

**United States Department of the Interior
Bureau of Land Management**

**Environmental Assessment
DOI-BLM-CO-N05-2014-0080-EA**

***Retamco's Proposed Federal 3-104-26-9 Well Pad and
Associated Road and Pipeline Infrastructure***

July 2015

U.S. Department of the Interior
Bureau of Land Management
Northwest District
White River Field Office
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BLM



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1. INTRODUCTION

1.1. Identifying Information

Project Title: Retamco Operating Inc.'s Proposed Federal 3-104-26-9 Well Pad and Associated Road and Pipeline Infrastructure

Legal Description: T. 3 N., R. 104 W., Sec. 26, 6th Principle Meridian

Applicant: Retamco Operating Inc.

NEPA Document Number: DOI-BLM-CO-N05-2014-0080-EA

Lease/Casefile/Project Number: COC67423
COC76582 (Pipeline ROW)

1.2. Background

The Bureau of Land Management (BLM) received a Notice of Staking (NOS) from Retamco Operating Inc. on May 9, 2014 for the Federal 3-104-26-9 well pad, access road, and pipeline. An onsite was conducted on May 15, 2014, and an Application for Permit to Drill (APD) was received on May 20, 2014. This is for a well pad with a single natural gas well.

1.3. Purpose and Need for Action

The purpose of the action is to provide the applicant the opportunity to develop oil and gas resources consistent with their federal oil and gas lease. The need for the action is established by the BLM's responsibility under the Mineral Leasing Act of 1920 (MLA), as amended [30 USC 181 et seq.], the Onshore Oil and Gas Leasing Reform Act of 1987, and the Energy Policy Act of 2005. The MLA authorizes the BLM to issue oil and gas leases for the exploration of oil and gas and permit the development of those leases. It is the policy of the BLM to make mineral resources available for disposal and to encourage development of mineral resources to meet national, regional, and local needs while protecting other natural resources. The existing lease is a binding legal contract that allows development of the mineral by the lessee. The Federal Land Management and Policy Act and the Mineral Leasing Act allows for use of public land for rights-of-way for oil and gas infrastructure, with appropriate consideration of other public resources.

1.4. Decision to be Made

Based on the analysis contained in this EA, the BLM will decide whether to approve or deny the proposed Federal 3-104-26-9 well pad with associated Application for Permit to Drill (APDs) and any associated rights-of-way (ROWs), and if so, under what terms and conditions. Under the National Environmental Policy Act (NEPA), the BLM must determine if there are any significant environmental impacts associated with the Proposed Action warranting further analysis in an Environmental Impact Statement (EIS). The Field Manager is the responsible officer who will decide one of the following:

- To approve the APDs and ROW grants with design features as submitted;
- To approve the APDs and ROW grants with additional mitigation added;
- To analyze the effects of the Proposed Action in an EIS; or
- To deny the APDs and ROW grants.

1.5. Conformance with the Land Use Plan

The Proposed Action is subject to and is in conformance (43 CFR 1610.5) with the following land use plan:

Land Use Plan: White River Record of Decision and Approved Resource Management Plan (ROD/RMP)

Date Approved: July 1997

Decision Language: “Make federal oil and gas resources available for leasing and development in a manner that provides reasonable protection for other resource values.” (page 2-5)

“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.” (page 2-49)

1.6. Lease Stipulations & Lease Notices

Lease Serial Number: COC-67423

Effective Date of Lease: July1, 2004

Lease Stipulations:

Table 1. Stipulations and Lease Notices on the COC-67423 Lease

Exhibit Number	Type of Exhibit (Stipulation or Lease Notice)	General Purpose	Applies to All or a Portion of the Lease
CO-34	Lease Notice	Endangered Species Act Section 7 Consultation	All
WR-CSU-01	Controlled Surface Use Stipulation	Protecting Fragile Soils on Slopes Greater than 35 Percent & Saline Soils	<u>PM: 6 T:0030N R: 1040W</u> Section 35: NE, NW, E2SW, S2SW; Section 34: 1,2; Section 27: 1-4; Section 26: NWSW, S2SW; Section 26: E2NE, W2NW; Section 25: N2SW, SWSW, N2SE;
WR-LN-01	Lease Notice	Prairie Dog Towns	<u>PM: 6 T:0030N R:1040W</u> Section 25: SWNE, N2SE, SESE
WR-LN-02	Lease Notice	Paleontological Values	<u>PM: 6 T: 0030N R: 1040W</u> Section 35: ALL; Section 26: ALL;

			Section 25: SWNE, SW, N2SE, SESE;
WR-TL-08	Timing Limitation Stipulation	Protecting Big Game Severe Winter Range	PM: 6 T: 0030N R: 1040W Section 26: N2NE; Section 25: SWNE;

2. PUBLIC INVOLVEMENT

2.1. Scoping

NEPA regulations (40 CFR 1500-1508) require that the BLM use a scoping process to identify potential significant issues in preparation for impact analysis. The principal goals of scoping are to identify issues, concerns, and potential impacts that require detailed analysis. Scoping is both an internal and external process.

Scoping was the primary mechanism used by the BLM to initially identify issues. Internal scoping was initiated when the project was presented to the White River Field Office (WRFO) interdisciplinary team on May 20, 2014. External scoping was conducted by posting this project on the WRFO's on-line National Environmental Policy Act (NEPA) register on May 28, 2014.

3. PROPOSED ACTION AND ALTERNATIVES

3.1. Proposed Action

3.1.1. Project Components and General Schedule

Retamco Operating Inc. (Retamco) has requested authorization to construct the Federal 3-104-26-9 well pad and drill one natural gas well (Federal 3-104-26-9) (Figure 1). The applicant also has requested authorization to install approximately 27,800 feet (5.3 miles) of gathering lines, and 12,461 feet of newly-constructed, re-routed or improved access road to access the location. If approved, construction activities would begin upon approval. Moreover, if approved and implemented, this action would result in approximately 26.8 acres of surface disturbance (Table 1). At interim reclamation, the pad location disturbance would be approximately 0.8 acres, the road would be 4.6 acres, and the pipeline would go directly into final reclamation, for an interim reclamation disturbance of 5.4 acres.

Table 1. Proposed surface disturbance estimates for Retamco's proposed Federal 3-104-26-9 well pad and associated road and pipeline infrastructure.

Disturbance Feature	Dimensions (L x W, feet)	Acres (working surface)	Acres (disturbance footprint)
Well Pad	300 x 300	2.1	3.7
Access Road and Pipeline	12,461 x 50	4.6 ¹	14.3
Pipeline (2 inch)	15,339 ¹ x 25	8.8	8.8 ¹
Total		15.5	26.8

¹Pipeline along the road improvements/construction would be included in the 50 foot construction corridor; the 25 foot corridor for the pipeline is along the highway and county road.

The proposed well pad has been engineered to accommodate one natural gas well.

3.1.2. Design Features

The entire Surface Use Plan of Operations (SUPO) is incorporated into the Proposed Action and is available for review at the WRFO. Key design features included within the SUPO to reduce or eliminate resource conflicts include:

1. A dike will be constructed completely around those production facilities designed to hold fluids (i.e, production tanks, produced water tanks and /or heater treater). These dikes will be constructed of compacted subsoil, be lined with a 24 mil liner, hold 110 percent capacity of the largest tank, and be independent of the back cut.
2. The entire location will be fenced and a cattle guard placed at the entrance on the location. With that, the production pit will be flagged, but will not be fenced.
3. Pits- the reserved pits will be lined. A plastic/vinyl liner will have a permeability less than or equal to 1×10^{-7} cm/sec, will be chemically compatible with all substances which may be put into the pit, and will be installed so that it will not leak. Liners made of any man-made synthetic material will be of sufficient strength and thickness to withstand normal installation and pit use. The liner will be installed with sufficient bedding (either straw or dirt) to cover any rocks, will overlap the pit walls, extend under the mud tanks, and be covered with dirt and/or rocks to hold it in place. No trash, scrap pipe, etc. that could puncture the liner will be disposed of in the reserve pit.
4. Prior to the commencement of drilling operations, the entire location will be fenced according to the following standards (or lesser standard if approved by the Authorized Officer, Bureau of Land Management):
 - 1) 32-inch net wire shall be used with two strands of barbed wire on top of (above) the net wire.
 - 2) The net wire shall be no more than four (4) inches above ground. The first strand of barbed wire shall be three (3) inches above the net wire. Total height of the fence shall be at least 42 inches.
 - 3) Corner posts shall be cemented and/or braced in such a manner to keep the fence tight at all times.
 - 4) Standard steel, wood, or pipe posts shall be used between corner braces. The maximum distance between any two posts shall be no greater than 16 feet.
 - 5) All wire shall be stretched, by using a stretching device, before it is attached to the corner posts.
 - 6) A 14-foot cattle guard will be placed at the entrance on the location to protect livestock and wildlife from entering the location.
5. The fencing will be “set back” from the top of the cut slope, and the toe of the fill slopes a sufficient distance, to allow for reclamation of the well location upon abandonment. Said fencing will be maintained until such time as the well has been abandoned and the reclaimed areas have successfully re-vegetated.
6. Retamco will be responsible for informing all persons associated with this projects that they will be subject to prosecution for damaging, altering, excavating, or removing and archaeological, historical, or vertebrate fossil on the site. If archaeological, historical, or vertebrate fossil materials are discovered, the operator will suspend all operations that further disturb such materials and immediately contact the Authorized Officer.

Operations will not resume until written authorization to proceed issued by the Authorized Officer.

- a. Within five working days, the Authorized Officer will evaluate the discovery and inform the operator of actions that will be necessary to prevent loss of significant cultural or scientific values.
 - b. Retamco will be responsible for the cost of any mitigation required by the Authorized Officer. The Authorized Officer will provide technical and procedural guidelines for the conduct of mitigation. Upon verification from the Authorized Officer that the required mitigation has been completed, the operator will be allowed to resume operations.
7. Retamco will be responsible for weed control within the disturbed areas associated with the proposed well. The following weed control programs will be used to meet this condition.
- a. Weed Inspection/Prevention: Proposed disturbances (i.e. pipelines, right-of-ways, etc.) will be inspected for noxious weeds during staking and planning phases, as season permits. If noxious weeds are encountered at this time, Retamco may consider an optional pre-treatment using Roundup (10 days to 2 weeks minimum, prior to construction). Roundup would kill most everything in construction pathway, including the noxious weed seeds, to prevent them before disturbing and shaking any seeds free. Most importantly is that it biodegrades over time and does not have a long term residual effect within the soils. This will allow for a weed free seeding after construction is completed.
 - b. Contractors will be encouraged to clean equipment between job loading locations, to help prevent the transport of noxious weed seeds. Soil disturbance will be minimized as much as possible and disturbed locations will be seeded promptly (season permitting) with a certified weed free seed. If mulch is used for erosion control, it will be certified weed free.
 - c. There are currently 24 plant species designated as noxious weeds. The following species may be applicable to this project and may change during operations:
 1. Canada thistle
 2. Common burdock
 3. Common St. Johnswort
 4. Common Tansy
 5. Dalmation toadflax
 6. Diffuse knapweed
 7. Dyers woad
 8. Field bindweed
 9. Hoary cress (Whitetop)
 10. Houndstongue
 11. Leafy spurge
 12. Musk thistle
 13. Ox-eyed daisy
 14. Perennial pepperweed
 15. Perennial sowthistle
 16. Plumeless thistle
 17. Purple loostrife
 18. Quackgrass
 19. Russian knapweed
 20. Saltcedar
 21. Scotch thistle
 22. Skeletonleaf bursage
 23. Spotted knapweed
 24. Yellow toadflax
 - d. Locations within the project containing significant amounts of these designated weeds will be reported to the local weed and pest office for updating their maps. If any unidentified weeds become a concern, they will be brought to the location

weed and pest office for identification and control recommendations. Ongoing communication will be kept with the BLM and local agencies to address any concerns that may arise regarding weed problems.

- e. Weed treatments will be treated with suitable herbicides selected by the BLM or the certified applicator, should any noxious or declared weeds be encountered within the disturbed areas associated with the proposed well pad area. All herbicides will be applied in compliance with the product labeling requirements, as well as applicable local, state and federal regulations. If herbicides will be used on Federal surface, a BLM Pesticide Use Proposal (PUP) will be obtained prior to any application. Hand pulling of weeds will be encouraged for small areas of infestation. Retamco will be responsible for weed control on disturbed areas within the exterior limits of this permit and will consult with the Authorized Officer and/or local authorities for acceptable weed control measures.

3.2. No Action Alternative

The No Action Alternative constitutes denial of the APD associated with the Proposed Action and denial of any associated ROW grants. Under the No Action Alternative, none of the proposed project components described in the Proposed Action would take place.

3.3. Alternatives Considered but Eliminated from Detailed Analysis

No feasible alternative surface locations were identified for the proposed project that would result in fewer impacts than the proposed location.

4. ISSUES

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 an environmental assessment (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. The following sections list the resources considered and the determination as to whether they require additional analysis.

4.1. Issues Analyzed

The following issues were identified during internal scoping as potential issues of concern for the Proposed Action. These issues will be addressed in this EA.

- **Air Quality**: Dust and equipment emissions from project construction, well drilling, well completions, and well production may impact the level of pollutants in the atmosphere and air quality standards.
- **Geology and Minerals**: The proposed project would encounter hydrocarbon bearing formations during drilling operations.

- **Soil Resources**: Surface disturbance associated with construction of well pads, roads, and pipeline trenches would result in disturbance of local soils.
- **Vegetation**: Initial surface disturbance associated with construction of the access road, pipeline and wellpad would result in 26.8 acres. At interim reclamation, the pad location disturbance would be approximately 0.8 acres, the road would be 4.6 acres, and the pipeline would go directly into final reclamation, for an interim reclamation disturbance of 5.4 acres.
- **Invasive, Non-Native Species**: Surface disturbance associated with construction of the wellpad, access road, and pipeline trenches would result in disturbance of local soils, thus increasing the possibility of invasive, non-native plant species being introduced.
- **Migratory Birds**: Well development activities would result in long-term modification of nesting habitat and would prompt avoidance-related disuse of otherwise suitable nesting habitat.
- **Terrestrial Wildlife**: Well development activities would result in the long-term modification of terrestrial habitats that provide big game and raptor forage and cover resources and influence the subsequent utility of these habitats in the support of seasonal use functions.
- **Special Status Animal Species**: Water used in the development of these wells would contribute to incremental depletions in streamflow-supporting downstream populations of fish listed under the Endangered Species Act, including: Colorado pikeminnow, razorback sucker, bonytail, and humpback chub.
- **Cultural Resources**: Only one extant site is located within APE and it is considered eligible for nomination to and listing on the National Register of Historic Places. Mitigation has been developed in consultation with the Colorado SHPO to insure no adverse impacts to the site.
- **Paleontological Resources**: The project is located in an area and geologic formation known to produce scientifically noteworthy fossil resources. Excavations into the underlying formation have the potential to impact noteworthy and scientifically important fossil remains.
- **Visual Resources**: This could potentially impact the Visual Resource Management class III objective of partially retaining the existing character of the landscape in this area. Also, exposed soils and the removal of vegetation could cause noticeable contrast for those traveling near the proposed project.
- **Livestock Grazing**: Surface disturbance associated with construction of the wellpad, access road, and pipeline would affect the amount of vegetation in the Artesia grazing allotment.
- **Realty Authorizations**: The access road is within the North Rangely oil & gas exploratory unit (COC76572X) boundary; therefore a ROW would not be required. The off-unit portion of the pipeline would require a right-of-way (ROW).
- **Hazardous or Solid Wastes**: The potential for harm to human health or the environment are presented by the risks associated with spills of fuel, oil, and/or hazardous substances

used during oil and gas operations. Accidental releases could cause soil, surface water, and/or groundwater contamination.

4.2. Issues Considered but not Analyzed

- **Surface and Groundwater Quality:** The soil disturbance would occur in the headwaters of Dripping Water Creek, an ephemeral tributary to the White River, so impacts to surface water quality would not occur. The drilling plan calls for a 400 foot surface casing which should be adequate to protect shallow aquifers that might be a source of groundwater in the future. No impacts would occur to municipal wells for the town of Dinosaur since the proposed drilling would be down gradient and south of these wells which are likely fed by runoff from Blue Mountain to the north.
- **Floodplains, Hydrology, and Water Rights:** The Proposed Action is not in a floodplain and is unlikely to impact surface hydrology. The project would use freshwater for operations with valid water rights.
- **Wetlands and Riparian Zones:** Riparian communities associated with the White River are the nearest to the Proposed Action. The river is separated from the nearest pipeline disturbance by a minimum 12.3 miles of ephemeral channel and from the pad by a minimum 16.8 miles of ephemeral channel.
- **Forestry and Woodland Products:** There are no forest woodlands that would be affected by the Proposed Action.
- **Aquatic Wildlife:** Aquatic habitat nearest the Proposed Action is the White River. The river is separated from the nearest pipeline disturbance by a minimum 12.3 miles of ephemeral channel and from the pad by a minimum 16.8 miles of ephemeral channel.
- **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.
- **Special Status Plant Species:** There is no occupied, suitable or potential habitat for any special status plant species (SSPS) within the Proposed Action. The nearest occurrence of occupied habitat for BLM sensitive species Debris milkvetch (*Astragalus detritalis*) is approximately one mile away in the Raven Ridge ACEC, which also hosts potential suitable habitat for the two other BLM sensitive species the White River beardtongue (*Penstemon scariosus* var. *ablifluvi*) and Graham's beardtongue (*Penstemon grahamii*). The Proposed Action should not generate any conceivable impacts to any SSPS or associated habitats due to distance from known populations and suitable habitat locations.
- **Areas of Critical Environmental Concern:** The nearest ACEC is Raven Ridge, approximately 0.6 miles to the southwest of the proposed pipeline that would run along County Road 21. There would be no conceivable impacts associated with the Proposed Action.
- **Wild Horses:** The proposed project is not located within the Piceance-East Douglas Herd Management Area or the North Piceance and West Douglas Herd Areas therefore this project would generate no impacts to wild horses.

- **Social and Economic Conditions:** There would not be any substantial changes to local social or economic conditions.
- **Environmental Justice:** According to recent Census Bureau statistics (2010), there are no minority or low income populations within the WRFO.
- **Prime and Unique Farmlands:** There are no Prime and Unique Farmlands within the project area.
- **Recreation:** The Proposed Action is located mostly on private surface lands and adjacent to State Highway 64 on BLM lands. Therefore there would be no impact to recreational opportunities or experiences as a result of implementing the Proposed Action.
- **Access and Transportation:** The Proposed Action would involve improving approximately 300 feet of an un-numbered BLM route which leads only to private property from State Highway 64. There would essentially be no change to public access and no impacts to the BLM transportation system as a result of implementing the Proposed Action.
- **Lands with Wilderness Characteristics:** There are no lands with wilderness characteristics identified within two miles of the Proposed Action.
- **Wilderness:** There are no designated Wilderness areas or Wilderness Study Areas located near the Proposed Action.
- **Fire Management:** The proposed project lies within the B3 Salt Desert Shrub Fire Management Polygon. All fires in this polygon will receive immediate and aggressive response. The Proposed Action will have little to no effect on the fire management for the WRFO.
- **Wild and Scenic Rivers:** There are no Wild and Scenic Rivers within the WRFO.
- **Scenic Byways:** There are no Scenic Byways within the project area.

5. AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

5.1. General Setting & Access to the Project Area

The project area is located in western Rio Blanco County in the upland salt desert north of Highway 64, but south of highway 40. The approximate elevation is approximately 5,800 feet, and the terrain is fairly flat. These ecological sites contain vegetation such as saltbush, Wyoming sagebrush, Indian rice grass, and bottle brush squirrel tail, among other species. Due to a previous range project that involved seeding, this area also has a strong component of crested wheatgrass. Also present is cheatgrass and halogeton.

5.2. Cumulative Impacts

5.2.1. Cumulative Impacts Analysis Areas

The geographic extent of cumulative impacts varies by the type of resource and impact. The timeframes, or temporal boundaries, for those impacts may also vary by resource. Different

spatial and temporal cumulative impact analysis areas (CIAAs) have been developed and are listed with their total acreage in Table 2.

Table 2. Cumulative Impact Analysis Areas by Resource

Resource	CIAA	Total CIAA Acreage	Temporal Boundary
Air Quality	WRFO Planning Area	2.7 million acres	Through 2021
Geology and Minerals	1 mile radius from well surface location	2,010 acres	Effects to these resources would generally remain until successful final reclamation of the well pad (+35 years)
Soil Resources, Access and Transportation, and Visual Resources,	6th-Level Hydrologic Unit Code of the Dripping Rock Creek-White River	29,320 acres	Effects to these resources would generally remain until successful final reclamation of the well pad (+35 years)
Hazardous or Solid Wastes	6th-Level Hydrologic Unit Code of the Dripping Rock Creek-White River	29,320 acres	The potential for effects to this resource could be throughout the life of the wells (+35 years).
Cultural resources	White River Field Office	2.2 million acres	The potential for effects to these resources could be throughout the life of the wells (+35 years).
Paleontological resource	MPA/Uinta formation Mancos shale Sego sandstone/castle gate sandstone Upper Mesa Verde	576,259 acres 197,619 acres 40,858 acres 328,287 acres Total= 566,764	Effects to these resources would generally remain until successful final reclamation of the well pad (+35 years)
Vegetation	White River BLM Field Office Rangeland Grazing Allotment- Artesia	43,919 acres	The potential for effects to this resource could be throughout the life of the wells (+35 years).
Invasive, Non Native Species	White River BLM Field Office Rangeland Grazing Allotment-Artesia	43,919 acres	Effects to this resource have the potential to be permanent.
Livestock Grazing	White River BLM Field Office Rangeland Grazing Allotment-Artesia	43,919 acres	The potential for effects to this resource could be throughout the life of the wells (+35 years).

Terrestrial wildlife, migratory birds, BLM sensitive species (terrestrial)	Dripping Rock Creek watershed west of Highway 64; collective big game severe winter range /winter concentration areas in Game Management Unit 21	10,000 acres (migratory birds and terrestrial sensitive species) 298 square miles (big game)	Initiation of Proposed Action through final reclamation of well pad and access and redevelopment of shrubland character on reclaimed acreage.
Colorado River fishes	Upper Colorado River Basin	110,000 square miles (upper river basin)	Cumulative impacts could occur from initiation of project through final reclamation of well pad and access.

5.2.2. Past, Present, and Reasonably Foreseeable Future Actions

Cumulative effects are defined in the 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.”

The Colorado Oil and Gas Conservation Commission database indicated there were a total (i.e., including those drilled prior to the 1997 RMP) of 4,098 private and federal producing wells in Rio Blanco County when queried for this project’s air analysis.

Estimates of surface disturbance within the lease (COC67423 at the surface location) that are most likely attributed to oil and gas activities equal approximately 6 acres. This area represents less than one percent of the total area of the lease, which is approximately 1,927 acres in size. Producing well density in the project area equals <1 producing well per square mile. Other past, present, and reasonably foreseeable actions in the project area include livestock grazing and associated range improvement projects, vegetation treatments, and both wildfires and prescribed burns. Recreation use is characterized by dispersed camping, OHV use, and hunting.

5.3. Air Quality

The U.S. Environmental Protection Agency (EPA), as directed by the Clean Air Act (CAA), has established national ambient air quality standards (NAAQS) for criteria pollutants. Criteria pollutants are air contaminants that are commonly emitted from the majority of emissions sources, and include carbon monoxide (CO), lead (Pb), sulfur dioxide (SO₂), particulate matter smaller than 10 and 2.5 microns (PM₁₀ and PM_{2.5}, respectively), ozone (O₃), and nitrogen dioxide (NO₂). Please note that ozone is generally not directly emitted from sources, but is chemically formed in the atmosphere via interactions of oxides of nitrogen (NO_x) and volatile organic compounds (VOCs) in the presence of sunlight and under certain meteorological conditions (NO_x and VOCs are ozone precursors). Exposure to air pollutant concentrations greater than the NAAQS has been shown to have a detrimental impact on human health and the environment. The EPA regularly reviews the NAAQS (every five years) to ensure that the latest science on health effects, risk assessment, and observable data such as hospital admissions are evaluated, and can revise any NAAQS if the data supports a revision. The current NAAQS levels

are shown in Table 3. Ambient air quality standards must not be exceeded in areas where the general public has access.

Table 3. Ambient Air Quality Standards

Pollutant (final rule citation)	Standard Type	Averaging Period	Level	Form	
Carbon Monoxide [76 FR 54294, Aug 31, 2011]	Primary	8-hour	9 ppm	Not to be exceeded more than once per year	
		1-hour	35 ppm		
Lead [73 FR 66964, Nov 12, 2008]	Primary and secondary	Rolling 3- month average	0.15 µg/m ³	Not to be exceeded	
Nitrogen Dioxide [75 FR 6474, Feb 9, 2010] [61 FR 52852, Oct 8, 1996]	Primary	1-hour	100 ppb	98 th percentile, averaged over 3 years	
	Primary and secondary	Annual	53 ppb	Annual mean	
Ozone [73 FR 16436, Mar 27, 2008]	Primary and secondary	8-hour	0.075 ppm	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years	
Particulate Matter [73 FR 3086, Jan 15, 2013]	PM2.5	Primary	Annual	12 µg/m ³	Annual mean, averaged over 3 years
		Secondary	Annual	15 µg/m ³	Annual mean, averaged over 3 years
		Primary and secondary	24-hour	35 µg/m ³	98 th percentile, averaged over 3 years
	PM10	Primary and secondary	24-hour	150 µg/m ³	Not to be exceeded more than once per year on averaged over 3 years
Sulfur Dioxide [75 FR 35520, Jun 22, 2010] Colorado (State Only) [38 FR 25678, Sept 14, 1973]	Primary	1-hour	75 ppb	99 th percentile of 1-hour daily maximum concentrations, averaged over 3 years	
	Primary and secondary	3-hour	267 ppb	Not to be exceeded in any 12 month period	
	Secondary	3-hour	0.5 ppm	Not to be exceeded more than once per year	

Source: National – 40 CFR 50, Colorado – 5 CCR 1001-14

µg/m³ = micrograms per cubic meter, ppb = parts per billion, ppm = parts per million

The CAA established two types of NAAQS:

Primary standards: Primary standards set limits to protect public health, including the health of "sensitive" populations (such as asthmatics, children, and the elderly).

Secondary standards: Secondary standards set limits to protect public welfare, including protection against decreased visibility, and damage to animals, crops, vegetation, and buildings.

In addition to the criteria pollutants, regulations also exist to control the release of hazardous air pollutants (HAPs). HAPs are chemicals that are known or suspected to cause cancer or other serious health effects, such as reproductive effects or birth defects, or adverse environmental effects. EPA currently lists 188 identified compounds as hazardous air pollutants, some of which can be emitted from oil and gas development operations, such as benzene, toluene, and formaldehyde. Ambient air quality standards for HAPs do not exist; rather these emissions are regulated by the source type, or specific industrial sector responsible for the emissions.

The EPA has delegated regulation of air quality to the State of Colorado (for approved State Implementation Plan (SIP) elements). The Colorado Department of Public Health and

Environment (CDPHE), Air Pollution Control Division (APCD) administers Colorado’s air quality control programs, and is responsible for enforcing the state’s air pollution laws.

The CAA and the Federal Land Policy and Management Act of 1976 (FLPMA) require the BLM to ensure actions taken by the agency comply or provide for compliance with federal, state, tribal, and local air quality standards and regulations. FLPMA further directs the Secretary of the Interior to take any action necessary to prevent unnecessary or undue degradation of the lands [Section 302 (b)], and to manage the public lands “in a manner that will protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archeological values” [Section 102 (a)(8)].

Existing Regional Air Quality

Air quality for any area is generally influenced by the amount of pollutants that are released within the vicinity and up wind of that area, and can be highly dependent upon the contaminants chemical and physical properties. Additionally, an area’s topography or terrain (such as mountains and valleys) and weather (such as wind, temperature, air turbulence, air pressure, rainfall, and cloud cover) will have a direct bearing on how pollutants accumulate or disperse. Ambient air quality in the affected environment (i.e., compliance with the NAAQS) is demonstrated by monitoring for ground level atmospheric air pollutant concentrations. The APCD monitors ambient air quality at a number of locations throughout the state. The data is summarized by monitoring regions and CDPHE prepares an annual report ([Annual Air Quality Reports](#)) to inform the public about air quality trends within these regions. Similarly, several Federal Land Managers (FLMs) like the BLM, FS, and NPS, also monitor air quality for NAAQS and Air Quality Related Values (AQRVs) to meet organic act requirements. Table 4 presents three years of monitoring data for criteria pollutants for each of the WRFO counties (or adjacent/representative county monitors where no monitoring exists in the WRFO). The maximum monitoring value is presented where multiple monitors exist within a single county that monitor for the same pollutant. Concentrations are in units of the standards form (see the “Level” column in Table 4), with the exception of the ozone data, which is shown as the 4th highest 8-hour average. To compute the ozone design value (3 year average of the 4th highest 8-hour max), sum all three years of data (if available) and divide by three.

Table 4. Ambient Air Quality Monitoring Data

County	Pollutant	Standard	Monitored Values		
			2011	2012	2013
Garfield	O3	8-hour	0.076	0.068	0.062
Garfield	PM10	24-hour	73	46	34
Moffat	O3	8-hour	0.06	0.066	0.065
Rio Blanco	NO2	1-hour	23	19	24
Rio Blanco	O3	8-hour	0.073	0.069	0.091
Rio Blanco	PM2.5	24-hour	21.5	33.4	26.7
Rio Blanco	PM2.5	Annual	9.9	9.9	9.1
Routt	PM10	24-hour	79	93	77

Although the project area is currently designated as attaining the NAAQS, area monitors (Rio Blanco County - Rangely, Colorado) have recorded exceedances of the NAAQS for the following pollutants: ozone. Exceedances by themselves do not necessarily mean that the area will be designated as nonattainment (which would be determined by CDPHE and EPA). The

form of the NAAQS must be considered, along with the monitored value.

AQRVs are metrics for atmospheric phenomenon, like visibility and deposition impacts, that may adversely affect specific scenic, cultural, biological, physical, ecological, or recreational resources. Visibility changes can occur when excessive pollutant contaminates (mostly fine particles) scatter light such that the background scenery becomes hazy. Deposition can cause excess nutrient loading in native soils and acidification of the landscape, which can lead to declining buffering capacity changes in sensitive stream and lake water chemistries (commonly referred to as acid neutralization change (ANC)). Air pollutants are deposited by wet deposition (precipitation) and dry deposition (gravitational settling). The chemical components of wet deposition include sulfate (SO₄), nitrate (NO₃), and ammonium (NH₄); the chemical components of dry deposition include sulfate, sulfur dioxide (SO₂), nitrogen oxides (NO_x), nitrate, ammonium, and nitric acid (HNO₃). A recent 2014 NPS Study suggests that the critical nitrogen load value for high elevation surface water in all natural areas of Colorado is 2.3 kg/ha-yr. The *NPS Technical Guidance on Assessing Impacts on Air Quality in NEPA and Planning Documents* suggests that critical sulfur load values above 3 kg/ha-yr may result in moderate impacts. AQRVs are important to FLMs because they have a mandate to ensure their Class I and sensitive Class II areas meet scientific (landscape nutrient loading) and congressionally mandated goals (i.e., regional haze). Class I areas are generally pristine landscapes such as national parks, national forests, and wilderness areas that are specifically provided the highest levels of air quality protection under the CAA. Sensitive Class II areas are usually afforded additional protection under state specific rule making for one or more pollutants. This status elevates them above ordinary Class II areas which account for every other area of the country that is not explicitly designated as Class I or Sensitive Class II.

As shown in Figure Air 1 in Appendix A, the following Class I / sensitive Class II areas are within or intersect the WRFO planning area: Dinosaur National Monument (sensitive Class II area - NPS) and Flat Tops Wilderness (Class I area – USFS).

The Figures Air 2 and Air 3 in Appendix A provide current trend data for visibility and deposition at White River National Forest and Rocky Mountain National Park, respectively. In general, trends with a negative slope indicate better atmospheric conditions for each potentially affected area.

Greenhouse Gases and Climate Change

There is broad scientific consensus that humans are changing the chemical composition of Earth's atmosphere. Activities such as fossil fuel combustion, deforestation, and other changes in land use are resulting in the accumulation of trace greenhouse gases (GHGs), such as carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), and several industrial gases in the Earth's atmosphere. An increase in GHG emissions is said to result in an increase in the earth's average surface temperature, primarily by trapping, and thus decreasing, the amount of heat energy radiated by the Earth back into space. The phenomenon is commonly referred to as global warming. Global warming is expected in turn, to affect weather patterns, average sea level, ocean acidification, chemical reaction rates, and precipitation rates, which is collectively referred to as climate change. The Intergovernmental Panel on Climate Change (IPCC) has predicted that the average global temperature rise between 1990 and 2100 could be as great as 5.8°C (10.4°F), which could have massive deleterious impacts on the natural and human environments. Although GHG levels have varied for millennia (along with corresponding variations in climatic conditions), industrialization and the burning of fossil carbon fuel sources have caused GHG concentrations to increase measurably, from approximately 280 ppm in 1750 to 400 ppm in 2014 (as of April). The rate of change has also been increasing as more industrialization and

population growth is occurring around the globe. This fact is demonstrated by data from the Mauna Loa CO₂ monitor in Hawaii that documents atmospheric concentrations of CO₂ going back to 1960, at which point the average annual CO₂ concentration was recorded at approximately 317 ppm. The record shows that approximately 70 percent of the increases in atmospheric CO₂ concentration since pre-industrial times occurred within the last 54 years.

Project Area County Oil and Gas Production

Table 5 shows the current oil and gas production statistics on a per county basis (well counts and production numbers are for both Federal and fee minerals) for counties containing the proposed project O&G development: Moffat, Rio Blanco and Garfield. The oil and gas data is from the Colorado Oil and Gas Conservation Commission (COGCC) database and is provided to convey the current level of intensity for oil and gas development within the vicinity of the proposed project.

Table 5. Project Area County Annual Production Data (2014)

County	No. of Producing Wells	Oil Produced (BBL)	Gas Produced (MCF)	Water Produced (BBL)
Garfield	12,314	2,039,721	609,038,912	38,806,599
Moffat	758	403,610	16,187,719	5,640,334
Rio Blanco	4,098	4,753,657	81,135,706	113,642,770

National Emissions Inventory Data (2011)

As previously stated, air quality is generally a function of air pollutants emissions loading within any particular region. With respect to the proposed project counties (Moffat, Rio Blanco and Garfield in northwest Colorado), the following emissions inventories in Table 6 are provided to describe the affected environment in terms of current cumulative emissions intensities.

Table 6. 2011 County NEI Data (tons)

Garfield	PM10	PM2.5	VOC	CO	NOX	SO2	CO2	CH4	N2O	NH3	HAPs
Agriculture	42.00	8.40	0	0	0	0	0	0	0	281.04	0
Biogenics	0	0	27,115.80	4,302.02	347.7	0	0	0	0	0	2,685.23
Bulk Gasoline Terminals	0	0	95.38	0.00	0	0	0	0	0	0	13.94
Commercial Cooking	32.58	30.18	4.33	12.41	0	0	0	0	0	0	1.64
Dust	2,627.39	312.21	0	0	0	0	0	0	0	0	0
Fires	203.21	171.98	468.98	1,992.60	27.41	15.01	23,517.54	97.22	0	32.60	45.85
Fuel Comb	250.46	248.18	2,307.63	4,222.61	6,129.26	117.03	0	0	0	19.29	591.98
Gas Stations	0	0	329.45	0	0	0	0	0	0	0	5.85
Industrial Processes	3,387.02	659.34	68,118.84	4,958.81	11,072.14	936.91	0	0	0	0	2,056.00
Miscellaneous	0	0	26.53	0	0	0	0	0	0	0	1.96
Mobile	126.37	108.51	1,128.36	12,425.51	2,700.96	14.57	517,623.73	51.18	17.56	32.29	287.63
Solvent	0.06	0.05	358.57	6.45	5.74	0.02	0	0	0	0	216.96
Waste Disposal	3.68	1.10	20.47	0.03	0.03	0.06	0	0	0	0	7.61
Sum Totals:	6,672.76	1,539.95	99,974.34	27,920.44	20,283.25	1,083.59	541,141.28	148.40	17.56	365.22	5,914.65
Moffat	PM10	PM2.5	VOC	CO	NOX	SO2	CO2	CH4	N2O	NH3	HAPs
Agriculture	295.32	59.06	0	0	0	0	0	0	0	620.41	0
Biogenics	0	0	29,532.40	6,013.21	648.91	0	0	0	0	0	4,915.57
Bulk Gasoline Terminals	0	0	12.95		0	0	0	0	0	0	0.23
Commercial Cooking	4.58	4.24	0.61	1.78	0	0	0	0	0	0	0.22
Dust	2,359.91	365.51	0	0	0	0	0	0	0	0	0
Fires	136.65	112.80	255.29	1,183.21	24.78	10.63	16,113.35	52.21	0	17.15	35.57
Fuel Comb							0	0	0		127.1

	293.09	187.08	222.29	3,226.03	14,244.15	3,957.08				87.25	3
Gas Stations	0	0	32.70	0	0	0	0	0	0	0	0.61
Industrial Processes	2,140.80	594.88	4,063.42	695.08	418.38	18.89	0	0	0	0	343.93
Miscellaneous	0	0	5.23	0	0	0	0	0	0	0	0.39
Mobile	29.25	25.36	304.49	2,322.61	491.28	2.66	87,189.01	6.34	2.70	4.49	76.70
Solvent	0	0	93.11	0	0	0	0	0	0	0	53.75
Waste Disposal	3.35	3.32	7.36	0.16	0.59	0.08	0	0	0	0.05	0.91
Sum Totals:	5,262.94	1,352.25	34,529.85	13,442.08	5,864.1	3,989.34	103,302.36	58.55	2.70	729.34	5,555.00
Rio Blanco	PM10	PM2.5	VOC	CO	NOX	SO2	CO2	CH4	N2O	NH3	HAPs
Agriculture	45.03	9.00	0	0	0	0	0	0	0	397.02	0
Biogenics	0	0	27,153.50	1,122.03	418.28	0	0	0	0	0	3,589.10
Bulk Gasoline Terminals	0	0	55.47	0	0	0	0	0	0	0	4.53
Commercial Cooking	2.65	2.43	0.33	0.99	0	0	0	0	0	0	0.12
Dust	3,766.95	573.15	0	0	0	0	0	0	0	0	0
Fires	42.54	35.08	81.00	379.98	6.05	2.81	4,112.06	16.26	0	5.43	9.64
Fuel Comb	119.63	119.00	490.89	1,967.11	2,987.78	26.18	0	0	0	2.78	152.11
Gas Stations	0	0	21.48	0	0	0	0	0	0	0	0.59
Industrial Processes	1,377.62	387.99	23,394.12	1,294.50	1,938.32	414.12	0	0	0	0	676.05
Miscellaneous	0	0	5.36	0	0.02	0	0	0	0	0	0.40
Mobile	30.12	26.82	393.79	2,399.99	310.20	1.56	64,517.88	3.95	1.72	2.91	104.80

Solvent	0	0	46.10	11.28	18.05	0	0	0	0	0	25.90
Waste Disposal	8.27	8.25	5.54	0.78	0.07	0.01	0	0	0	0.02	0.10
Sum Totals:	5,392.8 0	1,161. 74	51,647 .58	11,176 .66	5,678. 77	444.6 9	68,629. 93	20.21	1.72	408.1 8	4,563 .35

5.3.1. Environmental Consequences – Proposed Action

Direct and Indirect Impacts

In general, the Proposed Action would have a temporary negative impact to air quality, which would mostly occur during the construction phase. Utilization of the access road, surface disturbances, and construction activities, such as drilling, hydraulic fracturing, well completion, and equipment installation, would all impact air quality, through the generation of dust related to travel, transport, and general construction. This phase would also produce short-term emissions of criteria, hazardous, and greenhouse gas pollutants from vehicle and construction equipment exhausts. Once construction is complete, the daily activities at the site would be reduced to operational and maintenance checks, which may be as frequent as a daily visit. Emissions would result from vehicle exhausts associated with the maintenance and process technician visits. The well pad could be expected to produce fugitive emissions of well gas, which contains mostly methane and a minor fraction of volatile organic compounds. Fugitive emissions could also result from pressure relief valves and working and breathing losses from any tanks located at the site, as well as any flanges, seals, valves, or other infrastructure connections used at the site. Liquid product load-out operations would also generate fugitive emissions of VOCs and vehicular emissions. Most operations would be subject to some portions of the pollution control regulations currently on the books, and thus the proponent may have control equipment installed at the site to mitigate some or all of the expected fugitive emissions from flashing, load-outs, and leaks. Some control equipment, such as flares, would produce emissions of criteria, HAP, and GHG emissions via combustion.

As previously stated, ozone is not directly emitted like other criteria pollutants. Ozone formation and prediction is complex, generally results from a combination of significant quantities of VOCs and NO_x emissions from various sources within a region, and has the potential to be transported across long ranges. Therefore, it is typically not appropriate to assess (i.e., model) potential ozone impacts of a project on potential regional ozone formation and transport. However, BLM Colorado is performing a regional modeling study to assess potential ozone formation and impacts on a cumulative basis (see cumulative impacts for discussion).

DOI-BLM-CO-N05-2014-0115-EA analyzed the impacts associated with the construction drilling and operations of a 20-well pad and associated facilities. Emission estimates for these activities associated with the 20-well pad were calculated and disclosed for the EA (see Table B-1 Appendix B). The emissions inventories (EI) considered reasonably foreseeable oil and gas development activities for the proposed wells, and includes emissions from both construction and production operations. The following pollutants were inventoried where an appropriate basis, methodology, and sufficient data exists: CO, NO_x (includes NO₂), PM_{2.5}, PM₁₀, SO₂,

VOCs, HAPs, CO₂, CH₄, and N₂O. The EI was developed using reasonable but conservative scenarios for each construction and production activity. Production emissions were calculated for an entire year, and included activities that are not likely to occur every year (i.e., workovers and recompletions), thus the project inventory is conservative on an annualized basis. Potential emissions were calculated for each new project well assuming the minimum/basic legally required emissions control measures, common industry practices (as provided by oil and gas operators for the 1997 White River ROD/RMP air quality analysis), and any equipment configuration data that was provided by the Proposed Action proponent. Maximum foreseeable direct and indirect emissions would occur at the beginning of the project, during the construction phase. It is assumed that production would not begin until all of the wells were completed and all of the necessary infrastructure and site equipment connections were made (i.e., individual wells would not be brought online while completion and testing activities are still occurring at the site).

Also, the BLM Colorado Near-field Modeling Tool was used to screen project-level near-field NO₂ 1-hour, PM_{2.5} 24-hour, and annual average concentrations, and 1-hour and annual average concentrations for the following hazardous air pollutants (HAPs): benzene, formaldehyde and n-hexane. Appendix B provides information for the screening level tool and analysis and show that screening level impacts are acceptable with respect to air quality standards/impacts thresholds.

Table 7 compares elements of the Proposed Action and DOI-BLM-CO-N05-2014-0115-EA

Table 7 Comparison of Projects

Element	Proposed Action	20 Well Pad (DOI-BLM-CO-N05-2014-00115-EA)
New Construction Pipeline and Access	23.1 acres ¹	2.64 acres
Well Pad	3.7 acres	6.76 acres
Number of wells	3	20
Time to Drill and Complete Pad	1 - 2 months	>1 year
Average Drilling Length	3,700 feet	11,400 feet
Elevation	5,815 feet	6,670 feet
Nearest Sensitive ambient Air Receptor	>1,000 meters	>1,000 meters

¹Short term disturbance acres would be reduced to 4.6 acres of long term disturbance.

From comparing the two projects, it is reasonable to conclude impacts from Retamco's single well pad would be similar and would not exceed the impacts disclosed for the construction, drilling, and operations of the 20 wells in DOI-BLM-CO-N05-2014-00115-EA.

Cumulative Impacts

The Proposed Action, when combined with the past, present, and reasonably foreseeable future actions, could contribute incrementally to the deterioration of air quality in the region. Development of fluid minerals at the rate proposed within the APD would result in additional

surface and subsurface disturbances and emissions during construction, drilling, completion, and production activities. The severity of these incremental impacts could be elevated based on the amount of contemporaneous development (either Federal or private) in surrounding areas.

In consideration of disclosing cumulative and regional air quality impacts, the BLM has initiated the Colorado Air Resources Management Modeling Study (CARMMS). The study includes assessing statewide impacts of projected oil and gas development (both Federal and fee (i.e., private)) out to year 2021 for three development scenarios (low, medium, and high). Projections for development are based on either the most recent FO Reasonably Foreseeable Development¹ (RFD) document (high), or by projecting the current 5-year average development paces forward to 2021 (low²). The medium scenario included the same well count projections as the high, but assumed restricted emissions, where the high assumed current development practices and “on the books” emissions controls and regulations (2012). Each FO was modeled with the source apportionment option, meaning that incremental impacts to regional ozone and AQRVs from Federal oil and gas development in these areas are essentially tracked to better understand the significance of such development on impacted resources and populations. The CARMMS project leverages the work completed by the [WestJumpAQMS](#), and the base model platform and model performance metrics are based on those products (2008).

Based on the CARMMS projections, the BLM continually tracks emissions changes and air quality conditions to determine which projection path (low, medium, high) would be most appropriate to estimate air quality impact correlations based on the cumulative development (i.e., net emissions changes) that has occurred since the base emissions inventory year (2008). Although the predicted impacts are based on future modeling results (2021), the relative changes in the impacts between the scenarios provides insight into an understanding of how mass emissions impact the atmosphere on a relative basis. The following sub-section summarizes CARMMS results for projected new WRFO Federal oil and gas development (Federal O&G development year 2012 through year 2021).

CARMMS O&G Development and Emissions Tables

Table 8 provides the WRFO oil and gas development and projected production rates modeled for the CARMMS RFD (High) and 5-year Average (Low) modeling scenarios.

Table 8 CARMMS Future O&G Development / Projections Modeled - WRFO

Parameter	RFD (High) Scenario¹	5-year Average (Low) Scenario²
Federal Wells Per Year	599 (5,993 in 10 years)	99 (990 in 10 years)
Cumulative (Fed and non-Fed) Wells Per Year	681	126
Wells Per Pad (assumed for analysis)	8	8
2021 Cumulative Active Well Counts	9,278	3,727
% 2021 Cumulative Wells that Are Federal	88%	78%
Cumulative Average Annual No. Drill Rigs Operating	27	5

Cumulative 2021 Gas Production (MMscf/yr)	457,261	97,587
Cumulative 2021 Oil / Condensate Production (Mbbbl/yr)	2,419	609

¹ RFD based on O&G Industry and BLM Resource Specialists 20-year projections for the WRFO

² Future O&G development projections based on recent 5 years (2008-2012) of O&G development data for the WRFO.

Table 9 provides baseline year 2011 and projected year 2021 Federal oil and gas emissions for the WRFO. The emissions changes (as shown) from baseline year 2011 to year 2021 is reflective of the CARMMS 10-year emissions change for WRFO Federal O&G development and production for both (High and Low) CARMMS modeling scenarios.

Table 9: CARMMS Baseline and Projected Year 2021 Annual Emissions (TPY) - WRFO Federal O&G

WRFO Field Office	PM ₁₀	PM _{2.5}	NO _x	VOC	CO	SO ₂	CO ₂	CH ₄	N ₂ O
Baseline - 2011	354	169	3,296	4,433	2,495	270	1,054,639	21,321	17
RFD (High) Scenario - 2021	1,530	646	12,141	18,556	8,897	934	4,128,642	87,610	66
Emissions Change (2021 minus 2011) – RFD Scenario	1,176	478	8,846	14,123	6,402	664	3,074,003	66,289	49
RFD (Low) Scenario - 2021	391	158	2,760	4,758	2,223	181	1,128,378	27,244	19
Emissions Change (2021 minus 2011) – Low Scenario*	37	-10	-536	325	-272	-89	73,739	5,923	2

*for the low scenario, the decline (negative values) in NO_x, CO, SO₂ and PM_{2.5} emissions are associated with the overall decline in Federal O&G production due to normal production decline over the life of a western Colorado O&G well. Although there will be more Federal wells in operation in year 2021 (versus year 2011), the overall emissions for WRFO O&G production decline associated with current existing wells (year 2011) offset the O&G production related emissions associated with the new additional Federal wells in WRFO.

The CARMMS incremental modeling changes/results for each source group (i.e., WRFO planning area) are applicable for the amount of additional air pollutant emissions that were modeled in the Study. Annual oil and gas completions/development inventories (post year 2011)

are routinely compiled by the BLM to ensure that current and future oil and gas development does not exceed the acceptable “budgets” (O&G development / emissions rates), as modeled in CARMMS. Since year 2011, there have been approximately 169 new Federal wells completed in WRFO for years 2012-2014, at a maximum rate of 92 new Federal oil and gas wells completed per year (year 2012). This development rate is much lower than the approximate 5,993 new Federal wells (approximately 599 new Federal wells per year) for WRFO, as modeled for CARMMS year 2021 RFD scenario (new development for years 2012 through 2021) and is currently tracking lower than the approximately 990 new Federal wells (new O&G development for years 2012 through 2021) for WRFO as modeled for the CARMMS “low” scenario.

As future oil and gas development occurs (including the proposed project) in the WRFO, project-specific emissions (based on approved APDs) are being added to the total regional emissions estimates (all emissions sources: oil and gas emissions and more) to compare regional emissions rates modeled in cumulative air quality modeling studies (CARMMS), along with the corresponding modeling results, to confirm that activities approved by the BLM Colorado are within the modeled emissions analyzed in the cumulative analyses. The results and summaries of these annual analyses will be included in the BLM Colorado Air Resources annual reports (projected to begin year 2015 for calendar year 2014).

Based on the oil and gas development level analysis, as described above and the information provided in Table 8, it is reasonable to conclude that current levels of WRFO Federal oil and gas development are tracking at (or near) CARMMS “low” levels and the modeling results for the CARMMS low scenario are adequate for assessing future potential regional/cumulative air quality impacts. The following sub-section provides CARMMS Low scenario source apportionment modeling results for incremental WRFO oil and gas development year 2012 through year 2021.

CARMMS Modeling Results for Low Scenario – WRFO Federal O&G

As described above, the current 5-year average development forward projections (Low) modeling scenario provides a look at impacts that would cover all potential oil and gas development, using historical O&G development trends data. The Table 10 provides a quasi-cumulative summary of ozone, visibility and nitrogen deposition impacts for all of the projected WRFO Federal oil and gas emissions associated with the Low modeling scenario. These impacts show the relative contribution to full cumulative (all world-wide emissions sources) impacts for the projected year 2021 WRFO oil and gas emissions associated with the Low modeling scenario.

Table 10: CARMMS - WRFO Federal O&G Contribution to Modeled Impacts

Source Group - Modeling Scenario	Number of Annual Days Above 0.5 dv Change	Maximum Modeled Annual Nitrogen Deposition (kg/ha-yr)	Overall Maximum 4th High Daily 8-hour Ozone Contribution (ppb)	Maximum 4th High Daily 8-hour Ozone Contribution to Modeled Exceedance (ppb)	Overall Maximum 8th High 24-hour PM _{2.5} Contribution (µg/m ³)
WRFO – Low Scenario - Year 2021	0	0.0228	1.2	0.4321	0.6

* maximum modeled concentrations/values for any Class I/sensitive Class II area (AQRV) or grid cell (ozone).

As shown in **Table 10** above, there are no days that the projected WRFO year 2021 Federal oil and gas emissions have a significant (~ 0.5 dv) visibility change impact at any Class I or sensitive Class II area and the maximum modeled nitrogen deposition contribution is minimal with respect to the cumulative critical nitrogen deposition load of 2.3 kg/ha-yr value. The maximum contributions to 4th high daily maximum 8-hour ozone concentrations are minimal with respect to the 75 ppb 8-hour ozone standard and the maximum contribution to the 8th high maximum 24-hour PM_{2.5} concentration is minimal with respect to the 35 µg/m³ 24-hour PM_{2.5} standard.

The information above shows that the predicted air quality impact contributions associated with the historical 5-year average oil and gas development scenario for the entire WRFO are minimal, and it is reasonable to conclude that project-level O&G development (based on actual development plans) would have even lower contributions to the overall cumulative air quality.

CARMMS Modeling Results – Full Cumulative

Since current oil and gas development rates are tracking at or below CARMMS Low modeling scenario oil and gas development projections (new O&G development for years 2012 through 2021) for all or most of the BLM Colorado planning areas/Field Offices, CARMMS Low modeling scenario results are also being reported for cumulative air quality impacts. It’s important to note that all other emissions sources (other than new Colorado –based O&G) were modeled at the same rates for the CARMMS High and Low scenarios (the new Colorado O&G were only source category with varying development/emissions rates for the different CARMMS modeling scenarios).

Table 11 provides a full cumulative summary of ozone, visibility and nitrogen deposition impacts for all (i.e., world-wide) emissions sources associated with the CARMMS Low modeling scenario.

Table 11: CARMMS Modeled AQRV Impacts - Low 2021 Scenario - Full Cumulative Emissions Inventory

Class I Area	Best 20% Days Visibility Metric (dv) - 2021 Low Improvement from 2008	Worst 20% Days Visibility Metric (dv) - 2021 Low Improvement from 2008	Maximum Modeled Annual Nitrogen Deposition (kg/ha-yr) – 2021 Low Improvement from 2008
Mount Zirkel Wilderness	0.16	0.87	1.03
Flat Tops Wilderness	0.20	0.68	0.96

* positive values mean overall improvement and deposition values are maximum for all grid cells making up the Class I area

For full cumulative ozone design value projections at regional ozone monitoring sites, the maximum current year 8-hour ozone design concentration (DVC; based on 2006-2010 observations) is 82.0 ppb at the Rocky Flats North (CO_Jefferson_006) monitor that is projected to be reduced to 78.1 ppb for the CARMMS 2021 Low Development Scenario.

For the ozone design value projection unmonitored area analysis (analysis for areas with no monitors), the geographical extent (i.e., size) of the overall area of ozone design value exceedances is reduced (from 2008 to 2021), and the following CARMMS plot shows predicted ozone reductions in the Denver and Salt Lake City areas for the CARMMS Low development scenario as seen in Figure Air 4 in Appendix A.

The following CARMMS plot shows changes in 8th highest daily average PM_{2.5} concentrations (2021 Low Scenario minus Base Year 2008 concentrations). As shown in the Figure Air 5 in Appendix A, concentrations are expected to increase in major Colorado Front Range cities and near mining operations in Colorado.

With the exception of PM_{2.5} concentrations near large cities and future mining operations, the CARMMS Low Scenario full cumulative modeling results show an overall improvement to air quality in the region from year 2008 to year 2021.

Greenhouse Gases and Climate Change

DOI-BLM-CO-N05-2014-0115-EA estimated developing a 20-well pad would contribute 12,695 metric tons of carbon dioxide equivalent (CO₂(e)) in the maximum year and annual operating GHG emissions of the 20 wells would be 13 percent of the total emissions shown for the maximum year. Over a 25 year timeframe, the total GHG emissions expected would be approximately 48,214 metric tons CO₂(e) for the 20 wells in DOI-BLM-CO-N05-2014-0115-EA. It is reasonable to assume the GHG emissions of the Proposed Action’s single new well would be less than the 20 wells analyzed in DOI-BLM-CO-N05-2014-0115-EA. The total emissions provided do not account for the ultimate use or consumption of any produced minerals at this time, due to the fact that the ultimate form of use and any additional processing required creating

the product to sufficient quality (which could cause changes to the quantity of product) cannot be predicted with any reasonable certainty. Additionally, it should be noted that production values (also estimated at this time) could vary significantly over the life of the project, making any prediction of the quantities of GHG emitted highly speculative.

The CDPHE used the EPA's State Inventory Tool to estimate future years GHG emissions inventories for Colorado. In year 2020, it is estimated that Colorado's annual GHG emissions would be approximately 126,060,000 metric tons CO₂(e). It is anticipated that the 20 wells analyzed in DOI-BLM-CO-N05-2014-0115-EA would be in full operation by year 2021 and the annual operations GHG emissions would represent about 0.04 percent of the state of Colorado's year 2020 annual GHG emissions. Given the relative magnitude of greenhouse gas emissions associated with the operation of the 20 wells as compared to the state's GHG emission levels, the GHG contribution associated with the proposed single well would be extremely small.

To provide additional context, the EPA has recently modeled global climate change impacts from a model source emitting 20 percent more GHGs than a 1500MW coal-fired steam electric generating plant (approx. 14,132,586 metric tons per year of CO₂, 273.6 metric tons per year of nitrous oxide, and 136.8 metric tons per year of methane). It estimated a hypothetical maximum mean global temperature value increase resulting from such a project. The results ranged from 0.00022 and 0.00035 degrees Celsius occurring approximately 50 years after the facility begins operation. The modeled changes are extremely small, and any downsizing of these results from the global scale would produce greater uncertainty in the predictions. The EPA concluded that even assuming such an increase in temperature could be downscaled to a particular location, it "would be too small to physically measure or detect" (see Letter from Robert J. Meyers, Principal Deputy Assistant Administrator, Office of Air and Radiation re: "Endangered Species Act and GHG Emitting Activities (Oct. 3, 2008)). The project emissions would be a fraction of the EPAs modeled source and are shorter in duration, and therefore reasonable to conclude that the project would have no measurable impact on the climate.

5.3.2. Environmental Consequences – No Action Alternative

Direct and Indirect Impacts

Under the No Action Alternative, the BLM would not authorize any of the Proposed Action elements. The project, as designed, would not be implemented and no emissions would occur. No impacts to air quality would occur. The incremental increase to global GHG burden would not happen, however it is entirely likely the predicted climatic changes would occur, regardless (the Proposed Action would have a very minor "footprint" in the overall big picture).

Cumulative Impacts

Impacts would be similar to those described for the Proposed Action alternative

5.3.3. Mitigation Measures and Residual Impacts

Multiple near-field modeling assessments (including application of BLM COSO near-field impacts screening tool for the Proposed Action) performed by the BLM Colorado for Colorado-

based oil and gas air quality assessments indicate that routine water (or product with equivalent dust control efficiency) application to unpaved surfaces is necessary during the oil and gas development/construction phase to achieve air quality compliance even though construction phases last just a few weeks. The short-term particulate matter air quality standards do not allow for many exceedances per year and therefore could be exceeded multiple times with only a couple of weeks of construction activities emissions not controlled. In addition, multiple Colorado-based near-field modeling assessments (including the screening-level assessment for the Proposed Action) for oil and gas development suggest that drill rig, fracing, and completion related engines should meet EPA Non-Road Tier II emissions standards (at a minimum) in order to achieve compliance with short-term NO₂ air quality standards.

It is anticipated that the operator would apply for either an APCD air permit for the site as a whole, or cover individual equipment under one of Colorado's general permits for oil and gas operations. The state as the regulatory authority for oil and gas actions requires controls of emissions and standards for compliance that the operator will be subject to. It is expected that the operator will comply with the requirements and make every effort to minimize emissions through good engineering and operating practices to the maximum extent practical.

In addition to the applicant-committed design features, existing state and Federal requirements, the following BLM requirements will apply to minimize impacts associated with the development phase of the proposed project:

- All drill rigs, fracing, and completion related engines will be required to meet EPA Non-Road Tier II Emissions Standards (or cleaner) for all well development operations.

Residual Impacts: Impacts to local and regional air quality would be minimized by utilization of engines that meet EPA Non-Road Tier II Emissions Standards.

5.4. Geology and Minerals

5.4.1. Affected Environment

Surficial geology of the proposed well is the Cretaceous Sege Sandstone of the Mancos Formation (Green). The proposed well would be located on federal oil and gas lease COC67423. Colorado Oil and Gas Conservation Commission (COGCC) database identifies one shut in, and one drill and abandoned well location within a one mile radius. The nearest producing well is approximately three miles southeast of the proposed location. During drilling potential water, oil and gas zones would be encountered from surface to the targeted zone. The Proposed Action is outside of the area identified as being available for coal leasing in the White River ROD/RMP.

5.4.2. Environmental Consequences – Proposed Action

Direct and Indirect Impacts

The proposed cementing procedure for the wells isolates the geologic formations and would prevent the migration of water, gas, and oil between formations. Development of the well would deplete the oil and gas mineral resources in the targeted formation.

Cumulative Impacts

An additional 48 wells for full development of oil and gas resources within this one mile radius would be required if bottom hole spacing of 40 acres is necessary for the recovery of the resources. No other minerals or geologic resources would be affected by the Proposed Action.

5.4.3. Environmental Consequences – No Action Alternative

Direct and Indirect Impacts

The oil and gas resources of the targeted zones would not be developed and would remain available for future development.

Cumulative Impacts

There would be no contribution to the recovery of oil and gas resources.

5.4.4. Mitigation Measures and Residual Impacts

No additional mitigation measures are required. The oil and gas resources within the targeted zones would be recovered and would not be available for future development.

5.5. Soil Resources

5.5.1. Affected Environment

The classifications of soils within the proposed pad, centerlines of the access road, and pipeline that could be impacted by the Proposed Action are shown in Table 12.

Table 12. Soil Classifications contained within the pad, road, and pipeline disturbance (NRCS, 2008).

Soil Classification	Surface Texture	Erosion Hazard	Rutting Hazard
Turley fine sandy loam, 0 to 3 percent slopes	fine sandy loam	Slight	Severe
Tabyago-Cedarknoll association, 2 to 8 percent slopes	loam	Moderate	Severe
Chipeta-Killpack silty clay loams, 3 to 15 percent slopes	silty clay loam	Severe	Severe
Uffens loam, 0 to 5 percent slopes	loam	Slight	Severe
Chipeta-Walknolls complex, 5 to 15 percent slopes	silty clay loam	Severe	Severe
Potts-Begay fine sandy loams, 2 to 7 percent slopes	fine sandy loam	Moderate	Moderate

Of the surface disturbance analyzed, none would occur on soils with landslide potential. Nearly all the soils have a severe rutting hazard rating (98 percent) and the Chipeta-Killpack soils have a severe erosion hazard, but the disturbance to soils would only be from the installation of the pipeline and most of these soils are on private lands. The Chipeta-Walknolls soils have saline soils and are challenging areas for reclamation due to the topography.

5.5.2. Environmental Consequences – Proposed Action

Direct and Indirect Impacts

Unstable road surfaces and road surfaces not adequate for all-weather conditions, especially on roads with steep grades, can rut and rapidly lose drainage features causing erosion and instability. The Surface Use Plan (SUP) includes the upgrading and graveling of roads if the well goes into production. With proper BMPs for stormwater, engineered access roads, construction, reclamation and mitigation, impacts to soils outside the 30 meter buffer around surface disturbance are not expected. Final reclamation on the pipeline would likely be achieved within three to five years after installation. Reclamation of the pipeline may be more difficult in saline soils and complex topography.

Direct impacts from the construction of the well pad, access road and pipeline installation would include soil compaction, removal of vegetation, exposure of subsoil, mixing of soil horizons, loss of topsoil productivity, and an increase in the susceptibility of soils to wind and water erosion. Compaction due to construction activities would reduce aeration, permeability and water-holding capacities of soils in some locations. Removal of vegetation exposes soils to erosion from rainfall, wind and surface runoff. Exposure of subsoil and mixing of soil horizons can change the physical characteristics of subsoil and may reduce the productivity of these soils before reclamation is complete. Loss of topsoil productivity can occur during soil storage due to nutrient loss through percolation of precipitation through the soils, physical loss and mixing of less productive soil layers during moving and a loss of structure. An increase in surface runoff and sedimentation could be expected from impacted soils and these soils are likely to be less resilient to erosion from surface runoff after disturbance.

These direct impacts from the Proposed Action could result in increased indirect impacts to soils off the construction sites, such as increased runoff and erosion. Implementation of BMPs for stormwater and reclamation would reduce impacts from this project and could limit impacts to construction sites. However, there is still the potential for intense storm events or BMP failures, resulting in erosion off site. This type of erosion would be addressed by mitigation to require a plan to address problems if they develop.

Indirect impacts from this project could result in contamination of surface and subsurface soils, due to unintentional leaks or spills from equipment. If these spills occurred, they would affect the productivity of soils. Impacted soils would typically be removed or remediated on site and therefore loss of soil productivity would be temporary, possibly three to five years. However, the operator has proposed to place production equipment in soil bermed and lined secondary containment which limits the potential for these impacts to the soil resources.

Cumulative Impacts

The well pad, pipelines and road are within an ephemeral tributary to the White River named Dripping Rock Creek. Oil and gas development in this area is exploratory and therefore is likely to have, at most, one to three single well pads per section in isolated areas. If the well is successful, it could go into production. Production wells include surface disturbance for well

pads, pipelines, roads and support facilities. In addition to other oil and gas activity, dispersed recreation (hunting) would make use of the area with some roads to the south, but use is unlikely, due to the land ownership plans on the access road. Livestock grazing occurs on public and private lands in the area and these activities could reduce canopy cover and lead to localized erosion in some reclamation areas.

In general, soil disturbance in the Proposed Action and other activities would be likely to reduce soil productivity in the localized areas of disturbance, but would be unlikely to impact overall soil productivity for the long term.

5.5.3. Environmental Consequences – No Action Alternative

Direct and Indirect Impacts

No impacts to soils would occur.

Cumulative Impacts

Impacts would be similar to those described for the Proposed Action.

5.5.4. Mitigation Measures and Residual Impacts

1. In order to protect public land health standards for soils, erosion features, such as rilling, gullyng, piping and mass wasting on the surface disturbance or adjacent to the surface disturbance as a result of this action, will be addressed immediately after observation by contacting the AO and by submitting a plan to assure successful soil stabilization with BMPs to address erosion problems.

Residual Impacts: Immediate action to correct erosion features would prevent the project from having residual negative effects on the Public Land Health standard.

5.6. Vegetation

5.6.1. Affected Environment

The proposed project is located within the Upland Stony Loam/Upland Shallow Loam, Clayey Saltdesert/Saltdesert Break and Clayey Saltdesert ecological sites. Table 13 outlines each ecological site the primary vegetation found within each site.

Table 13. Ecological site descriptions.

Ecological Site / Woodland Type	Plant Community Appearance	Predominant Plant Species in the Plant Community
Clayey Saltdesert	Salt Desert Shrubland	Gardner saltbush, shadscale, mat saltbush, galleta, Salina wildrye, squirreltail, Indian rice grass
Upland Stony Loam	Sagebrush/grass Shrubland	Western wheatgrass, mutton grass, Indian rice grass, squirreltail, June grass, Wyoming big sagebrush, black sagebrush

The project area does have component of downy brome (cheatgrass) and halogeton as a component of the understory. This area also was seeded as part of a range project with crested wheatgrass. Portions of the herbaceous cover in the project area are almost primarily dominated by crested wheatgrass as a result of the past range projects.

5.6.2. Environmental Consequences – Proposed Action

Direct and Indirect Impacts

The proposed project would require the complete removal of vegetation on 26.8 acres. The 8.8 acres of disturbance for the pipeline and the 1.9 acres of interim reclamation of the well pad would be considered short-term disturbance, if reclamation is prompt and successful. The remaining 16.1 acres for well pad and access road would be long-term disturbance, devoid of vegetation for the life of the project.

Cumulative Impacts

The proposed project, when added to other projects and developments, in and near the project area, would result in an increase in short-term removal of existing vegetation on private and public land. Long-term changes in plant community composition and structure would also occur on those project sites and on a broader scale from activities such as livestock grazing. Of the total potential vegetation removal near the project area, the proposed project would not result in a noteworthy increase in vegetation disturbance or long-term changes in plant community.

5.6.3. Environmental Consequences – No Action Alternative

Direct and Indirect Impacts

The No Action Alternative would result in no impacts to vegetation around the pad, road, and pipeline corridors.

Cumulative Impacts

Denial of the proposed project would have little impact on the cumulative effect of oil and gas development impacts to the vegetative communities in the general project area.

5.6.4. Mitigation Measures and Residual Impacts

1. Seed mix #3 with minor modifications is recommended for reclamation of BLM lands associated with the Proposed Action. Application rates are shown in pounds of pure live seed (PLS), use seed that is certified and free of noxious weeds. It is recommended that this site be seeded between September 1 and March 15. If an alternate date of seeding is requested, contact the designated Realty Specialist prior to seeding for approval. Seed mixture rates are Pure Live Seed (PLS) pounds per acre. Drill seeding is the preferred method of application and drill seeding depth will be no greater than ½ inch. If drill seeding cannot be accomplished, seed should be broadcast at double the rate used for drill seeding, and harrowed into the soil.

Table 14. Recommended Species and Application Rates for reclamation on BLM Lands.

Variety	Common Name	Scientific Name	Application Rate (lbs PLS/acre)
Rosana	Western Wheatgrass	<i>Pascopyrum smithii</i>	4
Critana	Thickspike Wheatgrass	<i>Elymus lanceolatus</i>	3
Rimrock	Indian Ricegrass	<i>Achnatherum hymenoides</i>	3
	Needle and Thread Grass	<i>Hesperostipa comata</i>	2
	Sulphur Flower	<i>Eriogonum umbellatum</i>	0.5
	Scarlet Globemallow	<i>Sphaeralcea coccinea</i>	0.5

Residual Impacts: There would be no residual impacts known at this time.

5.7. Invasive, Non-Native Species

5.7.1. Affected Environment

The state of Colorado classifies noxious weeds into three categories: List A, List B, and List C. List A species are species designated for eradication, List B species have (or will have) a state noxious weed management plan developed to stop their spread. List C species are species for which the commissioner, in consultation with the state noxious weed advisory committee, local governments, and other interested parties, will develop and implement state noxious weed management plans for use of noxious weed management for the jurisdictions that choose to do so. There are currently no known List A or List B noxious weeds that occur immediately within the vicinity of the Proposed Action. Downy brome (cheatgrass), and halogeton are two List C noxious weeds that are known to occur in the project area.

5.7.2. Environmental Consequences – Proposed Action

Direct and Indirect Impacts

The disturbance associated with the Proposed Action could create or exacerbate a noxious weed problem by importing weed seed on vehicles and equipment or by creating suitable conditions in the form of non-vegetated disturbed areas. Construction activities could spread noxious weed species to other areas by carrying seeds or plant parts (rhizomes) on construction equipment.

Establishment of noxious or invasive weeds on the project’s disturbed soils could result in some areas being dominated by these aggressive species. It could also result in additional seed sources that would help to expand the occurrence of these species into adjacent plant communities.

Applicant committed measures described in the SUPO would aid in prevention of the spread of noxious weeds.

Cumulative Impacts

The proposed project could contribute to the noxious and invasive plant species present in the surrounding areas. However, existing roads through the area are common sources of invasive and noxious weeds, so elimination of these species from the general area may be unlikely.

5.7.3. Environmental Consequences – No Action Alternative

Direct and Indirect Impacts

Noxious and invasive plants would continue to be present within the vicinity of the project area and, depending on the aggressiveness of weed treatment activities, may continue to spread. There would be no further ground disturbing activities however, and the existing problem would not be exacerbated.

Cumulative Impacts

Cumulative effects would be similar to those from the Proposed Action.

5.7.4. Mitigation Measures and Residual Impacts

1. The operator will manage any noxious plants before seed production occurs. The operator will clean all off-road equipment to remove seed and soil prior to commencing operations within the project area.

Residual Impacts: There would be no residual impacts known at this time.

5.8. Migratory Birds

5.8.1. Affected Environment

The project area is composed of extensive low elevation Wyoming big sagebrush shrubland interspersed with bottomlands of basin big sagebrush and black greasewood. Typically, the ground cover associated with these communities is depauperate and dominated by invasive annuals or seeded crested wheatgrass. Birds nesting in these habitats include the BLM-sensitive Brewer's sparrow and USFWS Birds of Conservation Concern sage sparrow, sage thrasher, and loggerhead shrike. These birds generally begin nesting in early May and fledge young by early July. Overall nest densities in these habitats are likely on the order of 0.25 to 0.5 nests per acre.

The shrubland habitat adjacent to paved Highway 64 and RBC 21 is not considered suitable nesting habitat and few, if any, nesting attempts would be expected to take place along the proposed pipeline corridor.

5.8.2. Environmental Consequences – Proposed Action

Direct and Indirect Impacts

Potential for direct mortality/loss of nests from construction and right-of-way clearing is considered low. All road and pad construction would be completed after July 15 and before the

following nest season. In subsequent years, few nests are likely to be located in vegetation cleared for the pipeline corridor within 60 feet of the well access road (due to avoidance, see below). Few, if any, nests would be expected to be located along paved highway Highway 64 or RBC 21.

Direct and long-term habitat loss attributable to road upgrades, new road construction, and pad construction would amount to about seven acres. Vegetation clearing of the pipeline right-of-way would represent the loss of mature shrub canopies as migratory bird nest substrate for a decade or more (about 20 acres). However, since the pipeline would be located along well access or paved State/county roads and considering birds' tendency to avoid siting nests in close proximity to roads and other sources of disturbance, the equivalent longer term loss of nest habitat would remain low (e.g., under 6 acres).

Vehicle use along oil and gas roads has been found to reduce migratory bird nest density within 100 meters of a road by about 50 percent (about 168 acres, including 44 acres of BLM-administered land). Avoidance response by birds would be expected to reduce the effective capacity of habitat in the general project area by 20-40 nests. Relative to like-habitat in the Dripping Rock watershed west of Highway 64 to the Utah State line, this effect would involve less than one percent of the habitat base. Heavy activity along off-highway access routes during subsequent well development or pipeline installation could disrupt and fail nests located in closer proximity to road access, but the effect would be diminished since nesting birds would have already displaced and selected nest sites further from the road according to their tolerance of disturbance. Nesting bird density and distribution would be likely to approach pre-disturbance patterns once substantial reductions in vehicle traffic occur after well development and through the productive life of the location.

The proposed use of a reserve pit in project design could attract waterfowl and other migratory birds for the purposes of resting, foraging, or drinking. Waterfowl and migratory bird mortality in fluid storage facilities has been observed in the past on BLM WRFO lands. Contact with fluids may impact migratory birds by causing acute or chronic toxicity, or by affecting the insulating capacity of feathers. Raptors or scavengers that may feed on hydrocarbon-contaminated migratory birds may also be debilitated or killed. Such anthropogenic mortality of migratory birds is prohibited under the Migratory Bird Treaty Act. Mitigation measures are intended to prevent bird contact with produced water and drilling and completion fluids.

Relative to like-habitat in the Dripping Rock watershed west of Highway 64 to the Utah State line (about 10,000 acres), direct and indirect habitat loss would involve less than one percent of the habitat base. Because avoidance effects increase with increasing traffic frequency, the level of indirect impact would subside once the well was completed and producing. This acreage would be considered cumulatively minor, since there is little surface disturbing activity or infrastructure in this area.

Cumulative Impacts

5.8.3. Environmental Consequences – No Action Alternative

Direct and Indirect Impacts

There would be no action authorized that would influence migratory bird nest activity or habitat.

Cumulative Impacts

This project proposal would not contribute to influences on migratory bird habitat and populations.

5.8.4. Mitigation Measures and Residual Impacts

As a means of minimizing the number of nesting attempts adversely affected by development and complying with the intent of the Migratory Bird Treaty Act, access or pad construction associated with this project would not be authorized during the migratory bird nesting season (1 May through 30 June).

The operator will prevent migratory bird access to facilities that store or are expected to store fluids, which may pose a risk to such birds (e.g., toxicity, compromised insulation). Features that prevent access to such fluids must be in place and functional within 24 hours of the drilling rig moving off the location and will remain effective until such pits are removed or incapable of storing fluids. Deterrence methods may include netting or other alternative methods that effectively prevent use and that meet BLM approval (the use of “bird balls” is discouraged). It will be the responsibility of the operator to notify the BLM of the method that will be used to prevent access to stored fluids. All lethal and non-lethal events that involve migratory birds will be reported to the BLM Petroleum Engineer Technician immediately.

Residual Impacts: By avoiding direct loss of nest substrate and ongoing nest attempts that it supports, residual effects on nesting birds would be dependent on drilling and completion timeframes (i.e., level of coincidence with bird nesting activity). The COA would limit project-related nest disruption to less tolerant individuals in adjacent habitat and may extend to 20-40 nest attempts, but this impact would persist for no more than a single season. During the well’s productive life, disturbances associated with low levels of vehicle use would be imposed on birds that have adjusted to road disturbance based on their individual tolerance.

There would be no mitigation measures applied in the No Action alternative and there would be no residual effects in the absence of proposed development.

5.9. Terrestrial Wildlife

5.9.1. Affected Environment

The project location is situated near the margins of CPW-mapped elk winter concentration area (pad straddles boundary) and deer severe winter range/winter concentration area about 0.5-mile distant). These ranges are used by big game primarily from October through April.

The project area is generally devoid of substrate capable of supporting raptor nesting activity. Isolated junipers and occasionally ground sites are used by BLM-sensitive ferruginous hawks for nesting. These birds are an uncommon breeding species in the westernmost portions of the WRFO. The nearest known ferruginous hawk nest sites are two miles from the nearest project-related feature.

5.9.2. Environmental Consequences – Proposed Action

Direct and Indirect Impacts

Direct and long-term loss of forage production attributable to road upgrades, new road construction, and the working surface of the pad would amount to about seven acres. The availability of woody winter forage (sagebrush) would be reduced by about 20 additional acres for a decade or more. Herbaceous forage would redevelop on reclaimed portions of the pad and pipeline and partially offset forage losses in the short term. In the context of forage availability in the general project area, reductions to forage resources are considered diminutive and cumulatively minor, since there is very little fluid mineral or other development-related infrastructure in this area.

The tendency for big game animals to avoid human disturbance has been demonstrated widely since the 1970's and has been more precisely defined with recent GPS technology. Avoidance of human activity, regardless of form, can have important ramifications on big game energetics (e.g., avoidance movements, heightened state of alert) and nutrition (e.g., reduced time foraging and access to available forage, displacement from preferred foraging sites) that, in turn, have consequences on fitness and performance (e.g., survival, reproduction) at the individual and population level. While big game are simultaneously contending with the nutritional challenges (declining quality and access to forage) and elevated energy requirements of winter (maintaining homeothermy, reducing energy expenditures to extend fat stores), human disturbance and displacement to unfamiliar grounds divert from time and energy that would otherwise be expended in more efficient procurement of forage and managing energy expenditures (e.g., reducing heat loss, reducing travel across steep slopes or heavy snowpack).

The access networks and vehicle traffic that supports well development and production are thought to represent the aspect of oil and gas activity that most broadly influences big game and their habitat. Big game avoidance response tends to increase as the duration, frequency, and intensity of road use increases and its effect on landscape-level habitat suitability becomes more pronounced as the density and distribution of the road network across affected habitats expands.

Vehicle routes in the general project area tend to be clumped and their status/condition vary widely depending on their function (e.g., fenceline two-tracks versus regularly maintained facility access), but average route density is about 2.5 miles per square mile. Route density on the privately-owned parcel (7.3 mile/square mile) is substantially higher than surrounding BLM lands (2.1 mile/square mile). The proposed project would add little to the existing route network in either case (about 760 feet), but upgraded well access would carry substantially more frequent vehicle use during pad and well development. Once vehicle use-frequency subsided through the production phase, there would likely be relatively small additive effects on the utility of surrounding big game winter ranges. Because the Proposed Action is situated almost wholly on private lands and road access is privately controlled, vehicle-related disturbances would be considerably less frequent than if the road network had been sited on public land.

Avoidance response would be expected to be most pronounced on about 800 acres of land surrounding the operation (using an avoidance buffer of 0.25-mile). Although it is anticipated that the pad would be constructed and the well drilled prior to the winter occupancy period, pipeline construction could occur later and coincide with that period. Assuming proposed work was conducted coincident with the period of occupation, the area presumably affected would involve less than 100 acres of big game winter concentration area extent and little, if any, severe winter range in GMU 10 (trace percentages). Once activity subsided to production level intensity, residual avoidance effects would be expected to be relatively minor additions to the existing disturbance regime. Pipeline construction activity along State Highway 64 and RBC 21 would not be expected to influence wintering big game animals or the utility of adjacent habitat no matter the timeframe involved.

Cumulative Impacts

Direct and indirect big game impacts attributable to fluid mineral development outside the Piceance Basin are expected to be localized, relatively minor in scale, and occur principally in established fields within GMU 21 deer winter concentration areas. Although the Proposed Action would add incrementally to other mineral actions outside the Piceance Basin, reductions in habitat utility associated with avoidance of active drilling and the accumulated production activity are not expected to exceed 4 percent of the more important GMU 21 winter ranges (winter concentration areas, severe winter ranges) over the next 20 years. Specific to this proposed project, reductions to forage resources would be considered diminutive and cumulatively minor, since there is very little fluid mineral or other development-related infrastructure in this area. In the worst case, and assuming proposed work was conducted coincident with the period of winter occupation, the area subject to the highest level of indirect habitat loss involve less than 100 acres of big game winter concentration area and little, if any, severe winter range in Game Management Unit 10 (trace percentages). Once activity subsided to production level intensity, residual avoidance effects would be expected to be relatively minor additions to the existing disturbance regime.

5.9.3. Environmental Consequences – No Action Alternative

Direct and Indirect Impacts

There would be no action authorized that would affect big game winter range or influence wintering big game animals.

Cumulative Impacts

None.

5.9.4. Mitigation Measures and Residual Impacts

None.

5.10. Special Status Animal Species

5.10.1. Affected Environment

A number of special status animals are directly or indirectly associated with the general project area.

The project area drains to the White River and its 100-year floodplain below Taylor Draw dam, which, together, are designated critical habitat for the endangered Colorado pikeminnow. This occupied segment of the White River is separated from the nearest pipeline disturbance by a minimum of 12.3 miles of ephemeral channel and from the pad by a minimum of 16.8 miles of ephemeral channel. The White River is also inhabited by a number of BLM-sensitive fish, including roundtail chub and the flannelmouth, bluehead, and mountain sucker. The BLM-sensitive northern leopard frog may occupy the lower White River, but WRFO has no current documentation of their occurrence downstream of Rangely.

The midget faded rattlesnake is a BLM-sensitive species and species of special concern for the State of Colorado. This species occurs solely within the Green River Formation in southeast Wyoming, eastern Utah, and western Colorado and is typically associated with bedded sandstone outcrops and fallen midslope slabs on south to southeast facing exposures below 7,000 foot elevation. The project area is not associated with the Green River formation and the nearest rock outcrops are not only beyond the normal dispersal range of this species (about 1.25 miles from dens), but they do not provide the proper orientation or character for denning habitat.

The white-tailed prairie dog is a BLM-sensitive species and one that forms the habitat base for the reintroduced population (experimental non-essential) of black-footed ferret in northwest Colorado and northeast Utah. That portion of the project that extends beyond the highway margins (State Highway 64 and RBC Road 21 (Bonanza highway)) borders mapped prairie dog habitat along a 0.25 mile of the existing access route off Highway 64. Since this access can accommodate project-related vehicles without upgrade, the only potential disturbance to underground burrow systems would involve a 250-foot stretch extending from Highway 64. The proposed pipeline corridor would also intersect mapped prairie dog habitat distributed discontinuously along a 0.7 mile stretch of the Highway 64 right-of-way and less than a 0.2 mile

stretch of the RBC 21 right-of-way. As mapped, the proposed pipeline alignment would be located no more than 100 feet from the highway pavement's edge. The project area is located about 2 miles south of the U.S. Highway 40 corridor, which supports a relatively continuous band of prairie dog habitat extending east from Utah's Snake John ferret management area, and about 1.5 miles north of the WRFO's Coyote Basin ferret management area. More expansive and cohesive prairie dog distribution, which is better suited for persistent support of black-footed ferret, but located outside designated ferret management areas, is located about 1 mile north of the project area. At this time, ferrets in the WRFO are thought to be recovering from drastic, if not complete, reductions due to a plague epizootic in 2010 and local ferret populations are thought to be extremely small in the Coyote Basin and along the Highway 40 corridor in Colorado.

The project area is mapped by CPW as greater sage-grouse Potential General Habitat, a habitat category that represents occupied or formerly occupied sage-grouse ranges that lie outside habitats currently having the highest conservation value in maintaining sustainable sage-grouse populations. The historic Dripping Rock lek site is located 0.6-mile from the nearest point of upgraded well access and one mile from the pad location. The last recorded occupation of this lek was in 1989. Recent attempts to document sage-grouse activity in this area by WRFO have not been successful. Recent communication with local and regional CPW staff confirmed that sage-grouse no longer appear to inhabit the general project area.

The BLM-sensitive ferruginous hawk is an uncommon breeding bird associated with lower elevation sagebrush and salt desert communities, particularly those in close proximity to prairie dog towns. In the WRFO, these birds nest almost exclusively in isolated junipers or open stands of junipers. Those lands potentially influenced by the Proposed Action do not support junipers as suitable nest substrate. The WRFO has no record of any ferruginous hawk nest site within two miles of the Proposed Action.

There are no water features known to be capable of supporting a breeding population of Great Basin spadefoot within the general project area. The BLM-sensitive Brewer's sparrow is addressed in the Migratory Bird section.

5.10.2. Environmental Consequences – Proposed Action

Direct and Indirect Impacts

The proposed project area is separated from the nearest critical habitat for Colorado pikeminnow by a minimum of 12 miles of ephemeral channel. Given the limited extent of surface disturbance, required compliance with State and federal drilling and reclamation regulations, and lengthy separation of project work from designated and occupied aquatic habitat, there is no foreseeable likelihood that the Proposed Action would contribute sediments or contaminants capable of adversely influencing downstream aquatic habitat conditions or floodplain processes.

The Proposed Action would indirectly influence critical habitat designated for the endangered Colorado River fish in terms of water depletion alone. 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, as conditioned by the implementation of the reasonable and prudent alternative, 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.

The Recovery Implementation Program for Endangered Fish Species in the Upper Colorado River Basin (initiated in January 1988) 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 the 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. Water use attributable to this project (estimated at about 2.5 acre-feet for the single well) would be entered into the White River Field Office fluid minerals water depletion log, which would be submitted to the Colorado State Office at the end of the Fiscal Year.

Well development and access would not be expected to involve any white-tailed prairie dog burrow systems. Pipeline trenching and installation may, however, intersect up to one mile of mapped habitat. With the exception of 250 linear feet extending off Highway 64, these intersected towns are located immediately adjacent to paved highways and represent marginal habitat for prairie dogs (i.e., essentially sink-habitat) and, considering their close proximity to paved highways, are particularly poorly suited for the support of black-footed ferret. Although it is possible that a limited number of occupied prairie dog burrow systems may be intersected and destroyed in the course of pipeline installation, the risk and consequences of such an effect are considered minimal, both in the context of prairie dogs and black-footed ferret.

The Proposed Action would have no conceivable involvement with midget faded rattlesnake, greater sage-grouse, ferruginous hawk, or Great Basin spadefoot populations or habitat.

Cumulative Impacts

Incremental flow depletions from the Upper Colorado River system contribute to cumulative reductions in flow volume that affect seasonal fluctuations in flow, water quality, and channel/floodplain structure as important determinants of endangered fish habitat. However, the consequences of depletion were considered and conservation measures applied in the context of basin-wide water use in previous section 7 consultation with the FWS.

Although disturbance of white-tailed prairie dog burrow systems would be incremental contributions to those adversely influenced by other mineral actions in the WRFO (e.g., Coal Oil Basin), the transitory effects of such disturbance (i.e., mortality rapidly compensated) would not figure prominently in a cumulative sense. The potential for black-footed ferret to occupy these near-highway prairie dog burrow systems is considered remote and probably expose such ferrets to a high risk of vehicle mortality.

5.10.3. Environmental Consequences – No Action Alternative

Direct and Indirect Impacts

There would be no action authorized that would contribute to water depletion in the Upper Colorado River basin or influence white-tailed prairie dog or black-footed ferret habitats.

Cumulative Impacts

None.

5.10.4. Mitigation Measures and Residual Impacts

None.

5.11. Cultural Resources

5.11.1. Affected Environment

The proposed project has been inventoried at the Class III (100 percent) pedestrian level (Polk 2014 compliance dated September 4, 2014). Two previously reported sites in the area could not be relocated and are presumed to have been destroyed either by erosion or construction in the area. One previously recorded, site 5RB.3500, has been reevaluated as being eligible for nomination to and listing on the National Register of Historic Places (NRHP). The site is a range improvement project of a water well, pump house and a corral that is used to manage livestock and was built by the Civilian Conservation Corps at the end of the Great Depression in 1941, just before the start of World War II.

5.11.2. Environmental Consequences – Proposed Action

Direct and Indirect Impacts

The proposed project has been redesigned to avoid all of the structures associate with site 5RB.3500, and thus have minimal adverse effect on the NRHP eligible site, as determined in consultation with the Colorado SHPO (Nichols 2014). No other known sites in the area are known to be adversely impacted by the proposed project because either they are outside the Area of Potential Effect or have been previously lost to erosion or construction.

Cumulative Impacts

Provided that all mitigation measures are strictly adhered to and no subsurface remains are encountered during well pad construction and pipeline trenching, there should be no adverse cumulative impacts to the cultural resources database within the Field Office.

5.11.3. Environmental Consequences – No Action Alternative

Direct and Indirect Impacts

Under the No Action Alternative, there would be no new ground disturbance associated with oil and gas development and there would be no impacts to any known or unknown cultural resources in the vicinity. Natural erosional processes would continue as they have been for century's slowly eroding soils and any resources that might be present. These losses are so slow as to not to be considered adverse.

Cumulative Impacts

The cumulative impacts to the archaeological database under the No Action Alternative are too small to be quantified but would ultimately result in a long term, permanent irreversible and irretrievable loss of data from the regional archaeological database.

5.11.4. Mitigation Measures and Residual Impacts

1. The operator 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.
2. 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. The operator 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, 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. The operator, 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.
3. Pursuant to 43 CFR 10.4(g), the operator 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), the operator must stop activities in the vicinity of the discovery and protect it for 30 days or until notified to proceed by the AO.
4. The well tie pipeline must be routed through site 5RB.3500 parking area, between the corrals and the well and well house (Figure 2). No impacts to the structures are permitted per consultation with the Colorado State Historic Preservation Officer.

Residual Impacts: Provided that all mitigation measures are strictly adhered to, there would be no residual impacts to any currently known cultural resources. However, if previously unknown resources are impacted during any construction-related excavations, there would be a long term, permanent, irreversible, unquantifiable loss of data from the regional archaeological database.

5.12. Paleontological Resources

5.12.1. Affected Environment

The proposed well location and associated pipeline cross three formations (Tweto 1979), consisting of Mancos Shale, a Potential Fossil Yield Classification (PFYC) 3 formation, the Sego Sandstone, Buck Tongue of the Mancos and Castlegate Sandstone formation, PFYC 3, and the Upper Mesaverde, PFYC 5. The potential for PFYC 3 formations to produce fossils is not well understood in the WRFO, while the Upper Mesaverde is known to produce scientifically noteworthy fossils (c. Armstrong and Wolny 1989). The proposed well pad location and well tie pipeline has been inventoried for fossil resources (Scheetz and Britt 2014) and none were noted on the surface.

5.12.2. Environmental Consequences – Proposed Action

Direct and Indirect Impacts

If it becomes necessary to excavate into the underlying sedimentary rocks to construct the well pad, excavate any reserve/blooi/cuttings pits or bury the well tie pipelines, there is a potential to impact scientifically noteworthy fossil resources, especially in the Upper Mesaverde formation. Should any fossils be encountered during any excavation operations, it would likely result in the loss of some fossil material and associated paleo-environmental data, even with a paleontological monitor present.

Cumulative Impacts

If any fossil resources should happen to be revealed during construction there is likely to be some loss of scientific data, in spite of the potential recovery of all or part of the fossils. Some damage is likely to occur as the construction equipment encounters the fossils but recovery of as much of the undamaged material is likely to be important. Any losses of data or fossils would represent a long term, permanent, irreversible and irretrievable loss of fossils and scientific data from the regional paleontological database. At the present time it is not possible to quantify the loss of data.

5.12.3. Environmental Consequences – No Action Alternative

Direct and Indirect Impacts

There would be no construction related impacts to fossil resources under the No Action Alternative. The natural weathering and erosional process that have been occurring will continue to occur as they have for many centuries. These processes may slowly and gradually expose fossils that might be present resulting in the loss of the smaller fossils to erosional removal of the fossil from their context. Tumbling of the fossils during the erosional transport would likely result in the destruction of the fossils. Larger fossils that might be present would also be exposed and would gradually weather in place, slowly crumbling in to tiny fragments over time.

Cumulative Impacts

The cumulative impacts of the No Action Alternative are almost impossible to quantify due to the very slow nature of any losses due to the natural erosional processes. The loss of fossils and associated paleo-environmental data due to normally slow erosion process are very slow and not currently considered unacceptable.

5.12.4. Mitigation Measures and Residual Impacts

1. The operator 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 or other scientifically important fossils, collecting large amounts of petrified wood (over 25lbs./day, up to 250lbs./year), or collecting fossils for commercial purposes on public lands.
2. If any paleontological resources are discovered as a result of operations under this authorization, the operator 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.
3. 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.

Residual Impacts: If excavations for pad construction and/or pipeline trenching do not extend into any of the underlying sedimentary rock formations there would be no residual impacts to fossil resources. However, if excavations do penetrate into any of the underlying sedimentary rock formations, there is a potential for loss of paleontological data which cannot currently be quantified.

5.13. Visual Resources

5.13.1. Affected Environment

Visual resources are the visible physical features of a landscape that convey scenic value. The BLM developed the Visual Resource Management system to identify and evaluate an area's scenic value. The visual resource inventory (VRI) process described in BLM Manual H-8410-1 establishes VRI classes, which are used to assess visual values for areas of the landscape. VRI

classes II, III, and IV are determined by using a combination of three components: scenic quality, sensitivity level, and distance zones, with Class II having a higher level of value and Class IV having the least visual value. VRI Class I areas are assigned to special management areas, such as Wilderness Study Areas, which are the most valued landscapes. The VRI classes are the baseline from which environmental effects are measured. The Proposed Action is located in Visual Resource Inventory Class IV, which means this area is a lesser valued scenic landscape. The area of the landscape where the Proposed Action is located was placed into VRI Class IV as a result of a composite of the three above mentioned components. The area received a low Scenic Quality scoring of C (A, B, and C type rating). The Sensitivity Level rating as moderate value to the public, and the project is proposed to be located in a Distance Zone of Foreground-Middleground.

The BLM also maintains four Visual Resource Management (VRM) classes used to describe the level of acceptable change allowable at a given location. Scenic values in the BLM White River Resource Area have been classified according to the Visual Resource Management (VRM) system into four Visual Resource Management Classes (I-IV), and corresponding VRM objectives were established in the 1997 White River ROD/RMP. VRM Class I are the most restrictive, with VRM Class IV being the least restrictive for the amount of allowable change to occur on the landscape. The Proposed Action is located within a VRM Class III area. The objective of the VRM III classification is to partially retain the existing character of the landscape. The level of change to the characteristic landscape in VRM III areas should be moderate. Management activities may attract attention but 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 Proposed Action is located in the Dripping Spring drainage area to the northwest of Rangely, CO. This low relief panoramic landscape consists of vast gently sloping topography mixed with steeply eroded cliff bands and hillsides. This area consists of very few trees and is mostly grasses, sage brush, and mountain shrubs. The brown to light green vegetation contrasts with the buff and gray colored soils providing texture to the landscape. The pipe line portion of the Proposed Action would primarily be viewed by those traveling State Highway 64. The remaining portion of the Proposed Action (access road and well pad) would likely only be viewed by the owners of the private property involved, BLM employees, and those working on the Proposed Action. Although the well pad and access road is located on private property, the BLM must include best management practices to reduce impacts on federal authorizations.

5.13.2. Environmental Consequences – Proposed Action

Direct and Indirect Impacts

The construction of the well pad, pipeline, and access road includes a total of approximately 26.8 acres of total ground disturbance for the initial construction period. The exposed soils created by this construction activity and associated linear road and pipeline disturbance would likely create noticeable contrast to the landscape color and line characteristics from the construction start until interim reclamation. Upon completing interim reclamation, areas of exposed soils would be

reduced in size (10.8 acres) and other formerly disturbed acres would then have some vegetation growing. This would reduce the amount of noticeable contrast and newly established vegetation would begin to blend with the surrounding landscape. It is likely that the pipe line corridor would blend with the surrounding landscape after interim reclamation is complete. This is because it is designed to follow the line of State Highway 64 and there are no trees in this area. The well pad would also begin to blend with the surrounding landscape after interim reclamation is complete because there are no trees in this area and there have been various vegetation treatments to remove sage brush in this area, resulting in irregular portions of grasses without sagebrush. The unnatural shape and color contrast of all above ground structures could cause moderate long term impacts to casual observers, if not mitigated. To reduce this impact all permanent above ground structures (on-site for six months or longer) including tanks, associated production equipment, and any piping and valves will be painted, Covert Green according to the BLM Standard Environmental Chart CC-001: June 2008. This color should best serve to blend these structures with the scattered sagebrush, grasses, and naturally exposed soils that surround the proposed well pad location. Overall, the implementation of the Proposed Action would not change the Visual Resource Inventory Class IV rating and would meet the Visual Resource Management class III objective of partially retaining the existing character of the landscape in this area.

Cumulative Impacts

Combined with other existing, ongoing, and foreseeable oil and gas development and mining development activities in the area, the Proposed Action could begin to contribute to an increasingly impacted visual landscape.

5.13.3. Environmental Consequences – No Action Alternative

Direct and Indirect Impacts

By not implementing the Proposed Action, there would be no new impacts to visual resources or casual observers in this area and there would be no changes to visual resource inventory class ratings.

Cumulative Impacts

None have been identified as a result of this alternative.

5.13.4. Mitigation Measures and Residual Impacts

1. Paint and maintain the paint on all permanent above ground structures (on-site for six months or longer) including tanks, associated production equipment, and any piping and valves be painted, Juniper Green according to the BLM Standard Environmental Chart CC-001: June 2008.

Residual Impacts: Even after the life of the well and final reclamation, there would still be minor visual impacts until the vegetation structure is re-established.

5.14. Livestock Grazing

5.14.1. Affected Environment

The Proposed Action is located within the Artesia Allotment (06308). This allotment is authorized for winter and spring sheep use and is outlined in Table 15.

Table 15. Authorized Grazing for the Artesia Grazing Allotment.

ALLOTMENT		LIVESTOCK		GRAZING PERIOD				
Number	Name	Number	Kind	Begin	End	%PL	Type Use	AUMs
06308	Artesia	3,990	Sheep	12/1	2/28	100	Active	2,361
06308	Artesia	3,990	Sheep	3/1	4/1	100	Active	840
06308	Artesia	1,400	Sheep	4/1	5/20	100	Active	460

The proposed well pad and the majority of the access road are located on private lands that are fenced separate from the grazing allotment and are not used by the grazing permittee. The pipeline has 12,900 feet on BLM administered lands that run adjacent to Highway 64, and RBC 21 that are within the right of way and not used by the grazing permittee.

5.14.2. Environmental Consequences – Proposed Action

Direct and Indirect Impacts

The proposed project would have minimal impacts on grazing. The well pad and the majority of the access road and pipeline are on lands that the permittee does not have access to. There would be less than one AUM of forage loss on the grazing allotment, which would have no impacts on ranching operations. There is a fence off of Highway 64 that the access road would cross. There is a potential for gates to be left open and allow livestock access to the highway. The surface use plan says cattle guards would be installed, which would minimize the chance of livestock entering the highway.

Cumulative Impacts

Past and present development in the area is minimal and has little impacts to livestock operations. This project is not expected to have any additional impacts to livestock grazing in the area, because the amount of development within the grazing allotment (less than 1 acre) is nominal in comparison to the entire allotment. There is a potential that future development in the allotment could impact future grazing, and that would be analyzed during the grazing permit renewal process.

5.14.3. Environmental Consequences – No Action Alternative

Direct and Indirect Impacts

The No Action Alternative would result in no surface disturbance and no loss in forage for livestock. There would be no disturbance to fences or other range improvements.

Cumulative Impacts

There would be no further cumulative impacts to livestock grazing in the project area; however there is still the potential for future development in the area to impact authorized grazing within the allotment in the future.

5.14.4. Mitigation Measures and Residual Impacts

None.

5.15. Realty Authorizations

5.15.1. Affected Environment

The access road is within the North Rangely oil & gas exploratory unit (COC76572X) boundary. The off-unit portion of the pipeline would require a right-of-way (ROW). Table 16 describes the existing ROWs in the area of the proposed well pad, access road, and pipeline.

Table 16. Existing ROWs Near the Proposed Action

Case File	Holder	Authorized Use
COC29366	Mid-America Pipeline Company	Pipelines
COC52111		
COC62466		
COC30118	Blue Mountain Energy Inc	Railroad
COC34264	Red Rock Gathering Company	Pipeline
COC34284	Moon Lake Electric Association	Power lines
COC34348		
COC53757		
COC68665		
COC36333	CenturyTel of Eagle Inc	Telephone cable
COC53638		Telephone cable and fiber optic
COC37784	Chevron Pipeline Company	Pipeline
COC40644	Western Area Power Administration	Power lines
COC61308		
COC50044	C&J Field Services	Access road
COC55477	Grand Valley Reserve Inc	Access road
COC55528	Summit Energy	Pipeline
COC68204	Northwest Pipeline	Pipelines
COC011243		
COC70789	American Warrior Inc	Access road
COC01986	Colorado Department of Transportation	Highway 64

COC03119		
COC72907	Rocky Mountain Power	<i>Pending power line</i>

5.15.2. Environmental Consequences – Proposed Action

Direct and Indirect Impacts

The two-inch natural gas pipeline (ROW COC76582) to serve the Federal 3-104-26-9 well pad would be 8,450 feet long, 25 feet wide, and contain approximately 4.85 acres. Damage to the facilities or rights of existing ROW holders could occur if construction activities are not properly planned and other ROW facilities are not properly identified prior to construction. If accurate “as built” mapping is not provided to BLM, conflicts may develop in the future with other ROW holders.

Cumulative Impacts

As the number of ROW holders in the project area increases, so would competition for suitable locations for facilities. Increased ROW densities would also lead to a higher probability of conflict between ROW users.

5.15.3. Environmental Consequences – No Action Alternative

Direct and Indirect Impacts

Failure to authorize the proposed project would not result in any increased impacts to realty authorizations in the area.

Cumulative Impacts

There would not be any cumulative effects from not authorizing the proposed project.

5.15.4. Mitigation Measures and Residual Impacts

1. The holder will effectively coordinate with existing ROW holders prior to construction activity.
2. The holder will provide the BLM AO with data in a format compatible with the WRFO’s ESRI ArcGIS Geographic Information System (GIS) to accurately locate and identify the ROW and all constructed infrastructure, (as-built maps) within 60 days of construction completion. Acceptable data formats are: (1) corrected global positioning system (GPS) files with sub-meter accuracy or better; (2) ESRI shapefiles or geodatabases; or at last resort, (3) AutoCAD .dwg or .dxf files. Option 2 is highly preferred. In ALL cases the data must be submitted in Universal Transverse Mercator (UTM) Zone 13N, NAD 83, in units of meters. Data may be submitted as: (1) an email attachment; or (2) on a standard compact disk (CD) in compressed (WinZip only) or uncompressed format. All data will include metadata, for each submitted layer, that conforms to the Content Standards for Digital Geospatial Metadata from the Federal Geographic Data Committee standards. Questions should be directed to WRFO BLM GIS staff at (970) 878-3800.
3. Construction activity should take place entirely within the areas authorized in the ROW grant.

4. At least 90 days prior to termination of the ROW, the holder will contact the AO to arrange a joint inspection of the ROW. The inspection will result in the development of an acceptable termination and rehabilitation plan submitted by the holder. This plan will include, but is not limited to, removal of facilities, drainage structures, and surface material (e.g., gravel or concrete), as well as final recontouring, spreading of topsoil, and seeding. The Authorized Officer must approve the plan in writing prior to the holder's commencement of any termination activities.
5. No surface disturbing activities will take place on the subject right-of-way until the associated APD is approved. The holder will adhere to special stipulations in the Surface Use Program of the approved APD, relevant to any right-of-way facilities.
6. Boundary adjustments in Oil and Gas lease/unit COC76572X will automatically amend this right-of-way to include that portion of the facility no longer contained within the above described lease/unit COC76572X. In the event of an automatic amendment to this right-of-way, the prior on-lease/unit conditions of approval of this facility will not be affected even though they would now apply to facilities outside of the lease/unit as a result of a boundary adjustment. Rental fees, if appropriate will be recalculated based on the conditions of this grant and the regulations in effect at the time of an automatic amendment.

Residual Impacts: Provided that all mitigation measures are strictly adhered to, there would be no residual impacts to realty authorizations. Damage to existing ROW facilities and conflicts among ROW holders would be avoided if mitigation measures are adhered to.

5.16. Hazardous or Solid Wastes

5.16.1. Affected Environment

There are no known hazardous or other solid wastes on the subject lands. No hazardous materials are known to have been used, stored, or disposed of at sites included in the project area. Most of the exploration and production wastes that would be generated by the Proposed Action would be exempt from the Resource Conservation and Recovery Act (RCRA) hazardous waste regulations (e.g., produced water, produced gas). However, the exemption would not mean that these wastes present no hazard to human health and the environment, nor would the exemption relieve the operator from corrective action to address releases of exempt wastes. Non-exempt wastes such as lubricants, fuels, caustics or acids, and other chemicals would be used during exploration and production activities and solid waste (e.g., human waste and garbage) would be generated during the proposed activities.

The operator has not specified the chemicals that would be used for drilling, completion, and hydraulic fracturing. Constituents found in hydraulic fracturing fluids may include salts, acids, petroleum hydrocarbons, and numerous other additives. The concentrations of these constituents are not well documented.

5.16.2. Environmental Consequences – Proposed Action

Direct and Indirect Impacts

No listed or extremely hazardous materials in excess of threshold quantities are proposed for use in this project. While commercial preparations of fuels and lubricants proposed for use may contain hazardous constituents, they would be stored, used, and transported in a manner consistent with applicable laws such that generation of hazardous wastes is not anticipated. Solid wastes would be properly disposed of off-site at an approved facility.

Accidental releases associated with equipment failures, equipment maintenance and refueling, and storage of fuel, oil, other fluids, and chemicals could cause soil, surface water, and/or groundwater contamination. Improper management of pit contents may also contribute to environmental contamination. Releases of produced water would present the greatest threat for widespread impacts. The high salinity of produced water may affect plant growth due to the high osmotic pressure of the soil solution, affecting existing vegetation adjacent to pads and greatly reducing the chance for successful reclamation. High salinity may also impact surface or ground water through run-off or leaching. The sodicity (i.e., excess sodium) of produced water causes deterioration of the soil structure, thereby increasing the potential for soil erosion and reducing the chances of reclamation success. With implementation of the mitigation measures and adherence to the COAs, impacts would likely be temporary.

Since not all chemicals that would be used on the site have been disclosed, specifically chemicals or other additives used for drilling, completion, and hydraulic fracturing operations, impacts to groundwater may occur. These chemicals and additives can also be present in the reserve pit after it is closed, as well as in drill cuttings within the cuttings pit. With proper well completion, implementation of the mitigation measures and adherence to the COAs, impacts to aquifers above the producing zone would be unlikely.

Pipeline abandonment procedures listed in the Proposed Action describe pipeline abandonment procedures during final reclamation with the exception of flushing and properly disposing of any fluids in the lines. With the pipelines Retamco is proposing to install as part of the project and ultimately abandon, there would be potential, if not abandoned properly, for there to either be a spill of produced water or a release of natural gas. With proper pipeline abandonment procedures followed, implementation of the mitigation measures and adherence to the COAs, the potential risk for a release during or following abandonment would be greatly reduced.

Cumulative Impacts

Oil and gas exploration and development, and chemicals used for livestock and rangeland management are the principal sources of hazardous and solid wastes in the project area, while agriculture and human habitation also contribute. Proper implementation of the surface use plans and adherence to the COAs would greatly reduce any contribution from the Proposed Action to cumulative adverse effects from hazardous and solid wastes on human health and/or the environment. Nonetheless, the Proposed Action is expected to contribute incrementally to release of hazardous and solid waste in the watershed.

5.16.3. Environmental Consequences – No Action Alternative

Direct and Indirect Impacts

No hazardous or other solid wastes would be generated under the No Action Alternative.

Cumulative Impacts

The No Action Alternative would not contribute to cumulative effects from hazardous or solid wastes in the area of analysis.

5.16.4. Mitigation Measures and Residual Impacts

1. Comply with all Federal, State and/or local laws, rules and regulations, including but not limited to onshore orders and notices to lessees, addressing the emission of and/or the handling, use, and release of any substance that poses a risk of harm to human health or the environment. All spills or leakages of oil, gas, produced water, toxic liquids or waste materials, blowouts, fires, will be reported by the operator, in accordance with the regulations and as prescribed in applicable orders or notices.
2. Where required by law or regulation to develop a plan for the prevention of releases or the recovery of a release of any substance that poses a risk of harm to human health or the environment, provide a current copy of said plan to the BLM WRFO.
3. When drilling to set the surface casing, drilling fluid will be composed only of fresh water, bentonite, and/or a benign lost circulation material that does not pose a risk of harm to human health or the environment (e.g., cedar bark, shredded cane stalks, mineral fiber and hair, mica flakes, ground and sized limestone or marble, wood, nut hulls, corncobs, or cotton hulls).
4. All substances that pose a risk of harm to human health or the environment will be stored in appropriate containers. Fluids that pose a risk of harm to human health or the environment, including but not limited to produced water, will be stored in appropriate containers and in secondary containment systems at 110% of the largest vessel's capacity. Secondary fluid containment systems, including but not limited to tank batteries will be lined with a minimum 24 mil impermeable liner.
5. Construction sites and all facilities will be maintained in a sanitary condition at all times; waste materials will be disposed of promptly at an appropriate waste disposal site. "Waste" means all discarded matter including, but not limited to, human waste, trash, garbage, refuse, oil drums, petroleum products, ashes, and equipment.
6. As a reasonable and prudent lessee/operator in the oil and gas industry, acting in good faith, all lessees/operators and right-of-way holders will report all emissions or releases that may pose a risk of harm to human health or the environment, regardless of a substance's status as exempt or nonexempt and regardless of fault, to the BLM WRFO (970) 878-3800.

As a reasonable and prudent lessees/operator and/or right-of-way holder in the oil and gas industry, acting in good faith, all lessees/operators and right-of-way holders will provide for the immediate clean-up and testing of air, water (surface and/or ground) and soils contaminated by the emission or release of any substance that may pose a risk of harm to human health or the environment, regardless of that substance's status as exempt or non-exempt. Where the lessee/operator or right-of-way holder fails, refuses or neglects to provide for the immediate clean-up and testing of air, water (surface and/or ground) and soils contaminated by the emission or release of any quantity of a substance that poses a risk of harm to human health or the environment, the BLM WRFO may take measures to clean-up and test air, water (surface and/or ground) and soils at the lessee/operator's expense. Such action will not relieve the lessee/operator of any liability or responsibility.

Residual Impacts: Any storage on location and transportation of production fluids would retain the potential for spill. Improper management or failure to follow mitigation measures of the reserve pit has the potential for contamination of the soil.

5.17. Colorado Standards for Public Land Health

In January 1997, the Colorado BLM approved the Standards for Public Land Health. These standards cover upland soils, riparian systems, plant and animal communities, special status species, and water quality. Standards describe conditions needed to sustain public land health and relate to all uses of the public lands. If there is the potential to impact these resources, the BLM will note whether or not the project area currently meets the standards and whether or not implementation of the Proposed Action would impair the standards.

5.17.1. Standard 1 – Upland Soils

With mitigation, this action is unlikely to reduce the productivity of soils on public lands.

5.17.2. Standard 2 – Riparian Systems

The Proposed Action would have no influence on the Public Land Health standard.

5.17.3. Standard 3 – Plant and Animal Communities

With implementation of mitigation measures and successful re-vegetation, the Proposed Action would have no effect on the status of Land Health Standard 3 in the project area or at a landscape scale.

The general project area continues to support big game and migratory bird use during their respective seasons of occupation without serious impairment from ongoing mineral development. The Proposed Action, as proposed and conditioned, would not add appreciably to existing patterns and intensity of mineral development or human activity and would be consistent with continued meeting of the standard. The No Action Alternative would have no immediate influence on the standard, but in the event this proposal were not authorized, it is possible that alternative locations would be more disruptive to big game and migratory birds, including raptors, and involve more substantial additions to the local road network.

5.17.4. Standard 4 – Special Status Species

Water depletion effects attributable to fluid mineral development would be detrimental to Colorado pikeminnow from the population and habitat perspectives, and by nature and definition, are considered cumulative. These influences were thoroughly analyzed in the programmatic consultation cited above and resulted in the determination that BLM water depletions from the Colorado River Basin, as conditioned by the implementation of the reasonable and prudent alternative, 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.

The project area no longer provides for the support of sage-grouse, though this is likely attributable to adverse shifts in native herbaceous understory composition, including the proliferation of cheatgrass and introduction of crested wheatgrass, as well as the prior installation of electric transmission lines in close proximity to the only known lek. Dispersed fluid mineral developments would not be expected to have any further influence on meeting the land health standard in this regard.

The project area continues to support appropriate abundance and distribution of Brewer's sparrow and white-tailed prairie dogs and provides the fundamental requirements for black-footed ferret recovery actions. Failure to reestablish viable ferret populations are a likely product of introduced disease (i.e., sylvatic plague) rather than issues pertaining to the land health standards.

5.17.5. Standard 5 – Water Quality

It is unlikely that construction of the well pad, access roads, pipelines or drilling would result in an exceedance of state water quality standards.

6. SUPPORTING INFORMATION

6.1. Interdisciplinary Review

Table 9. List of Preparers

Name	Title	Area of Responsibility	Date Signed
Bob Lange	Hydrologist	Surface and Ground Water Quality; Floodplains, Hydrology, and Water Rights; Soils	6/30/2014
Paul Daggett	Mining Engineer	Air Quality; Geology and Minerals	7/28/2015
Justina Thorsen/Heather Woodruff	Ecologist	Areas of Critical Environmental Concern; Special Status Plant Species	6/4/2014 7/27/2015
Matthew Dupire/Heather Woodruff	Rangeland Management Specialist	Forest Management	8/5/2014 7/27/2015
Michael Selle	Archaeologist	Cultural Resources; Native American Religious Concerns; Paleontological	7/27/2015

Name	Title	Area of Responsibility	Date Signed
		Resources	
Matthew Dupire/Heather Woodruff	Rangeland Management Specialist	Invasive, Non-Native Species; Vegetation; Rangeland Management	8/5/2014 7/27/2015
Ed Hollowed	Wildlife Biologist	Migratory Birds; Special Status Animal Species; Terrestrial and Aquatic Wildlife; Wetlands and Riparian Zones	7/28/2015
Aaron Grimes	Outdoor Recreation Planner	Wilderness; Visual Resources; Access and Transportation; Recreation,	7/28/2015
Stacey Burke	Realty Specialist	Realty Authorizations	7/28/2015
Kyle Frary	Fire Management Specialist	Fire Management	6/30/2014
Ryan Snyder	Natural Resource Specialist	Project Lead; Hazardous Materials	7/29/2015
Joe David	Planning and Environmental Coordinator	NEPA Compliance	7/23/15

6.2. Tribes, Individuals, Organizations, or Agencies Consulted

Colorado Parks and Wildlife, personal communication via emails (Taylor Elm) of May 21 and June 23, 2014.

6.3. References

Armstrong, Harley J., and David G. Wolny

1989 Paleontological Resources of Northwest Colorado: A Regional Analysis. Museum of Western Colorado, Grand Junction, Colorado.

Colorado Air Pollution Control Division (CAPCD)

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Associated Access Road and Pipeline, Rio Blanco County, Colorado. Sagebrush
Consultants, Ogden, Utah. (14-55-01: OAHP # RB.LM.R1380)

Scheetz, Rodney D., and Brooks B Britt
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Utah. (14-194-01: OAHP #)

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Interior, Reston, Virginia.

APPENDIX A. FIGURES

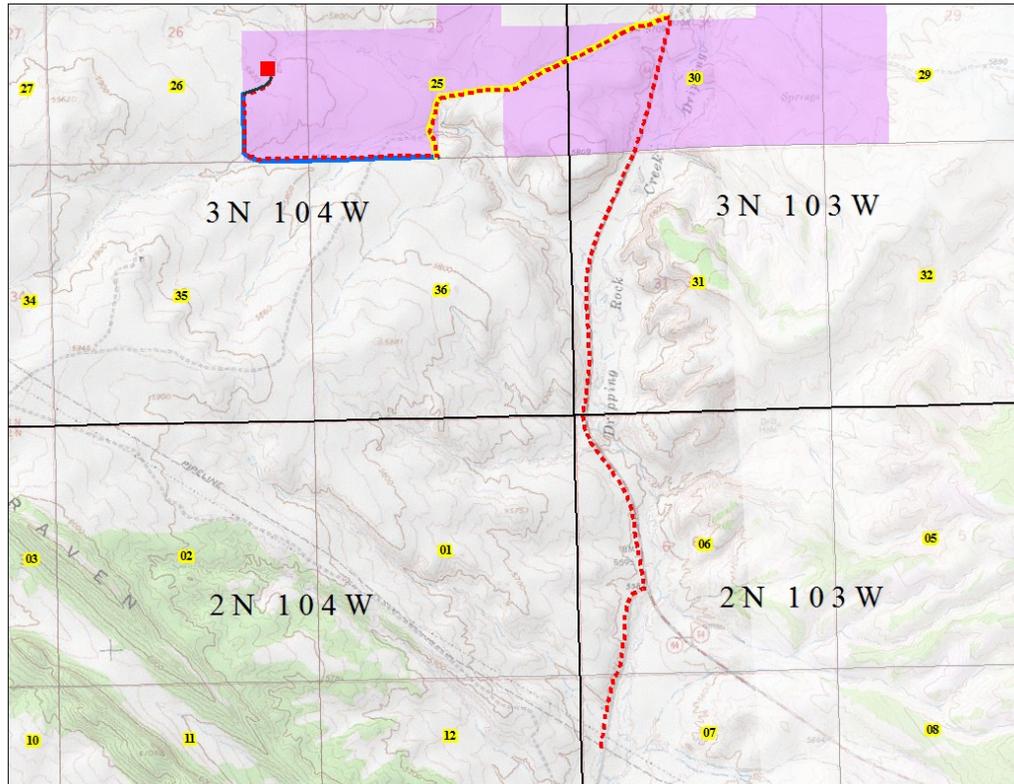


Figure 1. The image above illustrates the proposed geographic location for the Federal 3-104-26-9 well pad and the associated road and buried pipeline infrastructure. The proposed well pad is symbolized as a red box in Section 26, the proposed pipeline corridor is symbolized as a red dotted line, the proposed road corridor to be constructed is symbolized as a black solid line in Section 26, the existing road that would be improved is symbolized as a blue solid line, and the segment of road to be improved as needed is symbolized as a yellow solid line.



Figure 2. The figure above illustrates the route the pipeline would follow to avoid the cultural site in T. 2 N., R. 103 W., Sec. 7. The pipeline reroute is symbolized as a red line.

Figure Air 1 - White River Field Office and Designated Air Boundaries

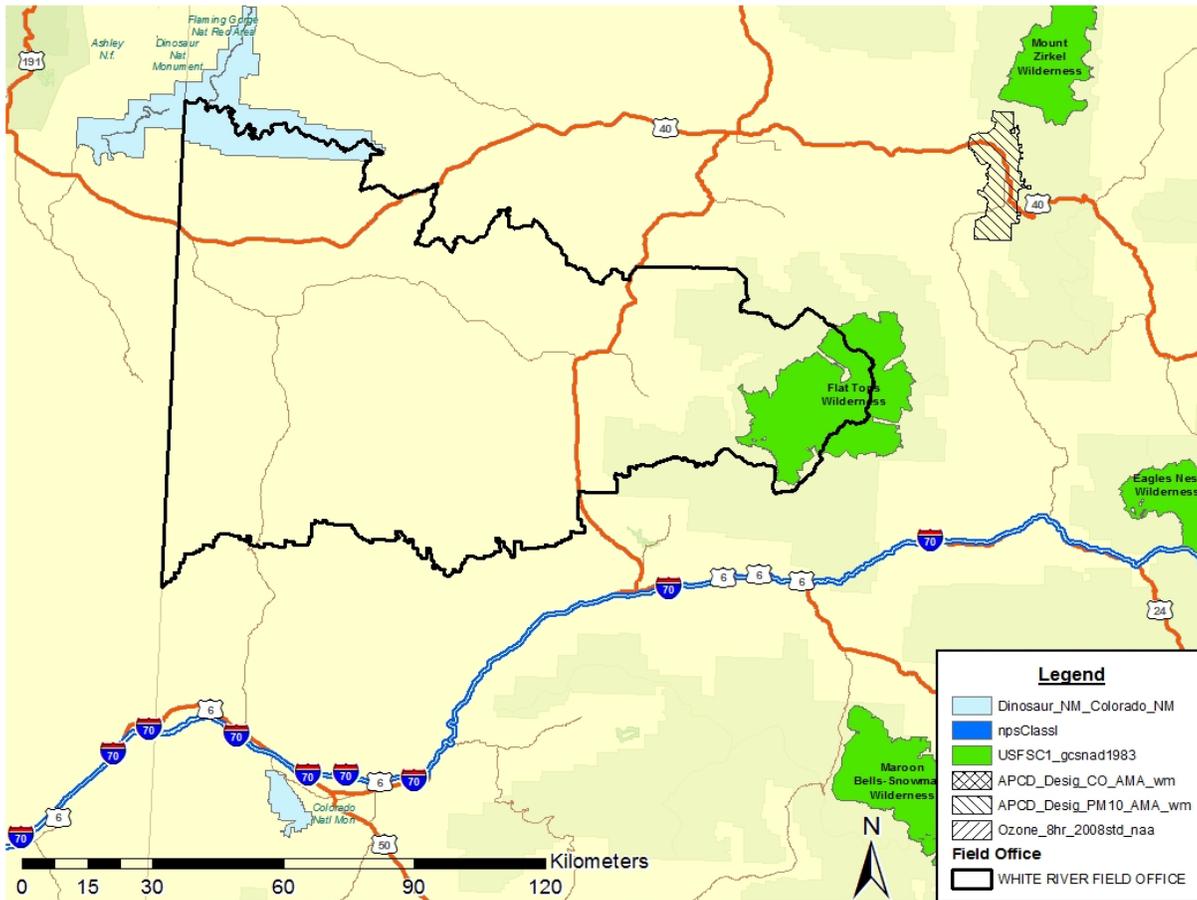


Figure Air 2 - AQRV Visibility Data for White River National Forest

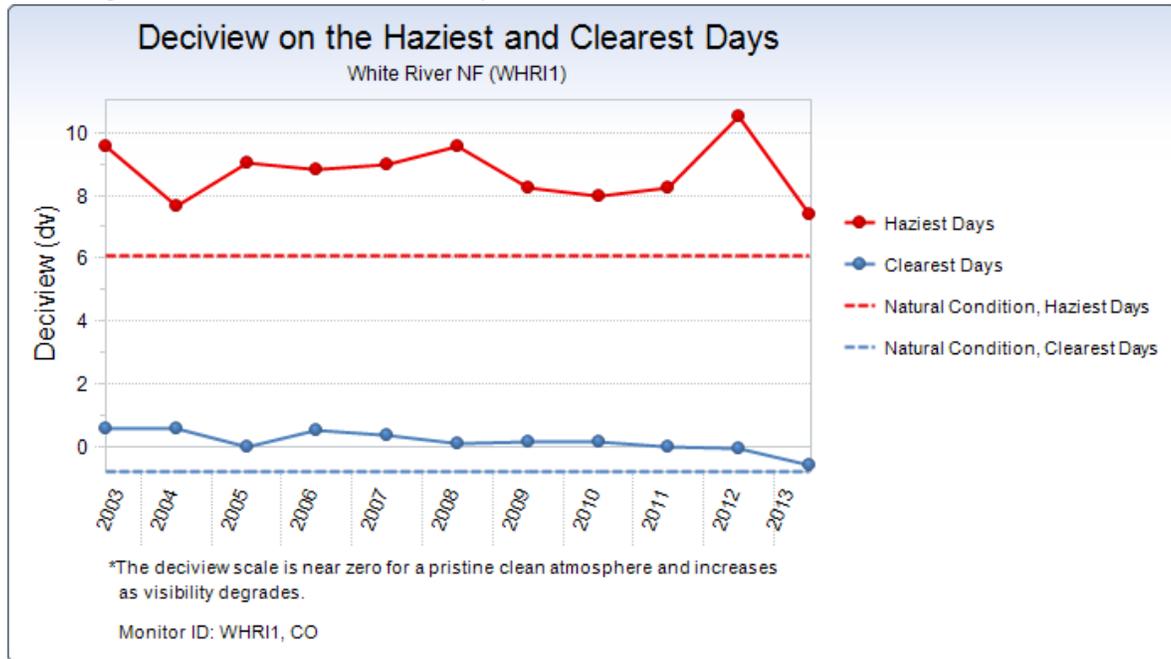
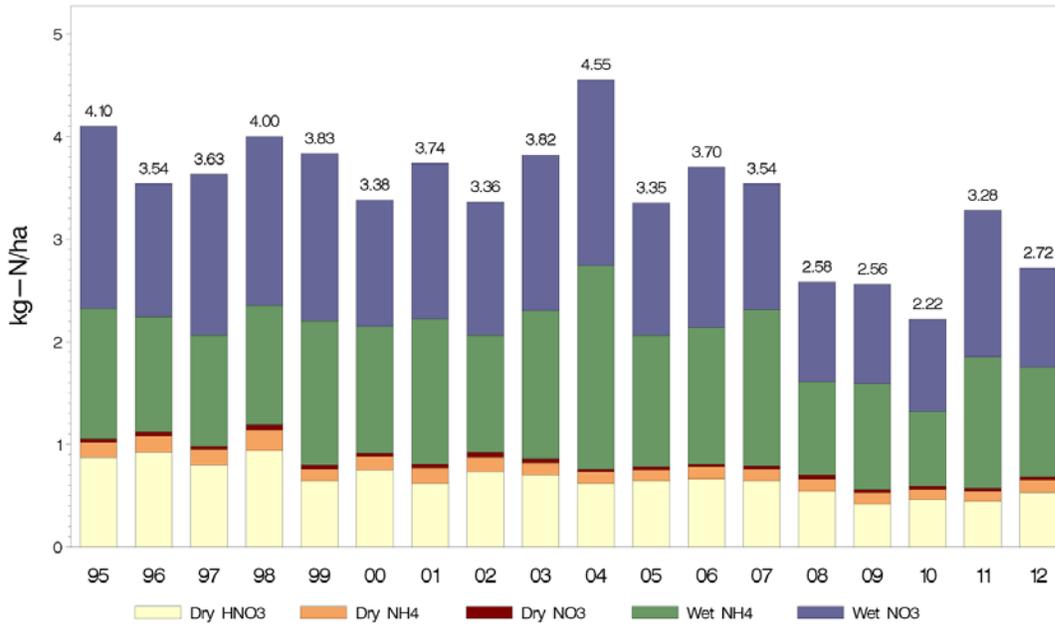


Figure Air 3 - AQRV Deposition Data for Rocky Mountain National Park

Total N Deposition
ROM406

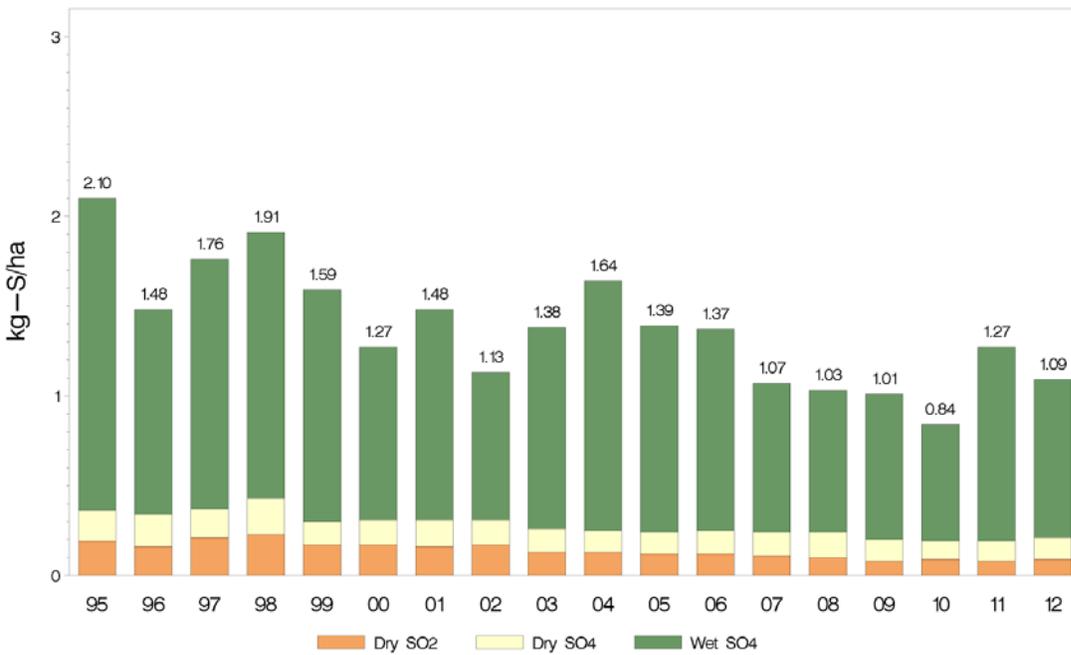


Source: CASTNET + Interpolated NADP-NTN/PRISM

Only complete years are shown

23APR14

Total S Deposition
ROM406

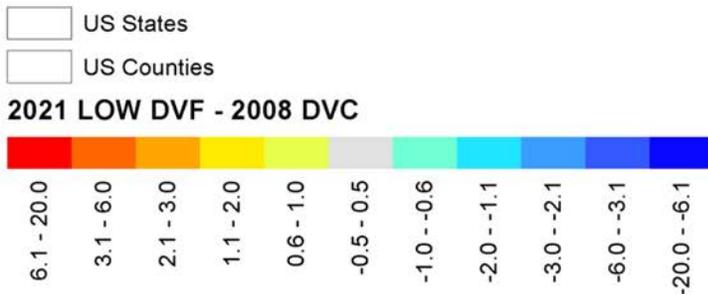
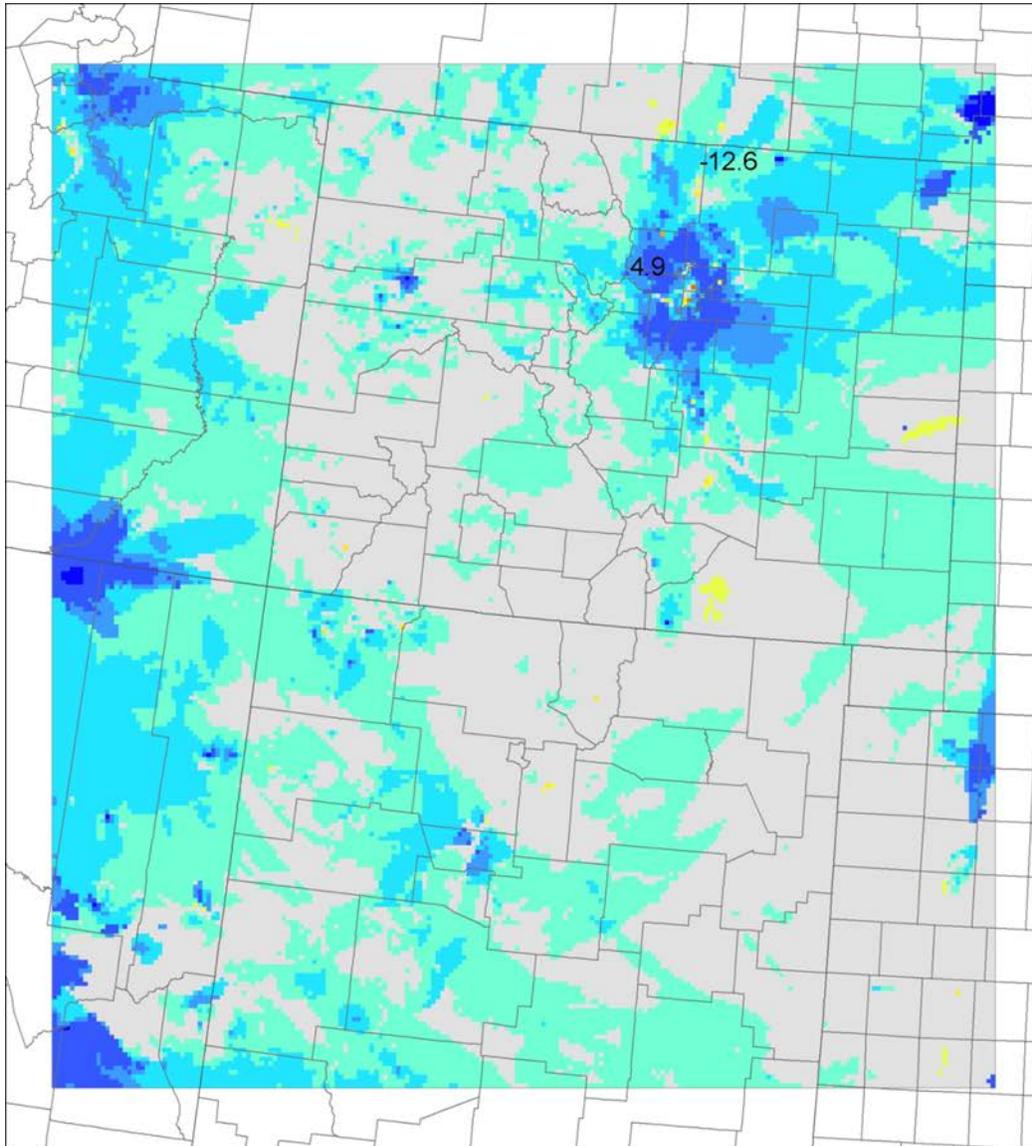


Source: CASTNET + Interpolated NADP-NTN/PRISM

Only complete years are shown

23APR14

Figure Air 4 - CARMMS plot shows predicted ozone reductions in the Denver and Salt Lake City areas for the CARMMS Low development scenario.



APPENDIX B. AIR EMISSION ESTIMATES AND NEAR FIELD MODELING FOR DOI-BLM-CO-N05-2014-0115-EA

Emission estimates for activities associated with the Proposed Action (20 well pad, 0.36 miles of new access and pipeline; approximately 10 acres disturbance) were calculated for this EA, and are disclosed in Table B-1 below. The emissions inventories (EI) considered reasonably foreseeable oil and gas development activities for the proposed wells, and includes emissions from both construction and production operations. The following pollutants were inventoried where an appropriate basis, methodology, and sufficient data exists: CO, NO_x (includes NO₂), PM_{2.5}, PM₁₀, SO₂, VOCs, HAPs, CO₂, CH₄, and N₂O. The EI was developed using reasonable but conservative scenarios for each construction and production activity. Production emissions were calculated for an entire year, and included activities that are not likely to occur every year (i.e., workovers and recompletions), thus the project inventory is conservative on an annualized basis. Potential emissions were calculated for each new project well assuming the minimum/basic legally required emissions control measures, common industry practices (as provided by oil and gas operators for the WRFO RMP EIS air quality analysis), and any equipment configuration data that was provided by the Proposed Action proponent. Maximum foreseeable direct and indirect emissions would occur at the beginning of the project during the construction phase. It is assumed that production would not begin until all of the wells are completed and all of the necessary infrastructure and site equipment connections are made (i.e., individual wells would not be brought online while completion and testing activities are still occurring at the site).

The following assumptions were applied consistently to all potential activities associated with the Proposed Action for developing a project-specific emissions inventory:

- The emissions estimated for construction activities are based on the disturbed surface area of ~ 10 acres as described in the Proposed Action for well pad, access roads, and any pipeline infrastructure. Assumes 50% manual dust emissions control.
- The emissions inventory calculations assume that all disturbed surfaces (well pads and access roads) would receive appropriate application of water during construction phase and emissions calculations (~ 50% dust control efficiency).
- Production phase equipment would include storage tanks, pneumatics, and separation equipment. The emissions inventory assumes no well-head compression would be needed for the proposed wells. Tank flashing emissions (VOCs) are assumed controlled to 95%. Emissions calculations for pneumatic devices assume low-bleed rate devices (6 cfh max).
- Natural gas is assumed to be piped directly into a gathering system. Completion related flaring would be limited due to the implementation of green completions.
- Drill rigs, completion, and fracing engines emissions are based on EPA Non-road Tier 2 emissions standards.
- The emissions inventory uses a western Colorado representative natural gas analysis to estimate VOC and HAP speciation percentages.
- Condensate and produced water emission calculations assume five bbls of condensate production per MMSCF of natural gas production and 14 bbls of produced water per day per well (based on COGCC 2012 data). Assumes 50% of produced water is hauled by truck and the other 50% is piped directly to processing facility.

Table B-1 Annual Emissions Inventory for Project (Tons)

WRFO EA - WPX 24-13-298 - 20 wells - 1 pad										
activity	PM10 (TPY)	PM2.5 (TPY)	CO (TPY)	NOx (TPY)	SO2 (TPY)	VOC (TPY)	HAPs (TPY)	CO2 (TPY)	CH4 (TPY)	N2O (TPY)
well pad / infrastructure construction - surface disturbance	0.19	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
well pad / infrastructure construction - traffic - dust	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
well pad / infrastructure construction - traffic - exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00
well pad / infrastructure construction - heavy equipment	0.01	0.01	0.02	0.06	0.00	0.01	0.00	4.12	0.00	0.00
drill rig transport - dust	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
drill rig transport - exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18	0.00	0.00
other drilling traffic - dust	0.10	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
other drilling traffic - exhaust	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.35	0.00	0.00
Tier 2 drilling engines	1.33	1.29	23.11	33.78	0.25	8.89	0.89	4,636.80	0.22	0.05
Tier 2 frac pump engines	0.40	0.39	7.02	10.25	0.08	2.70	0.27	1,407.60	0.07	0.02
completion water traffic - dust	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
completion water traffic - exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.00	0.00
other completion traffic - dust	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
other completion traffic - exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.21	0.00	0.00
completion venting and flaring	0.08	0.06	0.84	1.00	0.00	0.56	0.06	1,200.00	0.02	0.02
Tier 4 work-over rig engines	0.00	0.00	0.04	0.00	0.00	0.00	0.00	7.87	0.00	0.00
recompletion venting and flaring	0.01	0.01	0.08	0.10	0.00	0.01	0.00	120.00	0.00	0.00
condensate truck loading	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.01	0.00
well blowdowns	0.00	0.00	0.00	0.00	0.00	0.08	0.01	0.06	0.73	0.00
area source fugitives	0.00	0.00	0.00	0.00	0.00	1.92	0.19	0.93	11.89	0.00
pneumatic pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
pneumatic devices	0.00	0.00	0.00	0.00	0.00	5.28	0.53	3.99	51.17	0.00
wind erosion - applied for pads in production	0.17	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
production traffic - dust	0.08	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
production traffic - exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.30	0.00	0.00
pad heater	0.03	0.01	0.32	0.38	0.00	0.02	0.00	450.51	0.01	0.01
dehydrators	0.00	0.00	0.01	0.02	0.00	0.27	0.03	21.19	0.44	0.00
condensate tanks	0.00	0.00	0.00	0.00	0.00	5.40	0.54	0.00	0.00	0.00
water tanks	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00
totals - WPX 24-13-298	2.74	2.05	45.55	53.10	0.33	34.39	3.44	11114.53	135.20	0.12
* emissions are based on data surveys and assumptions as part of the WRFO RMP analysis. Development and well counts provided by WPX and WRFO (01-2015).										

Project-Specific Near-Field Impacts Analysis

The BLM Colorado Near-field Modeling Tool was used to screen project-level near-field NO₂ 1-hour, PM_{2.5} 24-hour and annual average concentrations, and 1-hour and annual average concentrations for the following hazardous air pollutants (HAPs): benzene, formaldehyde, and n-hexane. The following paragraphs provide information for the screening level tool and analysis and show that screening level impacts are acceptable with respect to air quality standards/impacts thresholds.

The BLM Colorado air quality near-field modeling screening tool uses the EPA AERMOD (American Meteorological Society Environmental Protection Agency Regulatory Model) modeling system for estimating ambient air concentrations for 500 meter access road (or corridor) construction or travel emissions and air quality impacts for emissions associated with one or two centralized O&G well-pads/facilities. The total emissions associated with the 500 meter roadway/corridor are equally divided into volume sources spaced at 10 meters apart. Ambient air receptors for the 500 meter roadway/corridor are spaced at 25 meters starting at the edge of roadway/corridor out to 100 meters from volume emissions sources. For modeling air quality impacts associated with roadway/corridor activities, the user has the flexibility to select whether the emissions releases occur continuously all day or during primary daylight hours (12 hours ~ 7am - 7pm). One centralized volume and point source represents each facility/well-pad for fugitive (non-combustion) and combustion related emissions sources, respectively. Ambient air receptors for the facilities are setup as concentric rings with 25 meter spacing at distances of 50, 75, 100, 150, 250, 400, 500, and 1000 meters of the volume and point source locations. Modeled concentrations are estimated at elevations above emissions source base elevations as designated by the user. Five years (2008-2012) of Colorado-based surface and upper-air meteorology is used to predict possible air quality impacts for both screening tools modules (roadway and centralized facilities).

The following Figures B-1 through B-3 show the emissions sources and ambient air receptor layouts and wind rose (wind direction and frequency diagram) for the near-field modeling screening tool.

Figure B1 - Well Pad / Facility Modeling Domain Configuration.

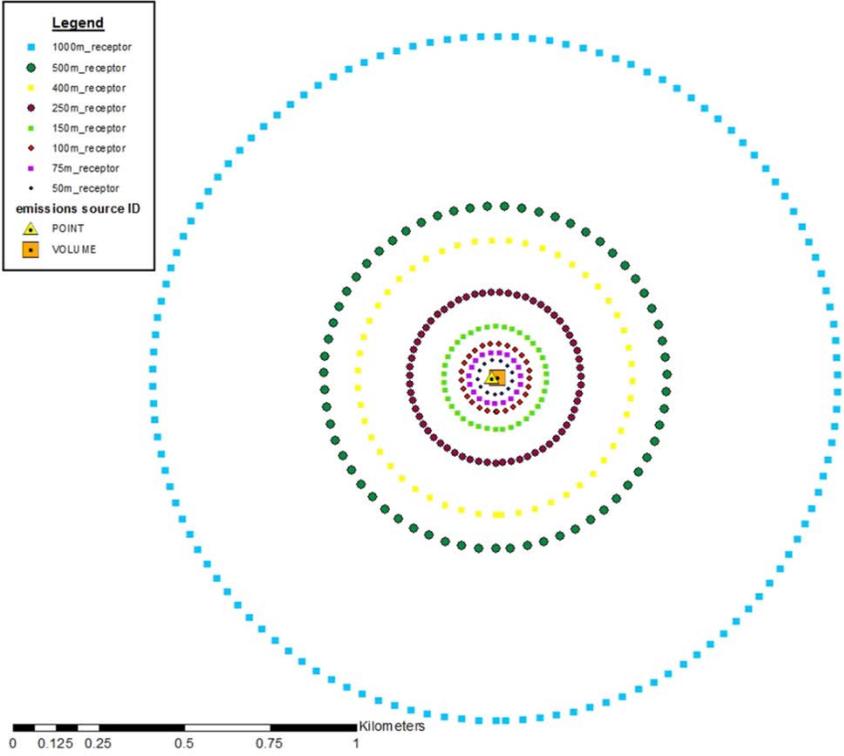


Figure B-2 - Access Road Modeling Domain Configuration.

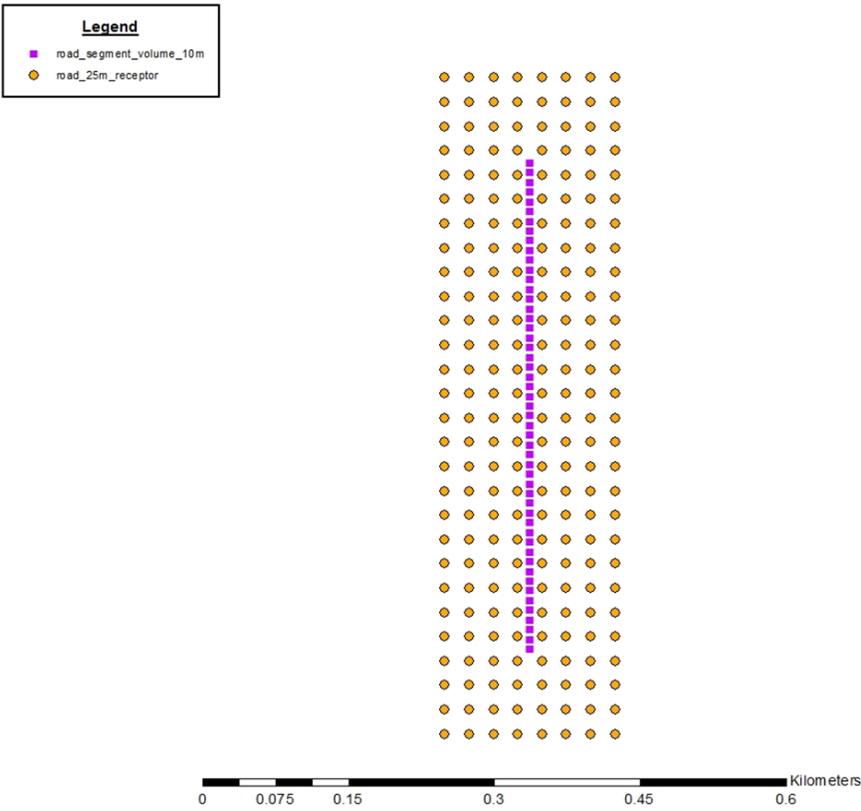
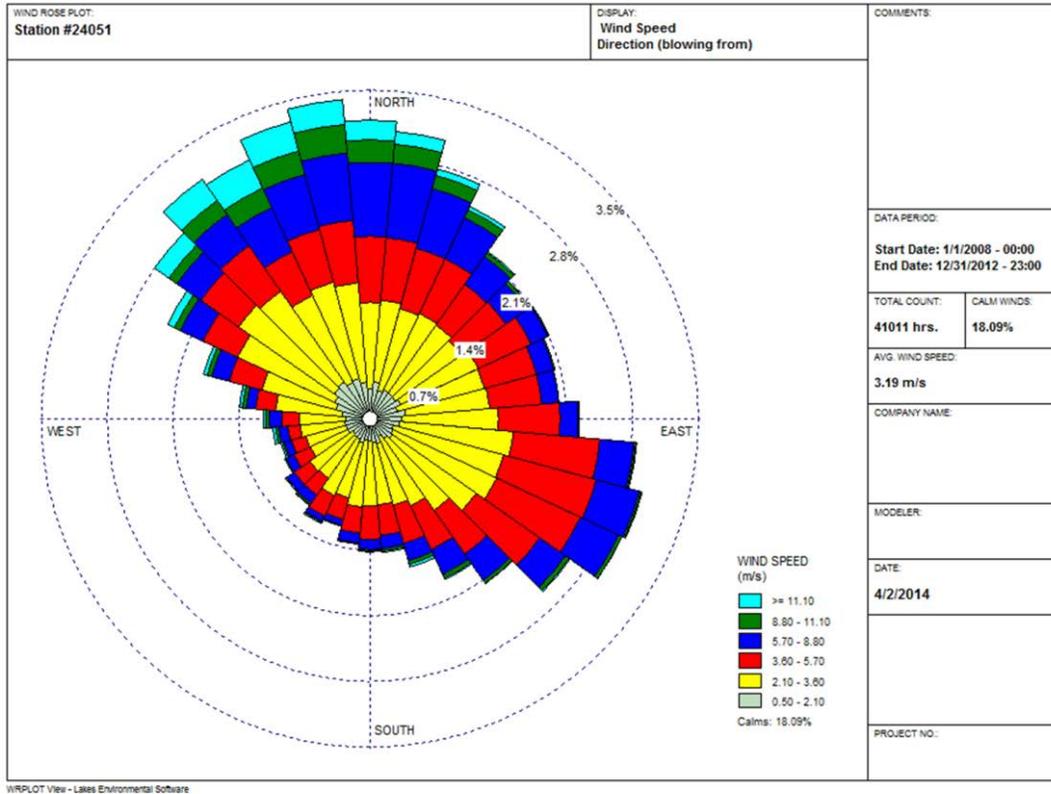


Figure B-3 - Wind Rose.



An emissions rate for each volume and point source was modeled for the matrix of user selected possibilities as described above using the AERMOD modeling system. The various modeling scenario results datasets were then aggregated into a database. The BLM Colorado near-field screening modeling tool then selected the most representative group of modeled air quality impacts based on the proposed project-specific inputs (receptor height, distance of sensitive receptor from emissions source(s), pollutant, averaging time, etc.), and directly scaled the AERMOD results based on actual emissions rates provided by the modeler. The following provides information for the screening-level modeling inputs:

- Annual emissions for each activity shown in Table B-1 above were grouped into one of four emissions source groups (well pad volume source, 500 meter unpaved access road segment, wells development point and wells operation point) and then the total emissions

for each source group were divided over the entire year to derive short-term (grams per second) emissions rate for modeling.

- No “sensitive” ambient air receptor, residence or place of business are within 1,000 meters of the proposed wellpad so air quality impacts for the wellpad/facility modeling analysis were estimated at the farthest receptor ring (1,000 meters) for the screening-level tool. Receptors for the roadway screening level analysis were assumed to begin adjacent to the roadway as shown in the figure above. Receptor base elevations were set equal to the emissions source base elevations (i.e., flat-terrain).
- Wellpad emissions sources for both construction and operations phase were modeled concurrently and assumed to last for at least three years (for estimating screening-level NO₂ 1-hour and PM_{2.5} impacts since those Standards are based on 3-year average values) that give an overestimate of potential impacts since development/construction activities are projected to occur for less than one year.
- All ambient air NO_x is considered to be NO₂ (EPA Tier 1 modeling approach).
- For the roadway screening model tool, unpaved fugitive dust emissions were assumed to occur all day long for the entire year which is likely an overestimate since most travel occurs during daytime hours.
- Recent monitored concentrations obtained from EPA’s Air Quality System were assumed to represent all existing emissions sources in the region not explicitly modeled and the following provides information for the background concentration values that were added to modeled concentrations for the Proposed Action to develop cumulative concentrations for the near-field analysis:
 - Year 2013 existing conditions/monitored concentrations values for NO₂ 1-hour (98th percentile daily maximum), PM_{2.5} 24-hour (2nd High) and annual averages were obtained from Ambient Air Quality Monitoring Data table.
 - Year 2012 monitoring data for HAPs: benzene, formaldehyde, and n-hexane that are used as background values for cumulative near-field modeling are from a Rifle, Colorado monitor located near many western Colorado oil and gas facilities. 1-hour values are maximums for all reported concentrations in year 2012 dataset and annual average values are averages of all values in the year 2012 dataset.

The following Tables B-2 through B-5 show the screening-level modeled near-field impacts specific to this air quality impacts analysis. As shown in the Tables, all modeled impacts (including background concentrations) are below the applicable Standards or accepted thresholds.

Table B-2

NAAQS Table - Access Road								
Criteria Pollutant	Avg. Period	Year	Concentration (ug/m ³)			Ambient Standard (ug/m ³)		Percent of NAAQS
			Modeled	Back-ground	Total	NAAQS	CAAQS	
PM ₁₀	24-hour	2008	7.08	34	41.08	150	150	27%
		2009	7.90		41.90			28%
		2010	8.40		42.40			28%
		2011	7.90		41.90			28%
		2012	7.80		41.80			28%
PM _{2.5}	24-hour	Mutiple Year Average	0.88	26.7	27.58	35	NA	79%
PM _{2.5}	Annual	Mutiple Year Average	0.30	9.1	9.40	12	NA	78%

CAAQS = Colorado Ambient Air Quality Standards

µg/m³ = micrograms per cubic meter

NAAQS = National Ambient Air Quality Standards

* Due to 24-hour and annual PM_{2.5} standard format that uses a three-year average to determine compliance, only one total concentration is reported for the five-year modeling period.

Table B-3

NAAQS Table - Facility / Well-Pad								
Criteria Pollutant	Avg. Period	Year	Concentration (ug/m ³)			Ambient Standard (ug/m ³)		Percent of NAAQS
			Modeled	Back-ground	Total	NAAQS	CAAQS	
NO ₂	1-hour	Mutiple Year Average	68.91	45.4	114.31	189	NA	60%
PM ₁₀	24-hour	2008	1.68	34	35.68	150	150	24%
		2009	1.97		35.97			24%
		2010	2.46		36.46			24%
		2011	2.00		36.00			24%
		2012	2.46		36.46			24%
PM _{2.5}	24-hour	Mutiple Year Average	0.53	26.7	27.23	35	NA	78%
PM _{2.5}	Annual	Mutiple Year Average	0.06	9.1	9.16	12	NA	76%
CAAQS = Colorado Ambient Air Quality Standards								
µg/m ³ = micrograms per cubic meter								
NAAQS = National Ambient Air Quality Standards								
* Due to 1-hour NO ₂ , 24-hour PM _{2.5} , and 1-hour SO ₂ NAAQS standard formats that use a three-year average to determine compliance, only one total concentration is reported for the five-year modeling period.								

Table B-4

HAPs Table - Acute						
HAP	Modeled Year	Maximum 1-Hour Modeled (µg/m³)	Background Concentration (µg/m³)	Maximum Total Concentration (µg/m³)	REL (µg/m³)	Percent of REL (%)
Benzene	2008	7.47	18.34	25.81	1,300	2%
	2009	4.31		22.65		2%
	2010	7.86		26.20		2%
	2011	8.74		27.08		2%
	2012	9.69		28.03		2%
Formaldehyde	2008	0.00	2.8	2.80	55	5%
	2009	0.00		2.80		5%
	2010	0.00		2.80		5%
	2011	0.00		2.80		5%
	2012	0.00		2.80		5%
n-Hexane	2008	30.94	66.97	97.91	390,000	0%
	2009	17.75		84.72		0%
	2010	32.52		99.49		0%
	2011	36.20		103.17		0%
	2012	40.16		107.13		0%

µg/m³ = micrograms per cubic meter
REL = Reference Exposure Level
* data source for all pollutants except n-hexane: USEPA Air Toxics Database, Table 2 (USEPA, 2005a).
* No REL available for n-hexane. Values shown are from Immediately Dangerous to Life or Health (IDLH/10), USEPA Air Toxics Database, Table 2 (USEPA, 2005a).

Table B-5

HAPs Table - Chronic					
Pollutant	Year	Annual Modeled Concentration ($\mu\text{g}/\text{m}^3$)	Background Concentration ($\mu\text{g}/\text{m}^3$)	Maximum Total Concentration ($\mu\text{g}/\text{m}^3$)	RfC ($\mu\text{g}/\text{m}^3$)
Benzene	2008	0.03	5.97	6.00	30
	2009	0.03		6.00	
	2010	0.03		6.00	
	2011	0.03		6.00	
	2012	0.03		6.00	
Formaldehyde	2008	0.00	1.39	1.39	9.8
	2009	0.00		1.39	
	2010	0.00		1.39	
	2011	0.00		1.39	
	2012	0.00		1.39	
n-Hexane	2008	0.11	18.33	18.44	200
	2009	0.11		18.44	
	2010	0.12		18.45	
	2011	0.11		18.44	
	2012	0.14		18.47	
$\mu\text{g}/\text{m}^3$ = micrograms per cubic meter					
RfC = Reference Concentration for Chronic Inhalation					
* USEPA Air Toxics Database, Table 1 (USEPA, 2005b).					

**U.S. Department of the Interior
Bureau of Land Management
White River Field Office
220 E Market St
Meeker, CO 81641**

FINDING OF NO SIGNIFICANT IMPACT (FONSI)

***Retamco's Proposed Federal 3-104-26-9 Well Pad and Associated
Road and Pipeline Infrastructure
DOI-BLM-CO-N05-2014-0080-EA***

Background

The Bureau of Land Management (BLM) received a Notice of Staking (NOS) from Retamco on May 9, 2014 for the Federal 3-104-26-9 well pad, access road, and pipeline. An onsite was conducted on May 15, 2014, and an Application for Permit to Drill (APD) was received on May 20, 2014. This is for a well pad with a single natural gas well.

Finding of No Significant Impact

Based upon a review of the EA and the supporting documents, I have determined that the Proposed Action will not have a significant effect on the quality of the human environment, individually or cumulatively with other actions in the general area. No environmental effects meet the definition of significance in context or intensity, as defined at 40 CFR 1508.27 and do not exceed those effects as described in the White River Resource Area Proposed Resource Management Plan and Final Environmental Impact Statement (1996). Therefore, an environmental impact statement is not required. This finding is based on the context and intensity of the project as described below.

Context

The project is a site-specific action directly involving BLM administered public lands that do not in and of itself have international, national, regional, or state-wide importance. The lease area is relatively undeveloped so impacts to soil and other biological resources would be considered local, low intensity, and of short duration. Road density within 5 miles of the proposed well pad equals approximately 2.3 miles of road corridor per square mile. Producing well density within 5 miles of the proposed well pad location equals approximately 0.8 producing wells per square mile.

Intensity

The following discussion is organized around the 10 Significance Criteria described at 40 CFR 1508.27. The following have been considered in evaluating intensity for this Proposed Action:

1. Impacts that may be both beneficial and adverse.

The site location for the proposed well has been described as having a component of invasive, annual cheatgrass. Proper and effective implementation of the proposed reclamation techniques could provide beneficial diversity to the currently existing plant community. While potentially harmful chemicals and additives may be used during drilling and completions operations, there is a possibility they could be released in volumes that could adversely affect human health or the environment; however, the proponent provides for safe containment and disposal of each type of potential waste, and the use of these materials are expected to enhance the beneficial recovery of the natural gas resource.

2. The degree to which the Proposed Action affects public health or safety.

There would be no impact to public health and safety if the safety measures described in the operator's drilling plan and SUP are properly implemented, and the developed mitigation is adhered to.

3. Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas. No wetlands, prime farmlands, parklands, or scenic rivers occur in the project area. A Class III Cultural Resource inventory was completed. The proposed project was redesigned in order to avoid known cultural resources.

4. Degree to which the possible effects on the quality of the human environment are likely to be highly controversial. No comments or concerns have been received regarding possible effects on the quality of the human environment during the public comment period.

5. Degree to which the possible effects on the quality of the human environment are highly uncertain or involve unique or unknown risk.

No highly uncertain or unknown risks to the human environment were identified during analysis of the Proposed Action.

6. Degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.

The Proposed Action neither establishes a precedent for future BLM actions with significant effects nor represents a decision in principle about a future consideration. Similar proposals to drill have been evaluated and approved, so authorization to drill the proposed wells would not set a precedent for future actions.

7. Whether the action is related to other actions with individually insignificant but cumulatively significant impacts. Rangeland used for livestock grazing has been described as populated with cheatgrass; implementation of the Proposed Action alone would not substantially contribute to the quality of the rangeland resources but an increase in construction-related oil and gas activities (reasonable but not yet proposed or speculated for the project area) could cumulatively result in irreversible changes to plant species composition.

8. The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed on the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources. A Class III Cultural Resource inventory was completed. The proposed project was redesigned in order to avoid known cultural resources. Mitigation for cultural resources that may be exposed due to natural weathering has been provided in the Decision Record.

9. The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act (ESA) of 1973. No special status plant species concerns have been identified. Cumulative water depletions from the Colorado River Basin are considered likely to jeopardize the continued existence of the Colorado pikeminnow, humpback chub, bonytail, and razorback sucker and result in the destruction or adverse modification of their critical habitat. In 2008, BLM prepared a Programmatic Biological Assessment (PBA) that addressed water depleting activities associated with BLM's fluid minerals program in the Colorado River Basin in Colorado, including water used for well drilling, hydrostatic testing of pipelines, and dust abatement on roads. In response, the U.S. Fish and Wildlife Service (FWS) prepared a Programmatic Biological Opinion (PBO) that addressed water depletions associated with fluid minerals development on BLM lands. The PBO included reasonable and prudent alternatives which allowed 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. The reasonable and prudent alternative 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 an amount based on the average annual acre-ft depleted by fluid minerals activities on BLM lands. This contribution was ultimately provided to the Recovery Program through an oil and natural gas development trade association. Development associated with this project would be entered into the WRFO fluid minerals water depletion log that is submitted to the Colorado State Office at the end of each Fiscal Year.

10. Whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment.

Neither the Proposed Action nor perceived impacts associated with it violate any laws or requirements imposed for the protection of the environment.

Signature of Authorized Official



ACTING Field Manager

July 30, 2015

Date

**U.S. Department of the Interior
Bureau of Land Management
White River Field Office
220 E Market St
Meeker, CO 81641**

DECISION RECORD

***Retamco's Proposed Federal 3-104-26-9 Well Pad and Associated
Road and Pipeline Infrastructure
DOI-BLM-CO-N05-2014-0080-EA***

Decision

It is my decision to implement the Proposed Action, as mitigated in DOI-BLM-CO-N05-2014-0080-EA authorizing the construction, operation, and maintenance of Federal 3-104-26-9 well pad and associated natural gas well (Federal 3-104-26-9) and pipeline and road infrastructure.

Design Features

1. A dike will be constructed completely around those production facilities designed to hold fluids (i.e, production tanks, produced water tanks and /or heater treater). These dikes will be constructed of compacted subsoil, be lined with a 24 mil liner, hold 110 percent capacity of the largest tank, and be independent of the back cut.
2. The entire location will be fenced and a cattle guard placed at the entrance on the location. With that the production pit will be flagged but will not be fenced.
3. Pits- the reserved pits will be lined. A plastic/vinyl liner will have a permeability less than or equal to 1×10^{-7} cm/sec, will be chemically compatible with all substances which may be put into the pit and will be installed so that it will not leak. Liners made of any man-made synthetic material will be of sufficient strength and thickness to withstand normal installation and pit use. The liner will be installed with sufficient bedding (either straw or dirt) to cover any rocks, will overlap the pit walls, extend under the mud tanks, and be covered with dirt and/or rocks to hold it in place. No trash, scrap pipe, etc. that could puncture the liner will be disposed of in the reserve pit.
4. Prior to the commencement of drilling operations, the entire location will be fenced according to the following standards (or lesser standard if approved by the Authorized Officer, Bureau of Land Management):

- 1) Thirty-two inch net wire shall be used with two strand of barbed wire on top of (above) the net wire.
- 2) The net wire shall be no more than four (4) inches above ground. The first strand of barbed wire shall be three (3) inches above the net wire. Total height of the fence shall be at least forty-two (42) inches.
- 3) Corner posts shall be cemented and/or braced in such a manner to keep the fence tight at all times.
- 4) Standard steel, wood, or pipe posts shall be used between corner braces. The maximum distance between any two posts shall be no greater than sixteen feet.
- 5) All wire shall be stretched, by using a stretching device, before it is attached to the corner posts.
- 6) A fourteen (14') cattle guard will be placed at the entrance onto the location to protect livestock and wildlife from entering the location.

The fencing will be “set back” from the top of the cut slope and the toe of the fill slopes a sufficient distance to allow for reclamation of the well location upon abandonment. Said fencing will be maintained until such time as the well has been abandoned and the reclaimed areas have successfully re-vegetated.

5. Retamco Operating Inc (ROI) will be responsible for informing all persons associated with this projects that they will be subject to prosecution for damaging, altering, excavating, or removing and archaeological, historical, or vertebrate fossil on the site. If archaeological, historical, or vertebrate fossil materials are discovered, the operator will suspend all operations that further disturb such materials and immediately contact the Authorized Officer. Operations will not resume until written authorization to proceed issued by the Authorized Officer.
 - 1) Within (5) five working days, the Authorized Officer will evaluate the discover and inform the operator of actions that will be necessary to preven loss of significant cultural or scientific values.
 - 2) ROI will be responsible for the cost of any mitigation required by the Authorized Officer. The Authorized Officer will provide technical and procedural guidelines for the conduct of mitigation. Upon verification from the Authorized Officer that the required mitigation has been completed, the operator will be allowed to resume operations.
6. Retamco Operating Inc (ROI) will be responsible for weed control within the disturbed areas associated with the proposed well. The following weed control programs will be used to meet this condition.

- 1) Weed Inspection/Prevention: Proposed disturbances (i.e. pipelines, right-of-ways, etc.) will be inspected for noxious weeds during staking and planning phases, is season permits. If noxious weeds are encountered at this time ROI may consider an optional pre-treatment using Roundup (10 days to 2 weeks minimum, prior to construction). Roundup would kill most everything in construction pathway, including the noxious weed seeds to prevent them before disturbing and shaking any seeds free. Most importantly is that it biodegrades over time and does not have a long term residual effect within the soils. This will allow for a weed free seeding after construction is completed.
- 2) Contractors will be encouraged to clean equipment between job loading locations, to help prevent the transport of noxious weed seeds. Soil disturbance will be minimized as much as possible and disturbed locations will be seeded promptly (season permitting) with a certified weed free seed. If mulch is used for erosion control it to will be certified weed free.
- 3) There are currently 24 plant species designated as noxious weeds. The following species may be applicable to this project and may change during operations:

1. Canada thistle	13. Ox-eyed daisy
2. Common burdock	14. Perennial pepperweed
3. Common St. Johnswort	15. Perennial sowthistle
4. Comman Tansy	16. Plumeless thistle
5. Dalmation toadflax	17. Purple loostripe
6. Diffuse knapweed	18. Quackgrass
7. Dyers woad	19. Russian knapweed
8. Field bindweed	20. Saltcedar
9. Hoary cress (Whitetop)	21. Scotch thistle
10. Houndstongue	22. Skeletonleaf bursage
11. Leafy spurge	23. Spotted knapweed
12. Musk thistle	24. Yellow toadflax
- 4) Locations within the project containing significant amounts of these designated weeds will be reported to the local weed and pest office for updating their maps. If any unidentified weeds become a concern, they will be brought to the location weed and pest office for identification and control recommendations. Ongoing communication will be kept with the BLM and local agencies to address any concerns that may arise regarding weed problems.
- 5) Weed treatments will be treated with suitable herbicides selected by the BLM or the certified applicator should any noxious or declared weeds be encountered with the disturbed areas associated with the proposed well pad area. All herbicides will be applied in compliance with the product labeling requirements, as well as applicable local, state and federal regulations. If herbicides will be used on

Federal surface, a BLM Pesticide Use Proposal (PUP) will be obtained prior to any application. Hand pulling of weeds will be encouraged for small areas of infestation. ROI will be responsible for weed control on disturbed areas within the exterior limits of this permit and will consult with the Authorized Officer and/or local authorities for acceptable weed control measures.

Mitigation Measures

1. All drill rigs, fracing, and completion related engines will be required to meet EPA Non-Road Tier II Emissions Standards (or cleaner) for all well development operations.
2. In order to protect public land health standards for soils, erosion features, such as rilling, gullyng, piping and mass wasting on the surface disturbance or adjacent to the surface disturbance as a result of this action, will be addressed immediately after observation by contacting the AO and by submitting a plan to assure successful soil stabilization with BMPs to address erosion problems.
3. Seed mix #3 with minor modifications is recommended for reclamation of BLM lands associated with the Proposed Action. Application rates are shown in pounds of pure live seed (PLS), use seed that is certified and free of noxious weeds. It is recommended that this site be seeded between September 1 and March 15. If an alternate date of seeding is requested, contact the designated Realty Specialist prior to seeding for approval. Seed mixture rates are Pure Live Seed (PLS) pounds per acre. Drill seeding is the preferred method of application and drill seeding depth shall be no greater than ½ inch. If drill seeding cannot be accomplished, seed should be broadcast at double the rate used for drill seeding, and harrowed into the soil.

Table 1. Recommended Species and Application Rates for reclamation on BLM Lands.

Variety	Common Name	Scientific Name	Application Rate (lbs PLS/acre)
Rosana	Western Wheatgrass	<i>Pascopyrum smithii</i>	4
Critana	Thickspike Wheatgrass	<i>Elymus lanceolatus</i>	3
Rimrock	Indian Ricegrass	<i>Achnatherum hymenoides</i>	3
	Needle and Thread Grass	<i>Hesperostipa comata</i>	2
	Sulphur Flower	<i>Eriogonum umbellatum</i>	0.5
	Scarlet Globemallow	<i>Sphaeralcea coccinea</i>	0.5

4. The operator will manage any noxious plants before seed production occurs. The operator will clean all off-road equipment to remove seed and soil prior to commencing operations within the project area.

5. As a means of minimizing the number of nesting attempts adversely affected by development and complying with the intent of the Migratory Bird Treaty Act, access or pad construction associated with this project would not be authorized during the migratory bird nesting season (1 May through 30 June).
6. The operator shall prevent migratory bird access to facilities that store or are expected to store fluids which may pose a risk to such birds (e.g., toxicity, compromised insulation). Features that prevent access to such fluids must be in place and functional within 24 hours of the drilling rig moving off the location and shall remain effective until such pits are removed or incapable of storing fluids. Deterrence methods may include netting or other alternative methods that effectively prevent use and that meet BLM approval (the use of “bird balls” is discouraged). It will be the responsibility of the operator to notify the BLM of the method that will be used to prevent access to stored fluids. All lethal and non-lethal events that involve migratory birds will be reported to the BLM Petroleum Engineer Technician immediately.
7. By avoiding direct loss of nest substrate and ongoing nest attempts that it supports, residual effects on nesting birds would be dependent on drilling and completion timeframes (i.e., level of coincidence with bird nesting activity). The COA would limit project-related nest disruption to less tolerant individuals in adjacent habitat and may extend to 20-40 nest attempts, but this impact would persist for no more than a single season. During the well’s productive life, disturbances associated with low levels of vehicle use would be imposed on birds that have adjusted to road disturbance based on their individual tolerance.
8. The operator 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.
9. 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. The operator 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, 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. The operator, 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.

10. Pursuant to 43 CFR 10.4(g), the operator 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), the operator must stop activities in the vicinity of the discovery and protect it for 30 days or until notified to proceed by the AO.
11. The well tie pipeline must be routed through site 5RB.3500 parking area, between the corrals and the well and well house (Figure 2). No impacts to the structures are permitted per consultation with the Colorado State Historic Preservation Officer.
12. The operator 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 or other scientifically important fossils, collecting large amounts of petrified wood (over 25lbs./day, up to 250lbs./year), or collecting fossils for commercial purposes on public lands.
13. If any paleontological resources are discovered as a result of operations under this authorization, the operator 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.
14. 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.
15. Paint and maintain the paint on all permanent above ground structures (on-site for six months or longer) including tanks, associated production equipment, and any piping and valves be painted, Juniper Green according to the BLM Standard Environmental Chart CC-001: June 2008.

16. The holder will effectively coordinate with existing ROW holders prior to construction activity.
17. The holder shall provide the BLM AO with data in a format compatible with the WRFO's ESRI ArcGIS Geographic Information System (GIS) to accurately locate and identify the ROW and all constructed infrastructure, (as-built maps) within 60 days of construction completion. Acceptable data formats are: (1) corrected global positioning system (GPS) files with sub-meter accuracy or better; (2) ESRI shapefiles or geodatabases; or at last resort, (3) AutoCAD .dwg or .dxf files. Option 2 is highly preferred. In ALL cases the data must be submitted in Universal Transverse Mercator (UTM) Zone 13N, NAD 83, in units of meters. Data may be submitted as: (1) an email attachment; or (2) on a standard compact disk (CD) in compressed (WinZip only) or uncompressed format. All data shall include metadata, for each submitted layer, that conforms to the Content Standards for Digital Geospatial Metadata from the Federal Geographic Data Committee standards. Questions should be directed to WRFO BLM GIS staff at (970) 878-3800.
18. Construction activity should take place entirely within the areas authorized in the ROW grant.
19. At least 90 days prior to termination of the ROW, the holder will contact the AO to arrange a joint inspection of the ROW. The inspection will result in the development of an acceptable termination and rehabilitation plan submitted by the holder. This plan will include, but is not limited to, removal of facilities, drainage structures, and surface material (e.g., gravel or concrete), as well as final recontouring, spreading of topsoil, and seeding. The Authorized Officer must approve the plan in writing prior to the holder's commencement of any termination activities.
20. No surface disturbing activities will take place on the subject right-of-way until the associated APD is approved. The holder will adhere to special stipulations in the Surface Use Program of the approved APD, relevant to any right-of-way facilities.
21. Boundary adjustments in Oil and Gas lease/unit COC76572X will automatically amend this right-of-way to include that portion of the facility no longer contained within the above described lease/unit COC76572X. In the event of an automatic amendment to this right-of-way, the prior on-lease/unit conditions of approval of this facility will not be affected even though they would now apply to facilities outside of the lease/unit as a result of a boundary adjustment. Rental fees, if appropriate will be recalculated based on the conditions of this grant and the regulations in effect at the time of an automatic amendment.
22. Comply with all Federal, State and/or local laws, rules and regulations, including but not limited to onshore orders and notices to lessees, addressing the emission of and/or the

handling, use, and release of any substance that poses a risk of harm to human health or the environment. All spills or leakages of oil, gas, produced water, toxic liquids or waste materials, blowouts, fires, will be reported by the operator, in accordance with the regulations and as prescribed in applicable orders or notices.

23. Where required by law or regulation to develop a plan for the prevention of releases or the recovery of a release of any substance that poses a risk of harm to human health or the environment, provide a current copy of said plan to the BLM WRFO.
24. When drilling to set the surface casing, drilling fluid will be composed only of fresh water, bentonite, and/or a benign lost circulation material that does not pose a risk of harm to human health or the environment (e.g., cedar bark, shredded cane stalks, mineral fiber and hair, mica flakes, ground and sized limestone or marble, wood, nut hulls, corncobs, or cotton hulls).
25. All substances that pose a risk of harm to human health or the environment will be stored in appropriate containers. Fluids that pose a risk of harm to human health or the environment, including but not limited to produced water, will be stored in appropriate containers and in secondary containment systems at 110% of the largest vessel's capacity. Secondary fluid containment systems, including but not limited to tank batteries will be lined with a minimum 24 mil impermeable liner.
26. Construction sites and all facilities will be maintained in a sanitary condition at all times; waste materials will be disposed of promptly at an appropriate waste disposal site. "Waste" means all discarded matter including, but not limited to, human waste, trash, garbage, refuse, oil drums, petroleum products, ashes, and equipment.
27. As a reasonable and prudent lessee/operator in the oil and gas industry, acting in good faith, all lessees/operators and right-of-way holders will report all emissions or releases that may pose a risk of harm to human health or the environment, regardless of a substance's status as exempt or nonexempt and regardless of fault, to the BLM WRFO (970) 878-3800.
28. As a reasonable and prudent lessees/operator and/or right-of-way holder in the oil and gas industry, acting in good faith, all lessees/operators and right-of-way holders will provide for the immediate clean-up and testing of air, water (surface and/or ground) and soils contaminated by the emission or release of any substance that may pose a risk of harm to human health or the environment, regardless of that substance's status as exempt or non-exempt. Where the lessee/operator or right-of-way holder fails, refuses or neglects to provide for the immediate clean-up and testing of air, water (surface and/or ground) and

soils contaminated by the emission or release of any quantity of a substance that poses a risk of harm to human health or the environment, the BLM WRFO may take measures to clean-up and test air, water (surface and/or ground) and soils at the lessee/operator's expense. Such action will not relieve the lessee/operator of any liability or responsibility.

Compliance with laws & Conformance with the Land Use Plan

This decision is in compliance with the Endangered Species Act and the National Historic Preservation Act. It is also in conformance with the 1997 White River Record of Decision/Approved Resource Management Plan.

Environmental Analysis and Finding of No Significant Impact

The Proposed Action was analyzed in DOI-BLM-CO-N05-2014-0080-EA and it was found to have no significant impacts, thus an EIS is not required.

Public Involvement

Scoping was the primary mechanism used by the BLM to initially identify issues. Internal scoping was initiated when the project was presented to the White River Field Office (WRFO) interdisciplinary team on 5/20/2014. External scoping was conducted by posting this project on the WRFO's on-line National Environmental Policy Act (NEPA) register on 5/28/2014.

Rationale

Analysis of the Proposed Action has concluded that there are no significant negative impacts and that it meets Colorado Standards for Public Land Health. Additionally, authorization to drill the proposed well would allow for the development of an oil and gas lease.

Monitoring and Compliance

On-going compliance inspections and monitoring of drilling, production, and post-production activities will be conducted by White River Field Office staff during construction of the well pad, access road, and pipeline. Specific mitigation developed in the associated Environmental Assessment and the lease terms and conditions will be followed. The Operator will be notified of compliance related issues in writing, and depending on the nature of the issue(s), will be provided 30 days to resolve such issues.

Administrative Remedies

There are different administrative remedy processes for authorizations issued under the authority of 43 CFR 3100 (on-lease oil and gas development) or 43 CFR 2800 (rights-of-way).

State Director Review

Under regulations addressed in 43 CFR 3165.3(b), any adversely affected party that contests a decision of the Authorized Officer may request an administrative review, before the State Director, either with or without oral presentation. Such request, including all supporting documentation, shall be filed in writing with the BLM Colorado State Office at 2850 Youngfield

Street, Lakewood, Colorado 80215 within 20 business days of the date such decision was received or considered to have been received. Upon request and showing of good cause, an extension may be granted by the State Director. Such review shall include all factors or circumstances relevant to the particular case.

Appeal

Any party who is adversely affected by the decision of the State Director after State Director review, under 43 CFR 3165.3(b), of a decision may appeal that decision to the Interior Board of Land Appeals pursuant to the regulations set out in 43 CFR Part 4.

This decision shall take effect immediately upon the date it is signed by the Authorized Officer and shall remain in effect while any appeal is pending unless the Interior Board of Land Appeals issues a stay (43 CFR 2801.10(b)). Any appeal of this decision must follow the procedures set forth in 43 CFR Part 4. Within 30 days of the decision, a Notice of Appeal must be filed in the office of the Authorized Officer at White River Field Office, 220 East Market St., Meeker, CO 81641 with copies sent to the Regional Solicitor, Rocky Mountain Region, 755 Parfet St., Suite 151, Lakewood, CO 80215, and to the Department of the Interior, Board of Land Appeals, 801 North Quincy St., MS300-QC, Arlington, VA, 22203. If a statement of reasons for the appeal is not included with the notice, it must be filed with the Interior Board of Land Appeals at the above address within 30 days after the Notice of Appeal is filed with the Authorized Officer.

Signature of Authorized Official



ACTING Field Manager



Date