Juniperus osteosperma*
Kochia, *Kochia scoparia*
Winterfat, *Kraschenninnikovia lanata*
Basin wildrye, *Leymus cinereus*
Saline wildrye, *Leymus salinus*
Piceance bladderpod, *Lesquerella parviflora*
Dalmatian toadflax, *Linaria dalmatica, L. genistifolia*
Yellow toadflax, *Linaria vulgaris*

Rayless aster, *Macaranthera grindeliodes*
Pricklypear cactus, *Opuntia* sp.
Western wheatgrass, *Pascopyrum smithii*
Grahm's beardtongue, *Penstemon grahamii*
Cushion phlox, *Phlox pulvinata*
Sharpleaf twinpod, *Physaria acutifolia*
Dudley Bluffs bladderpod, *Physaria congesta*
Dudley Bluffs twinpod, *Physaria obcordata*
Pinyon pine, *Pinus edulis*
Bluebunch wheatgrass, *Pseudoroegneria spicata*
Douglas-fir, *Pseudotsuga menziesii*
Antelope bitterbrush, *Purshia tridentata*
Oak, *Quercus* sp.
Russian thistle, *Salsola iberica*
Black greasewood, *Sarcobatus vermiculatus*
Needle-and-thread grass, *Stipa comata*
Common mullein, *Verbascum thapsus*

Appendix B

Threatened, Endangered, and Sensitive Species not Included for Discussion in the EA

Appendix B
Threatened, Endangered, and Sensitive Species not Included for Discussion in the EA

Common Name/ Scientific Name	Habitat [1]/ Known Occurrences	Potential Occurrence within the Project Area [2, 3]	Federal Status	State Status or Rank [4, 5]
Mammals (in taxonomic order)				
White-tailed Prairie Dog *Cynomys leucurus*	Open shrublands, arid grass-shrub, and mountain valleys mostly in semidesert shrublands, also agriculture/pasture.	None	BLM-S	
Northern Pocket Gopher *Thomomys talpoides*	Agricultural and pasture lands, semidesert shrublands, and grasslands from 5,000 feet upwards into alpine tundra. In Rio Blanco County.	Unlikely		SC
Kit Fox *Vulpes macrotis*	Semidesert shrubland and margins of pinyon-juniper woodlands, saltbush, sagebrush, and greasewood. Distribution does not include Rio Blanco County.	None		SE
Wolverine *Gulo gulo luscus*	Wolverine populations currently exist in the northern Rocky Mountains, although there is no evidence that there is a population in Colorado at the present.	None	FC	SE
River Otter *Lutra Canadensis*	Riparian habitats that traverse ecosystems ranging from semidesert shrublands to montane and subalpine forests. Historically in Rio Blanco County.	None		ST
Black-footed Ferret *Mustela nigripes*	Black-footed ferrets were reintroduced in northwest Colorado in 1999 to the Coyote Basin in Rio Blanco County on the Colorado-Utah border west of Rangely and, in 2001, to Wolf Creek in Moffat County southeast of Dinosaur National Monument (Holmes, 2008). The Coyote Basin site is approximately 40 miles west/northwest and the Wolf Creek site is over 20 miles northwest of the project area. No prairie dog colonies occur and suitable habitat for black-footed ferrets is not present in the vicinity of the project area.	None	FE	
Canada Lynx *Lynx Canadensis*	The closest denning and wintering habitat to the project area is within the White River National Forest, approximately 23 miles to the east. Because there is little suitable denning or wintering habitat on BLM-administered lands, dispersing lynx are not expected within the WRFO planning area.	None	FT	

Common Name/ Scientific Name	Habitat [1]/ Known Occurrences	Potential Occurrence within the Project Area [2, 3]	Federal Status	State Status or Rank [4, 5]
Birds (in taxonomic order)				
American White Pelican *Pelecanus erythrorhynchos*	Larger reservoirs, breeding on islands in eastern Colorado.	None	BLM-S	
White-faced Ibis *Plegadis chihi*	Marsh edges, wet meadows, reservoir shorelines. Present in Rio Blanco County.	None	BLM-S	
Greater Sage-grouse *Centrocercus urophasianus*	A sagebrush obligate species. Known occupied, brood rearing, and leks are over 5.5 miles away from the proposed Meeker Gas Plant Expansion. The project area has been mapped as vacant or unknown habitat for Parachute/Piceance/Roan population.	Unlikely	FC BLM-S	SC
Columbian Sharp-tailed Grouse *Tympanuchus phasianellus columbianus*	Gambel oak, serviceberry shrublands, sagebrush shrublands, aspen forests, and irrigated cropland and fields. Present in eastern Rio Blanco County.	Unlikely	BLM-S	SC
Northern Goshawk *Accipter gentilis*	Forests of aspen, ponderosa pine, lodgepole pine, often near clearings and water. Present in Rio Blanco County.	Unlikely	BLM-S	
Ferruginous Hawk *Buteo regalis*	Grassland, semidesert shrublands, rare in pinyon-juniper, nests on isolated structures. Present in Rio Blanco County.	Unlikely	BLM-S	SC
American Peregrine Falcon *Falco peregrinus anatum*	Open conifer forests, riparian forests, and cliffs; migrant in western Colorado. Present in Rio Blanco County.	Unlikely	BLM-S	SC
Greater Sandhill Crane *Grus canadensis tabida*	Migrants - mudflats around reservoirs, agriculture, moist meadows. Breeding - parks with grassy hummocks, beaver ponds, natural ponds with willows or aspens. Present in Rio Blanco County.	None		SC
Mountain Plover *Charadrius montanus*	Short-grass grasslands, with scattered cactus, often in overgrazed sites and prairie dog colonies. Present in Rio Blanco County.	None	BLM-S	SC
Long-billed Curlew *Numenius americanus*	Short-grass grasslands, wheat fields, dry land agriculture, nests near water. Present in Rio Blanco County.	None	BLM-S	SC

Common Name/ Scientific Name	Habitat [1]/ Known Occurrences	Potential Occurrence within the Project Area [2, 3]	Federal Status	State Status or Rank [4, 5]
Yellow billed cuckoo *Coccyzus americanus*	No known population of this species exists within the WRFO planning area. There is no suitable habitat (riparian forests dominated by cottonwoods) for this species in the project area.	None	FC	
Western Burrowing Owl *Athene cunicularia*	Grasslands, semi-desert shrublands, in or near prairie dog colonies. Present in Rio Blanco County.	None	BLM-S	ST
Reptiles (in taxonomic order)				
Longnose Leopard Lizard *Gambelia wislizenii*	Greasewood and sagebrush shrublands on deep sandy soils on flat or gently sloping, open ground. Presence unknown but potentially in Rio Blanco County.	None		SC
Amphibians (in taxonomic order)				
Boreal Toad *Bufo boreas boreas*	Pond margins, marshes, wet meadows, riparian areas in subalpine zones. Present in Rio Blanco County.	None	BLM-S	SE
Northern Leopard Frog *Rana pipiens*	Margins, banks of marshes, ponds, streams, other permanent water. Present in Rio Blanco County.	None	BLM-S	SC
Fishes (in taxonomic order)				
Colorado River Cutthroat Trout *Oncorhynchus clarki pleuriticus*	Clear, headwater streams in the Colorado River drainage, clear mountain streams. Present in the Upper White River drainage in Rio Blanco County.	None	BLM-S	SC
Roundtail Chub *Gila robusta*	Colorado River drainage, mostly large rivers, also streams and lakes. Present in the White River in Rio Blanco County.	None	BLM-S	SC
Mountain Sucker *Catostomas platyrhynchus*	Small rivers and streams with moderate currents and with gravel, sand, mud substrates. Present in the White River, Yellow Creek, and Piceance Creek, Rio Blanco County.	None	BLM-S	SC
Flannelmouth Sucker *Catostomas latipinnis*	Larger streams and rivers with riffles, eddies, backwaters. Present in Rio Blanco County in Piceance Creek and lower Yellow Creek.	None	BLM-S	SC
Bluehead Sucker *Catostomus discobolus*	Headwater streams to large rivers with moderate velocity, not found in standing water. Present in Rio Blanco County within the White River and larger tributaries.	None	BLM-S	SC

Common Name/ Scientific Name	Habitat [1]/ Known Occurrences	Potential Occurrence within the Project Area [2, 3]	Federal Status	State Status or Rank [4, 5]
Plants (in alphabetical order)				
Narrowstem Gilia *Aliciella (Gilia) stenothyrsa*	Silty to gravelly loam soils derived from the Green River or Uinta Formations. Found in open places often in hills of pinyon-juniper, salt desert shrub, sagebrush, and mountain-mahogany communities. Elevations: 5,000 to 9,400 feet. Rio Blanco County, closest record 17 miles from the project area.	Unlikely	BLM-S	S1
Debris Milkvetch *Astragalus detritalis*	Pinyon-juniper and mixed desert shrub communities with *Artemisia, Stipa, Phlox, Trifolium*; often rocky soils ranging from sandy clays to sandy loams and on alluvial terraces with cobbles. Elevations: 5,400 to 7,200 feet. Rio Blanco County, closest record 19 miles from the project area.	Unlikely	BLM-S	S2
Duchene Milkvetch *Astragalus duchesnensis*	Pinyon-juniper and desert shrub communities on sandstone or shale outcrops. Elevations: 4,600 to 6,400 feet. Rio Blanco County, closest record approximately 40 miles from the project area.	Unlikely	BLM-S	S1S2
Tufted Cryptantha *Cryptantha (Oreocarya) caespitosa*	Pinyon-juniper, sagebrush usually with other cushion plants on sparsely vegetated gypsum, clay or shale knolls. Elevations: 6,200 to 8,100 feet. Moffat County, closest record >55 miles from the project area.	None	BLM-S	S2
Rollins Cryptantha (Catseye) *Cryptantha (Oreocarya) rollinsii*	White shale slopes of the Green River Formation; in pinyon-juniper or cold desert shrubland communities. Elevations: 5,300 to 5,800 feet. Rio Blanco County, closest record 34 miles from the project area.	None	BLM-S	S2
Ephedra Buckwheat *Eriogonum ephredoides*	White clay, white shale slopes, Parachute Creek formation in big sagebrush with *Atriplex, Cercocarpus, Juniperus, Cryptantha* Elevations: 5,500 to 6,000 feet. Rio Blanco County, closest record 37 miles from the project area.	None	BLM-S	S1
Cathedral Bluff Dwarf Gentian *Gentianella tortuosa*	Found in sagebrush through spruce-fir forests on shale outcrops of the Green River Formation. Elevations: 8,500 to10,800 feet. Rio Blanco County, closest record 18 miles from the project area.	Unlikely	BLM-S	S1
Flaming Gorge Evening Primrose *Oenothera acutissima*	Sandy, gravelly, rocky soils in seasonal wet meadows, depressions, drainages in mixed conifer, sagebrush shrub. Elevations: 5,300 to 8,500 feet. Moffat County, closest record 47 miles from the project area.	None	BLM-S	S2

Common Name/ Scientific Name	Habitat [1]/ Known Occurrences	Potential Occurrence within the Project Area [2, 3]	Federal Status	State Status or Rank [4, 5]
Colorado (Lingulate) Feverfew *Parthenium (Bolophyta) ligulatatum*	Barren shale knolls or semibarren calciferous or gypsiferous outcrops in salt desert shrub, serviceberry, rabbitbush, Indian rice-grass, greasewood, galleta, black sagebrush, pygmy sagebrush, and pinyon-juniper communities. Elevations: 5,500 to 7,000 feet. Rio Blanco County, closest record 39 miles from the project area.	None	BLM-S	S2
Cathedral Bluff (Sun-loving) Meadowrue *Thalictrum heliophilum*	Open sunny sites on sparsely vegetated, steep shale talus slopes of the Green River Formation in Skinner Ridge PCA. Elevations: 6,300 to 8,800 feet. Rio Blanco County, closest record 17 miles from the project area.	Unlikely	BLM-S	S2

[1] Habitats described by:
Wildlife and Fish: CDOW, 2009a, Andrews and Righter, 1992; Fitzgerald et al, 1994; Hammerson, 1986; Woodling, 1985.
Plants: CNHP, 1999; and Culver et al., 2008

[2] Potential occurrence based on species' habitat associations and known distributions (CDOW, 2009b).
No Occurrence: May occur in Rio Blanco County but restricted distributions are distant and habit is not present in the Proposed Action project area.
Occurrence Unlikely: May occur in Rio Blanco County and marginally suitable habitat present in project area.
Occurrence Possible: Occurs in Rio Blanco County, suitable habitat is present, but not observed in project area.

[3] Potential occurrence based on species' habitat associations and distances of known occurrences from CU, CSU, and RM herbarium records.
None: May occur in Rio Blanco County but restricted distributions are distant (>30 miles) and habit is not present in the project area.
Unlikely: May occur in Rio Blanco County but no suitable habitat present in project area.
Possible: Occurs in Rio Blanco County, suitable habitat is present, but not observed in project area.

[4] State Status (wildlife and fish): SE = State Endangered, ST = State Threatened, SC = Special Concern:

[5] Colorado Natural Heritage Program ranks (plants): S1= Critically Imperiled, S2= Imperiled, S3= Vulnerable, S4 = Apparently Secure. A "B" after the rank indicates the rank applies to Breeding Habitat.

References

Andrews, R. and R. Righter. 1992. Colorado Birds: a Reference to their Distribution and Habitat. Denver Museum of Natural History. Denver, Colorado.

Colorado Division of Wildlife. 2009a. Colorado Herptetofauna Atlas. Available at: http://ndis.nrel.colostate.edu/herpatlas/coherpatlas/.

Colorado Division of Wildlife. 2009b. Natural Diversity Information Source. Colorado State University. Available at: http://ndis.nrel.colostate.edu/.

Colorado Natural Heritage Program. 1999. Colorado Rare Plant Field Guide. Colorado Rare Plant Technical Committee, Colorado Natural Heritage Program, Fort Collins, Colorado.

Culver, D.R., P. Lyon, and J. Huggins. 2008. Survey of Critical Biological Resources, Rio Blanco County, Colorado. Colorado Natural Heritage Program, Fort Collins, Colorado.

Fitzgerald, J.P., C.A. Meaney, and D.M. Armstrong. 1994. Mammals of Colorado. Denver Museum of Natural History and University Press of Colorado. Niwot, Colorado.

Hammerson, G.A. 1986. Amphibians and Reptiles in Colorado. Colorado Division of Wildlife, Denver, Colorado.

Woodling, J. 1985. Colorado's Little Fish – A Guide to the Minnows and Other Lesser Known Fishes in the State of Colorado. Colorado Division of Wildlife. Denver, Colorado.

Appendix C

Conditions of Approval

Air Quality

1. Enterprise shall comply with all applicable local, state, and federal air quality laws, statutes, regulations, standards, and implementation plans. Enterprise shall provide documentation of this compliance to BLM, if requested.

Soils

2. All construction and travel on roads shall stop until soils dry if vehicles and equipment form ruts greater than 3 inches deep. Vegetation clearing and soil segregation activities shall also cease if ruts greater than 3 inches are observed in soils.
3. Soil disturbing activities shall cease when winds exceed 30 mph or when dust cannot be controlled with water as a dust suppressant. If windy conditions warrant the suspension of construction activities, the Reality Specialist with the BLM shall be notified through the Environmental Monitor.
4. To ensure successful final reclamation, topsoil salvaged from the facility shall be re-spread to the greatest degree practical on cut slopes, fill slopes prior to seeding. Topsoil shall not be stored or spread more than 3 feet thick to retain its viability for final reclamation and protect it from erosion. BLM recommends seed mix #2 for re-seeding the topsoil piles.

Surface and Groundwater Quality

5. The internal retention basins for Meeker III and IV shall be lined with a synthetic liner(s) with a minimum thickness of 24 mils and shall be of a high-density polyethylene, polypropylene, poly vinyl chloride, hypalon, or other synthetic material that is impervious, weather resistant, and resistant to deterioration when in contact with hydrocarbons, aqueous acids, alkali, fungi, or other substances. The synthetic liner(s) shall also be resistant to deterioration by ultraviolet light, punctures and tearing, and shall be designed for the life of the retention basins. The retention basins shall be padded with material if necessary to reduce potential damage to the liner by sharp rock edges.
6. Retention basins for Meeker III and IV shall be constructed, monitored, and operated to provide for a minimum of two (2) feet of freeboard at all times and should not be breached (cut) when fluids are present. Any fluids or solids removed from the pit should be disposed of in an approved facility.

Vegetation

7. Surface disturbances associated with the gas plant expansion and power line right-of-way shall be clearly flagged prior to construction to minimize effects on vegetation adjacent to the project area.

8. WREA shall flag an access route within the permitted power line right-of-way to minimize removal of trees and shrubs for access by construction vehicles.
9. If possible, the topsoil and herbaceous vegetation shall not be cleared in the radius around the power poles. Vegetation shall be removed by brush-hogging with no topsoil disturbance.
10. Once the power line is installed, all disturbed areas shall be reseeded at the first appropriate seeding window. The BLM recommends using seed mix #2.
11. All disturbed areas shall be reseeded at the first appropriate seeding window. The BLM recommends using seed mix #2 outlined below. Final reclamation shall use the seed mix and reclamation practices approved by the BLM at that time.

Cultivar	**Common Name**	**Scientific Name**	**Application Rate (lbs PLS/acre)**
Arriba	Western Wheatgrass	*Pascopyrum smithii*	4
Rimrock	Indian Ricegrass	*Achnatherum hymenoides*	3.5
Whitmar	Bluebunch Wheatgrass	*Pseudoroegneria spicata ssp. inermis*	4
Lodorm	Green Needlegrass	*Nassella viridula*	2.5
Timp	Northern Sweetvetch	*Hedysarum boreale*	3
	Sulphur Flower Buckwheat	*Eriogonum umbellatum*	1.5

12. If, after two growing seasons, the following success criteria are not achieved, then the steps will be reassessed in consultation with the BLM WRFO and additional seeding at an appropriate seeding window will occur. Success criteria to achieve:
    - Vegetation monitoring (method approved by the BLM) reveals that the total vegetative ground cover in the reseeded area is less than 80 percent of foliar cover of the desired plant community (as determined by the BLM).
    - The resulting plant community must have at least five desirable plant species, at least two of which must be a forb or shrub, each comprising at least three percent relative cover, none of which may exceed 70 percent relative cover individually.

<u>Invasive Non-Native Species</u>

13. Use of pesticides shall comply with the applicable federal and state laws. Pesticides shall be used only in accordance with their registered uses and within limitations imposed by the Secretary of the Interior. Prior to the use of pesticides, Enterprise/WREA shall obtain from the AO written approval of a pesticide use proposal (PUP) showing the type and quantity of material to be used, pest(s) to be controlled, method of application, location of storage and disposal of containers, and any other information deemed necessary by the AO. Emergency use of pesticides shall be approved in writing by the AO prior to such use.
14. Enterprise/WREA shall be responsible for weed control on disturbed areas within the right-of-way throughout the life of the project and through final abandonment.

15. Enterprise/WREA are responsible for consultation with the AO and/or local authorities for acceptable weed control methods (within limits imposed in the grant stipulations.)

16. All construction equipment and vehicles would be cleaned prior to entering BLM Weed Free Zones.

17. All hay, straw, unprocessed feed, and seed used in BLM Weed Free Zones would be certified free of specified noxious weeds listed in Colorado Weed Free Forage Certification Standards.

18. All authorized users of disturbed areas would be required to inventory for noxious weeds in both the spring and fall.

Sensitive Animal Species

19. Enterprise and their contractors shall observe all posted speed limits.

20. Enterprise shall take precaution where wildlife crossing signs are placed along RBC 5.

Migratory Birds

21. Enterprise/WREA shall avoid vegetation removal during the migratory bird nesting period, generally May 15 to July 15.

22. WREA shall utilize brush-hogging techniques to clear vegetation within the power line right-of-way.

23. If construction would commence within the raptor nesting season (May 15 to August 15), Enterprise/WREA would conduct additional raptor surveys and follow appropriate temporal and spatial buffers recommended by the BLM WRFO.

Aquatic Wildlife

24. Process water used for operations and dust abatement during construction is considered a depletion of the Colorado River Basin that jeopardizes the continued existence of four endangered fish species, including the Colorado pikeminnow. Enterprise and the BLM have agreed to put this project under the FWS' Programmatic Biological Opinion in order to streamline the consultation process with the FWS.

Terrestrial Wildlife

25. Construction of the power line and any construction activities associated with the expansion of the gas plant shall be prohibited in mule deer and elk severe winter range between December 1 and April 30. An exception may be granted by the Field Manager if, after consultation with Colorado Parks and Wildlife, it is determined that the Proposed Action would not interfere with habitat function or compromise animal condition within the project vicinity.

26. The power line route shall be revegetated with species that are palatable for wildlife. Weeds shall be controlled to maintain native vegetation. Final reclamation shall use the seed mix and reclamation practices recommended by the BLM at that time.

Cultural Resources

27. Enterprise is responsible for informing all persons who are associated with the project that they will be subject to prosecution for knowingly disturbing archaeological sites or for collecting artifacts.

28. If any archaeological materials are discovered as a result of operations under this authorization, activity in the vicinity of the discovery will cease, and the BLM WRFO Archaeologist will be notified immediately. Work may not resume at that location until approved by the AO. Enterprise will make every effort to protect the site from further impacts including looting, erosion, or other human or natural damage until BLM determines a treatment approach, and the treatment is completed. Unless previously determined in treatment plans or agreements, the BLM will evaluate the cultural resources and, in consultation with the State Historic Preservation Office (SHPO), select the appropriate mitigation option within 48 hours of the discovery. Enterprise, under guidance of the BLM, will implement the mitigation in a timely manner. The process will be fully documented in reports, site forms, maps, drawings, and photographs. The BLM will forward documentation to the SHPO for review and concurrence.

29. Pursuant to 43 CFR 10.4(g), Enterprise must notify the AO, by telephone and written confirmation, immediately upon the discovery of human remains, funerary items, sacred objects, or objects of cultural patrimony. Further, pursuant to 43 CFR 10.4(c) and (d), Enterprise must stop activities in the vicinity of the discovery and protect it for 30 days or until notified to proceed by the AO.

Paleontological Resources

30. Enterprise is responsible for informing all persons who are associated with the project operations that they will be subject to prosecution for disturbing or collecting vertebrate fossils, collecting large amounts of petrified wood (over 25lbs./day, up to 250lbs./year), or collecting fossils for commercial purposes on public lands.

31. If any paleontological resources are discovered as a result of operations under this authorization, Enterprise or any of his agents must stop work immediately at that site, immediately contact the BLM Paleontology Coordinator, and make every effort to protect the site from further impacts, including looting, erosion, or other human or natural damage. Work may not resume at that location until approved by the AO. The BLM or designated paleontologist will evaluate the discovery and take action to protect or remove the resource within 10 working days. Within 10 days, the operator will be allowed to continue construction through the site, or will be given the choice of either (a) following the Paleontology Coordinator's instructions for stabilizing the fossil resource in place and avoiding further disturbance to the fossil resource, or (b) following the Paleontology

Coordinator's instructions for mitigating impacts to the fossil resource prior to continuing construction through the project area.

32. Any excavations into the underlying native sedimentary stone must be monitored by a permitted paleontologist. The monitoring paleontologist must be present before the start of excavations that may impact bedrock.

Visual Resources and Scenic Byways

33. To the extent practicable and safe, aboveground facilities shall be painted to blend with the surrounding landscape characteristics with an appropriate color selected from the BLM Standard Environmental Colors chart.

34. Disturbed areas within the power line right-of-way shall be re-contoured and re-vegetated to blend with the natural topography as soon as possible after disturbance, where practicable.

35. Fences would be coated or painted with non-reflective surfacing, or an appropriate color from the BLM Standard Environmental Colors chart would be used to paint them.

Wastes, Hazardous or Solid

36. The release of any chemical, oil, petroleum product, produced water, or sewage, etc., (regardless of quantity) must be reported to the Bureau of Land Management – WRFO Hazardous Materials Coordinator at (970) 878-3800.

37. There shall not be any traces of oil or solvents in the water used as a dust suppressant. Only water needed for abating dust shall be applied; dust abatement shall not be used as a water disposal option under any circumstances.

Fire Management

38. Enterprise shall notify the Craig Interagency Dispatch Center of any fires during construction.

    - The reporting party will inform the dispatch center of fire location, size, status, smoke color, aspect, fuel type, and provide their contact information.

    - The reporting party, or a representative of should remain nearby, in a safe location, in order to make contact with incoming fire resources to expedite actions taken towards an appropriate management response.

    - The applicant and contractors will not engage in any fire suppression activities outside the approved project area. Accidental ignitions caused by welding, cutting, grinding, etc. will be suppressed by the applicant only if employee safety is not endangered and if the fire can be safely contained using hand tools and portable hand pumps. If chemical fire extinguishers are used the applicant must notify incoming fire resources on extinguisher type and the location of use.

- Natural ignitions caused by lightning will be managed by Federal fire personnel. If a natural ignition occurs within the approved project area, the fire may be initially contained by the applicant only if employee safety is not endangered. The use of heavy equipment for fire suppression is prohibited, unless authorized by the Field Office Manager.

Forest Management

39. First, woody material will be chipped and stockpiled for later use in reclamation. Woods chips can be incorporated into the topsoil layer to add an organic component to the soil to aid in reclamation success.

40. Woody materials, not used for woods chips, required for reclamation shall be removed in whole with limbs intact and shall be stockpiled along the margins of the authorized use area separate from the topsoil piles. Once the disturbance has been recontoured and reseeded, stockpiled woody material shall be scattered across the reclaimed area where the material originated. Redistribution of woody debris will not exceed 20-30% ground cover. Limbed material shall be scattered across reclaimed areas in a manner that avoids the development of a mulch layer that suppresses growth or reproduction of desirable vegetation. Woody material will be distributed in such a way to avoid large concentrations of heavy fuels and to effectively deter vehicle use.

41. Trees that must be removed for construction and are not required for reclamation shall be cut down to a stump height of 6 inches or less prior to other heavy equipment operation. These trees shall be cut in four foot lengths (down to 4 inches diameter) and placed in manageable stacks immediately adjacent to a public road to facilitate removal for company use or removal by the public.

42. Timberland and Woodland inventories must be completed prior to proposed action construction to estimate timber volume removal for billing purposes, and determine the presence of old growth. An inventory for Douglas-fir will be the first priority, and must be sent to the BLM Forester. If old growth is present, additional mitigation measures may be required, including adjusting the construction plan to minimize disturbance and maximize old growth retention and/or pipeline rerouting, if practicable.

43. Enterprise/WREA shall purchase trees removed according to the inventoried volume, prior to forest product removal resulting from the Proposed Action.

Rangeland

44. Livestock operators shall be provided adequate notification of construction schedules and locations to allow them to make necessary adjustments in their livestock grazing plans.

45. Enterprise shall ensure that heavy equipment does not exceed the GVW (gross vehicle weight) limits of cattle guards.

46. Any range improvement projects affected by this action shall be repaired to BLM standards.

Realty Authorizations

47. Enterprise/WREA shall construct, operate, and maintain the facilities, improvements, and structures within this right-of-way in strict conformity with the plan(s) of development which was (were) approved and made part of the grant. Any relocation, additional construction, or use that is not in accord with the approved plan(s) of development, shall not be initiated without the prior written approval of the authorized officer. A copy of the complete right-of-way grant, including all stipulations and approved plans(s) of development, shall be made available on the right-of-way area during construction, operation, and termination. Noncompliance with the above will be grounds for an immediate temporary suspension of activities if it constitutes a threat to public health and safety or the environment.

48. The holder shall contact the authorized officer at least five days prior to the anticipated start of construction and/or any surface disturbing activities. The authorized officer may require and schedule a preconstruction conference with the holder prior to the holder's commencing construction and/or surface disturbing activities on the right-of-way. The holder and/or his representative shall attend this conference. The holder's contractor, or agents involved with construction and/or any surface disturbing activities associated with the right-of-way, shall also attend this conference to review the stipulations of the grant including the plans(s) of development.

49. The holder shall submit a plan of development that describes in detail the construction, operation, maintenance, and termination of the right-of-way and its associated improvements and/or facilities. The plan shall include drawings in sufficient detail to enable a complete evaluation of all proposed structures, facilities, and landscaping to ensure compliance with the requirements of the grant and to ensure visual compatibility with the site. These drawings shall be the construction documents and must show dimensions, materials, finishes, etc. to demonstrate compliance with all requirements. The plans will be reviewed and, if appropriate, modified and approved by the authorized officer. An approved plan of development shall be made a part of the right-of-way grant.

50. The holder shall protect all survey monuments found within the right-of-way. Survey monuments include, but are not limited to, General Land Office and Bureau of Land Management Cadastral Survey Corners, reference corners, witness points, U.S. Coastal and Geodetic benchmarks and triangulation stations, military control monuments, and recognizable civil (both public and private) survey monuments. In the event of obliteration or disturbance of any of the above, the holder shall immediately report the incident, in writing, to the authorized officer and the respective installing authority if known. Where General Land Office or Bureau of Land Management right-of-way monuments or references are obliterated during operations, the holder shall secure the services of a registered land surveyor or a Bureau cadastral surveyor to restore the disturbed monuments and references using surveying procedures found in the Manual of Surveying Instructions for the Survey of the Public Lands in the United States, latest edition. The holder shall record such survey in the appropriate county and send a copy to the authorized officer. If the Bureau cadastral

surveyors or other Federal surveyors are used to restore the disturbed survey monument, the holder shall be responsible for the survey cost.

51. Enterprise/WREA shall contact existing rights-of-way holders prior to construction and coordinate activities to avoid impacts to existing natural gas pipeline, water line, power line, and roads.

Recreation

52. Enterprise/WREA shall post signs on access roads to inform recreationists of development activities and construction schedules and promote the avoidance of accidents, especially during hunting seasons.

Access and Transportation

53. Enterprise and their contractors shall follow posted speed limits and implement a speed limit of 30 miles per hour where speeds are not posted and on unpaved roads.