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

ENVIRONMENTAL ASSESSMENT

NUMBER: DOI-BLM-CO-110-2012-0100-EA

CASEFILE/PROJECT NUMBER: Wiley 32-3-97-1 and Wiley 22-3-97-1: COC-066388
COC75989 (Access Road Right-of-Way (ROW)
COC75990 (Pipeline ROW)

PROJECT NAME: Endeavour Proposed Wells 32-3-97-1 and 22-3-97-1

LEGAL DESCRIPTION: Wiley 32-3-97-1: T3N, R97W, Sec.32, NENW; Wiley 22-3-97-1: T3N, R97W, Sec. 22, NWNW

APPLICANT: Endeavour Operating Corporation (Endeavour)

PURPOSE & NEED FOR THE ACTION: The purpose of the Proposed Action is to manage the exploration and development of mineral resources on Public Lands in a manner that avoids, minimizes, reduces, or mitigates potential impacts to other resource values. The need for the action is established under the authority of Federal Land Policy and Management Act of 1976 (FLPMA) to respond to the request to develop the federal leases.

Decision to be Made: The BLM will decide whether or not to approve the construction, drilling, operation, and maintenance of the Wiley 32-3-97-1 and Wiley 22-3-97-1 wells, and if so, under what conditions.

SCOPING, PUBLIC INVOLVEMENT, AND ISSUES:

Scoping: 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 10/9/2012. External scoping was conducted by posting this project on the WRFO's on-line National Environmental Policy Act (NEPA) register on 10/10/2012.

DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES:

Background: Endeavour has submitted two Applications for Permits to Drill (APD's) and two Notice of Stakings (NOS') for exploratory wells in the newly formed Wiley Unit. The Wiley oil and gas Unit is geographically located in both the White River Field Office (WRFO) and Little

Snake Field Office (LSFO) areas. An onsite was conducted for the 32-3-97-1 proposed well on 5/12/2012, and for the other three wells on 7/12/2012. There is a lease expiration date of 11/30/2012 for the federal lease COC-066388. A lease extension was requested by Endeavour and granted by the WRFO in October 2012. The APD's under consideration in this NEPA document are for two wells that would be located in the WRFO area.

NOSs for the Wiley 28-4-97-1 and Wiley 30-4-97-1 Locations

Additional wells may be drilled in the Wiley Unit; the decision to propose additional wells would be based upon the exploratory findings of the first Wiley 32-3-97-1 and Wiley 22-3-97-1. Two additional sites that may be proposed under the current Plan of Development (POD) scenario includes the Wiley 28-4-97-1 and Wiley 30-4-97-1; these wells would be located in the LSFO area. Complete APDs would be received for these two locations if Endeavour decides to continue forward with the current development plan. No pipeline routes have been identified at the NOS stage. A separate decision would be made by the BLM as to whether or not to permit these locations once the APDs were submitted.

Proposed Action:

Endeavour proposes to drill the Wiley 32-3-97-1 and 22-3-97-1 vertical wells to determine the extent and recovery potential for both the Niobrara and Frontier formation. Testing results from the proposed exploratory wells would be used to identify if subsequent drilling for one or more horizontal wells is warranted. If testing results do not indicate that drilling subsequent horizontal wells would be warranted, the wells would be placed into final reclamation. The estimated total volume of water required to drill each individual strata graphic evaluation well (Wiley #22-3-97-1 and Wiley #32-3-97-1) is 126,000 gallons. If a horizontal wellbore is permitted, drilled, and fractured, the estimated amount of water will increase by 200,000 barrels for each well. If a horizontal well is warranted, then interim reclamation (including re-contouring work) would commence within six months following well completions of the horizontal well.

Wiley 32-3-97-1 Location

The total surface disturbance required to construct the proposed well pad (including installation of storm water Best Management Practices (BMPs) would be 5.2 acres. The well pad would be reduced in area to a 1.4 acre functional area during the production phase of the project. A 5,107ft pipeline with a 50ft construction corridor is proposed. An access road is proposed within the same corridor for the first 2,383 ft. The first 2,383ft of the 50ft corridor would result in 2.7 acres of surface disturbance during construction, and would be reclaimed down to the 2,383ft access road with a 16ft running surface during production. Approximately 0.9 acres of surface disturbance resulting from the access road would be visible during the production phase of the project. The pipeline would continue for another 2,724ft until its tie in point, resulting in 3.1 acres of surface disturbance during construction. The initial 11 acres of surface disturbance required during the construction phase of the project would be reduced to 2.3 acres of surface disturbance during the production phase. Surface disturbance for the 32-3-97-1 is summarized in Table 1. below.

Table 1. Anticipated Surface Disturbance at Various Phases of the Proposed Operation for the Wiley 32-3-97-1 well

	Disturbance in acres during Construction Phase (50ft ROW)	Disturbance in acres during Production Phase (16ft working surface)	Disturbance in acres following Abandonment
2,383ft access road and pipeline corridor	2.7	0.9	0.0
2,724ft pipeline corridor	3.1	0.0	0.0
32-3-97-1 well pad	5.2	1.4	0.0
Total	11.0	2.3	0.0

Wiley 22-3-97-1 Location

The total surface disturbance required to construct the proposed well pad (including installation of stormwater BMPs) would be 4.7 acres. The well pad would be reduced in area to a 1.4 acre functional area during the production phase of the project. A 17,116ft pipeline with a 50ft construction corridor is proposed. An access road is proposed within the same corridor for the first 3,138ft. The first 3,138 of the 50ft corridor would result in 3.6 acres of surface disturbance during construction, and would be reclaimed down to the 3,138ft access road with a 16ft running surface during production. Approximately 1.2 acres of surface disturbance resulting from the access road would be visible during the production phase of the project. The pipeline would continue for another 13,978 until its tie-in point, resulting in 16 acres of surface disturbance during construction. The initial 24.3 acres of surface disturbance required during the construction phase of the project would be reduced to 2.6 acres of surface disturbance during the production phase. Surface disturbance for the 22-3-97-1 is summarized in Table 2. below.

Table 2. Anticipated Surface Disturbance at Various Phases of the Proposed Operation for the Wiley 22-3-97-1 well

	Disturbance in acres during Construction Phase (50ft ROW)	Disturbance in acres during Production Phase (16ft working surface)	Disturbance in acres following Abandonment
3,138ft access road and pipeline corridor	3.6	1.2	0.0
13,978ft pipeline corridor	16.0	0.0	0.0
well pad	4.7	1.4	0.0
Total	24.3	2.6	0.0

Design Features: See detailed Surface Use Plan (SUP) of the Wiley 32-3-97-1 Surface Location and a detailed SUP of the Wiley 22-3-97-1 Surface Location.

No Action Alternative: The proposed Wiley 32-3-97-1 and Wiley 22-3-97-1 wells would not be authorized, constructed or drilled, and the oil and gas lease issued to Endeavour would expire.

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

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

Date Approved: July 1, 1997

Decision Number/Page: Page 2-5

Decision Language: "Make federal oil and gas resources available for leasing and development in a manner that provides reasonable protection for other resource values."

AFFECTED ENVIRONMENT & ENVIRONMENTAL CONSEQUENCES

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. Because a standard exists for these five categories, a finding must be made for each of them in an environmental analysis (EA). These findings are located in specific elements listed below.

Cumulative Effects Analysis Assumptions: Cumulative effects are defined in the Council on Environmental Quality (CEQ) regulations (40 CFR 1508.7) as "...the impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions." Table 3 lists the past, present, and reasonably foreseeable future actions within the area that might be affected by the Proposed Action; for this project the area considered was the Natural Resources Conservation Service (NRCS) 5th Level Watershed. However, the geographic scope used for analysis may vary for each cumulative effects issue and is described in the Affected Environment section for each resource.

Table 3. Past, Present, and Reasonably Foreseeable Actions

Action Description	STATUS		
	Past	Present	Future
Livestock Grazing	X	X	X
Wild Horse Gathers	No	No	No
Recreation	X	X	X
Invasive Weed Inventory and Treatments	X	X	X
Range Improvement Projects : Water Developments Fences & Cattleguards	X	X	X
Wildfire and Emergency Stabilization and Rehabilitation	X	X	X
Wind Energy Met Towers			X
Oil and Gas Development: Well Pads Access Roads Pipelines Gas Plants Facilities	X	X	X
Power Lines	X	X	X
Oil Shale	X	X	X
Seismic	X	X	X
Vegetation Treatments	X	X	X

Affected Resources:

The CEQ Regulations state that NEPA documents "must concentrate on the issues that are truly significant to the action in question, rather than amassing needless detail" (40 CFR 1500.1(b)). While many issues may arise during scoping, not all of the issues raised warrant analysis in 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. Table 4 lists the resources considered and the determination as to whether they require additional analysis.

Table 4. Resources and Determination of Need for Further Analysis

Determination[1]	Resource	Rationale for Determination
Physical Resources		
PI	Air Quality	See discussion below.
PI	Geology and Minerals	See discussion below.
PI	Soil Resources*	See discussion below.
PI	Surface and Ground Water Quality*	See discussion below.

Determination[1]	Resource	Rationale for Determination
Biological Resources		
NP	Wetlands and Riparian Zones*	There are no systems in the vicinity of the project area that are known to support riparian communities. The nearest system capable of supporting riparian species is the White River which is separated from the project area by roughly three miles of ephemeral channel.
PI	Vegetation*	See discussion below.
PI	Invasive, Non-native Species	See discussion below.
PI	Special Status Animal Species*	See discussion below.
PI	Special Status Plant Species*	See discussion below.
PI	Migratory Birds	See discussion below.
NP	Aquatic Wildlife*	The nearest system that supports higher order aquatic species is the White River, which is separated from the project area by approximately three miles of ephemeral channel. Discussions on water depletions with regards to Colorado River endangered fish will be discussed in Special Status Animal Species section.
PI	Terrestrial Wildlife*	See discussion below.
NP	Wild Horses	The proposed project is not located within the Piceance-East Douglas Herd Management Area (HMA) or the North Piceance and West Douglas Herd Areas.
Heritage Resources and the Human Environment		
PI	Cultural Resources	See discussion below.
PI	Paleontological Resources	See discussion below.
PI	Native American Religious Concerns	Addressed under the Cultural Resources section below.
PI	Visual Resources	See discussion below.
PI	Hazardous or Solid Wastes	See discussion below.
PI	Fire Management	See discussion below.
NI	Social and Economic Conditions	There would not be any substantial changes to local social or economic conditions.
NP	Environmental Justice	According to recent Census Bureau statistics (2000), there are no minority or low income populations within the WRFO.
NP	Lands with Wilderness Characteristics	There are no lands with Wilderness characteristics within the project area.
Resource Uses		
PI	Forest Management	See discussion below.
PI	Rangeland Management	See discussion below.

Determination[1]	Resource	Rationale for Determination
PI	Floodplains, Hydrology, and Water Rights	See discussion below.
PI	Realty Authorizations	See discussion below.
PI	Recreation	See discussion below.
PI	Access and Transportation	See discussion below.
NP	Prime and Unique Farmlands	There are no Prime and Unique Farmlands within the project area.
Special Designations		
NP	Areas of Critical Environmental Concern	There are no Areas of Critical Environmental Concern (ACEC) within the project area. The nearest ACEC is Duck Creek which is located 2.5 miles to the southwest. Due to large distance of the Proposed Action to Duck Creek, there will be no impact to ACECs.
NP	Wilderness	There are no Wilderness Areas or Wilderness Study Areas impacted by the Proposed Action.
NP	Wild and Scenic Rivers	There are no Wild and Scenic Rivers in the WRFO.
NP	Scenic Byways	There are no Scenic Byways within the project area.

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

AIR QUALITY

Affected Environment: The Proposed Action is an attainment area for national and state air quality standards, based on a review of designated non-attainment areas for criteria pollutants published by the Environmental Protection Agency (EPA 2013). The Proposed Action is also located more than 10-miles from any special designation airsheds or non-attainment areas. Non-attainment areas are areas designated by U.S. Environmental Protection Agency (EPA) as having air pollution levels that persistently exceed the national ambient air quality (NAAQ) standards. Projects that could impact special designation areas and/or non-attainment areas may require special consideration from the Colorado Department of Public Health and Environment (CDPHE) and the EPA. The closest special designation areas are Dinosaur National Monument which is located northwest of the project area (designated Class II airshed with Prevention of Significant Deterioration (PSD) with thresholds for sulfur oxides and visibility), and the Mount Zirkel and Flat Tops Wilderness Areas located north and east of the Proposed Action (designated Class I areas). The closest non-attainment area in Colorado is along the Front Range corridor and it is a non-attainment for ozone. General conformity regulations require that federal activities do not cause or contribute to a new violation of NAAQ standards; that actions do not cause additional or worsen existing violations of the NAAQ standards; and that attainment of these standards is not delayed by federal actions in non-attainment areas.

The Proposed Action is in Rio Blanco County within the Western Counties Monitoring Region of Colorado (APCD 2010). Local air quality parameters including particulates are measured at monitoring sites located at Meeker, Rangely, Dinosaur and Ripple Creek Pass near the Flat Tops

Wilderness Area. Ozone data have been collected in Meeker and Rangely since 2010 and at Colorado National Monument in Mesa County since 2007. The closest location for an Interagency Monitoring of Protected Visual Environments (IMPROVE) site is near the Flat Tops Wilderness, northeast of the Project Area. IMPROVE sites measure visibility impairment from air borne particles.

Environmental Consequences of the Proposed Action:

Direct and Indirect Effects: The Proposed Action would result in low and short-term impacts on air quality during construction, drilling, completion and, to a lesser extent, from vehicles and gas processing and compression facilities during the production phase. Increases in the following criteria pollutants would occur due to combustion of fossil fuels during construction activities: carbon monoxide, ozone (secondary pollutant formed photochemically from volatile organic compounds (VOCs) and nitrogen oxides (NOx)), nitrogen dioxide, and sulfur dioxide. Three ozone advisories were issued in February and March of 2011 for Rio Blanco County (CAQCC 2011) based on data collected from the Rangely monitoring site showing one hour and eight hour exceedance of NAAQ criteria, but did not lead to a violation of NAAQ standards. Ozone above the one hour and eight hour criteria can cause breathing difficulties and respiratory infections especially in the elderly, the young and those with pre-existing ailments such as asthma.

Additional low, short-term impacts to air quality may occur due to venting or flaring of gas from the wells and VOCs from pits, storage and treatment of cuttings and tanks during drilling and completion activities. Venting and/or flaring of natural gas is typically done for short periods of time in order to determine potential production amounts and characterize the quality of the gas. If the exploratory wells are successful, VOCs including hazardous air pollutants (HAPs) commonly associated with oil and gas production (benzene, toluene, ethylbenzene, xylene, and n-hexane) will be released from tanks, separation equipment and due to transportation of natural gas, produced water and condensate by pipeline or trucks. The amount of these releases are difficult to estimate, but would be within CDPHE air permit limits estimated in tons per year. Non-criteria pollutants (NAAQ standards have not been set for non-criteria pollutants), such as nitric oxide, air toxins (e.g. benzene), and total suspended particulates may experience slight, temporary increases as a result of the Proposed Action.

Soil disturbance resulting from construction, heavy equipment, and drill rigs is expected to cause increases in fugitive dust and inhalable particulate matter, specifically particulate matter (PM) 10 microns (μm) or less in diameter (PM_{10}) and particles 2.5 μm or less in diameter ($PM_{2.5}$). Particulate matter is made up of a number of components, including acids (such as nitrates and sulfates), organic chemicals, metals, and soil or dust particles. More than 70 percent of PM_{10} (coarse particles) is created from windblown dust and soil from roads, fields and construction sites. A smaller percentage of coarse particles comes from automobile and diesel engine exhaust, soot from wood fires, and sulfates and nitrates from combustion sources such as industrial boilers (CAQCC 2011). Dust production is the most likely during the construction and drilling phases, especially when conditions are dry and/or windy. Particulate matter is the major contributor to reductions in visibility, due to particulates ability to scatter or absorb light. Particulate matter can also have human health impacts.

Fugitive dust emissions would likely cause low, short-term impacts to local air quality, specifically visibility. Once the wells go into interim reclamation topsoil removed during road construction would be redistributed and stabilized alongside the road and the pads would also be recontoured and stabilized. As vegetation establishes in the reclaimed areas, dust production will occur only when vehicles travel on the access roads to service the wells. The increase in airborne particulate matter from this project is not expected to exceed Colorado ambient air quality (CAAQ) or NAAQ standards on an hourly, eight-hour average or daily basis.

In summary, soil disturbance resulting from construction of pads and roads and drilling is expected to cause increases in fugitive dust and inhalable particulate matter in the project area and immediate vicinity and may contribute to reductions in regional visibility. In addition, increases in the following criteria pollutants: carbon monoxide, VOCs, ozone, nitrogen dioxide, and sulfur dioxide would also occur due to combustion of fossil fuels during exploration and production activities. Non-criteria pollutants such as carbon dioxide, methane and nitrous oxides, air toxins (e.g. benzene), total suspended particulates (TSP), and increased impacts to visibility and atmospheric deposition may also increase as a result of the Proposed Action. Even with these increased pollutants the Proposed Action is unlikely to result in an exceedance of NAAQ and CAAQ standards, and is likely to comply with applicable PSD increments and other significant impact thresholds.

Cumulative Effects: The Proposed Action is in the two-county area (Rio Blanco and Garfield Counties), principal air pollution sources include emissions from motor vehicles, oil and gas development, coal-fired power plants, coal mines, sand and gravel operations, windblown dust, and wildfires and prescribed burns (CAQCC 2011). Facility emissions in the two-county area are dominated by emissions related to oil and gas exploration, processing, or transportation. Due to these emission sources in the Piceance, White River and in the nearby Uinta and Yampa River Basins, VOCs, nitrogen oxides, and dust (particulate matter) are likely to increase into the future. However, with the exception of ozone, overall air quality conditions in the White River Basin are likely to continue to be in attainment of NAAQ standards due to effective atmospheric dispersion. Ozone levels may increase in localized area and are influenced by emissions in the White River Basin as well as from the nearby Uinta and Yampa River basins. Data collected in Dinosaur, Meeker and Rangely have measured exceedance in standards for 1-hour and 8-hour values for ozone (120 ppb and 75 ppb, respectively). To date, these exceedances have not been persistent enough to result in a violation of NAAQ standards.

Environmental Consequences of the No Action Alternative:

Direct and Indirect Effects: No impacts to air quality would result from the No Action Alternative.

Cumulative Effects: Impacts would be similar to those described for the action alternative.

Mitigation:

1. Endeavor will limit unnecessary emissions from point or nonpoint pollution sources and prevent air quality deterioration from necessary pollution sources in accordance with all applicable state, federal and local air quality law and regulation.

2. Endeavor will treat all access roads with water and/or a chemical dust suppressant during construction and drilling activities so that there is not a visible dust trail behind vehicles. Any technique other than the use of freshwater as a dust suppressant on BLM lands will require prior written approval from BLM.

GEOLOGY AND MINERALS

Affected Environment: Surficial geology of both wells is Quaternary alluvium of which 32-3-97 overlays the tertiary lower member of the Fort Union Formation and 22-3-97 overlays the upper member of the Fort Union Formation. The 32-3-97 is located on the southern flank of the southeastern plunging Midland anticline (Hail 1973) and 22-3-97 is on the northern flank. During drilling potential water, coal, oil, and gas resources will be encountered from surface to the targeted zone. These wells are located in an area identified in the White River ROD/RMP as having high potential for oil and gas and are outside the area identified as suitable for coal leasing. Limited oil and gas exploration has occurred within a two miles radius of the proposed wells. This consists of six wells; three plugged and abandoned oil and gas wells, one shut in, one commercial injection well and one drill and abandoned (COGCC 2012). Nearest oil and gas field development occurs approximately three miles south of the project in the Weber Sand Participating Area COC55102A. The proposed wells 22-3-97 and 32-3-97 are within Federal Oil and Gas Leases COC66386 and COC66388, respectively, which are included in the Wiley Exploratory Federal Oil and Gas Unit COC75390X.

Environmental Consequences of the Proposed Action:

Direct and Indirect Effects: Coal and water zones may be encountered during drilling and the cementing program of the Proposed Action isolates the formations and will prevent the migration of gas, water, and oil between formations including coal zones. Development of this well could deplete the hydrocarbon resources within the drainage acreage associated with reservoir characteristics in the targeted formation.

Cumulative Effects: As stated above the Colorado Oil and Gas Conservation Commission (COGCC 2012) database identifies six nonproducing oil and gas wells within a two mile radius of the well pads. At a minimum, an additional 42 wells could be required for full field development (320 acre bottom hole spacing) of the oil and gas resources in the two mile radius to occur. This would depend on the reservoir drainage characteristics within the targeted formation. Full field development could deplete the oil and gas resources of the targeted formations.

Environmental Consequences of the No Action Alternative:

Direct and Indirect Effects: The oil and gas resources in the targeted zones would not be developed at this time and would remain available for future recovery.

Cumulative Effects: There would be no contribution to the recovery of oil gas resources.

Mitigation: None.

SOIL RESOURCES

Affected Environment: The classifications of soils within 30 meters of the proposed surface disturbance and could be impacted by the well pads, access roads, and pipelines as described in the Proposed Action, are shown in Table 5. There are no fragile soils or soils prone to landslides on federal lands that will be impacted by this project.

Table 5. Soil Classifications within 30 Meters of the Surface Disturbance Proposed and/or the Centerline of Roads and Pipelines (NRCS, 2008).

Soil Classification	Range Site	Potentially Impacted (Acres)
Yamac Loam,2-15%slope	Rolling Loam	30
Rentsac-Moyerson-RockOutcrop complex, 5-65% slopes	PJ Woodlands/Clayey Slopes	27
Kobar silty clay cloam, 3-8% slopes	Clayey Slopes	21
Forelle loam, 3-8% slopes	Rolling Loam	12
Patent loam, 3-8% slopes	Rolling Loam	8
Torrifluvents, gullied	None	5
Abor Clay Loam,5-30%slopes	None	5
Redcreek-Rentsac complex, 5-30% slopes	PJ woodlands	4
Moyerson stony clay loam, 15-65% slopes	Clayey Foothills	1

Both pads and access roads are in fairly stable terrain, but are located in gullied terrain. There are two drainage crossings that will require culverts and several low water crossings are needed to cross ephemeral channels. The soils at both pads are rated as "well suited" for site preparation, meaning that with proper construction practices they should not present a challenge to initiate reclamation and provide a stable working surface for drilling. The erosion hazard for both access roads and pads is moderate to severe and due to the fairly flat topography bisected by gullies. This topography lends itself to a crown and ditched road design. As proposed by Endeavor, these roads will have a 16ft travel way and be crowned and ditched. It is likely that these road surfaces will be saturated during storm events.

Environmental Consequences of the Proposed Action:

Direct and Indirect Effects: The Proposed Action would disturb an estimated 35 acres. With proper BMPs for stormwater, construction practices, reclamation practices and mitigation described below impacts to soils outside the 30 meter buffer around surface disturbance are not expected. Final reclamation on the pipeline would be achieved within three to five years after installation.

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 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 could result in increased indirect impacts to soils off the construction sites such as increased runoff and erosion. Implementation of BMPs for stormwater, mitigation and reclamation will reduce impacts from this project and should limit impacts to construction sites. However, there is the potential for intense storm events or BMP failures resulting in erosion off the site. This is most likely to occur on the access roads with gully crossings. Monitoring of areas along the access road as required in the mitigation below should identify any failure of BMPs or unanticipated erosion and allow a plan to be developed for addressing them.

The access road to the Willey 22-3-97 pad passes through soils with clayey loam and silty clay loam surface texture that are not likely to provide a suitable road base for the access road. This section of the road would likely rut and quickly lose its drainage features if travel occurs during wet conditions. Temporary access for the drilling of the vertical evaluation well can likely be repaired through maintenance actions, but if the lateral well is completed and access is needed to the site on a more regular basis, road base and/or gravel should be used to stabilize the travelway of the access road. Otherwise, it is likely that the road shape would not be maintained and erosion would occur along the road.

Although the soils for the access road to the Wiley 32-3-97 pad are not as clayey, the erosion hazard for these soils is severe and with the gullied nature of this valley bottom the road should be surfaced during the drilling of the lateral well and production phase to maintain the integrity of the travel surface. Without this surfacing of the access roads long-term maintenance of the road will be difficult. This makes it more likely that the drainage features on the access roads will be ineffective and the roadway will experience erosion during regular use. As with the access road to the Wiley 22-3-97 pad, temporary access to drill the assessment wells can be repaired and is unlikely to need all weather surfacing.

Indirect impacts from this project could result in contamination of surface and subsurface soils due to unintentional leaks or spills from construction equipment, storage tanks, and production equipment and if these spills occurred they would affect the productivity of soils.

Cumulative Effects: Well pads in the general area (Crooked Wash watershed) have been and are likely to be single pads like this one and would likely occur on average at one to three well pads per square mile. If the evaluation wells and the lateral wells are successful, the well density may increase or if other gas wells in the area are successful. Additional production wells would include surface disturbance for well pads, pipelines, roads and support facilities. Extensive development of oil and gas in this area has not been proposed nor is foreseeable at this time. Livestock grazing and dispersed recreation occurs on public and private lands in the area and may reduce canopy cover and lead to localized erosion in some reclamation areas.

No other impacts other than those caused by oil and gas development, livestock and recreation are expected in the Crooked Wash watershed. In general, soil disturbance in the Proposed Action and other activities are likely to reduce soil productivity and may lead to increased erosion and instability of soils in local areas, but is not likely to be outside the 30 meter buffer around the disturbance analyzed for impacts to soil resources.

Environmental Consequences of the No Action Alternative:

Direct and Indirect Effects: No impacts to soils would occur.

Cumulative Effects: Impacts would be similar to those described for the action alternative.

Mitigation:

1. In order to protect public land health standards for soils, erosion features such as rilling, gullying, 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 Authorized Officer (AO) and by submitting a plan to assure successful soil stabilization with BMPs to address erosion problems.
2. All construction activity shall cease when soils or road surfaces become saturated to a depth of three inches unless approved by the AO.
3. To maintain the drainage features of the access roads, the access roads to Wiley 22-3-97 (from the C-1W injection well pad to the 22-3-97 well pad) and Wiley 32-3-97 (from BLM road 1511 to the 32-3-97 well pad) will be surfaced with six inches of road base and/or gravel aggregate after the vertical evaluation wells are drilled, after maintenance of the road surface occurs and before the lateral well bores are drilled or the wells go into production. Maintenance means restoring the travel surface shape and borrow ditches for the 16ft \crown and ditched road design proposed by Endeavor. As described in the SUP, the surfacing will be removed before final reclamation but otherwise will be maintained.

Finding on the Public Land Health Standard #1 for Upland Soils: With mitigation, this action is unlikely to reduce the productivity of soils on public lands.

SURFACE & GROUND WATER QUALITY

Affected Environment: Surface Water: This project is mostly within the Crooked Wash watershed tributary to the White River. Table 6 describes water segments that may be impacted by this project.

Table 6. Water Quality Classification Table (WQCC 2012b)

Segment	Segment Name	Use Protected	Protected Beneficial Uses			
			Aquatic Life	Recreation	Agriculture	Water Supply
13a	All tributaries to the White River from the confluence with Piceance Creek to Douglas Creek.	Yes	Warm 2	Not Primary Contact Recreation	Yes	No
12	The mainstem of the White River from Piceance to Douglas Creek	No	Warm 1	Existing Primary Contact Recreation	Yes	Yes

Segment 13a describes tributaries to the White River that are protected for warm water aquatic life (Warm 2). The warm designation means the classification standards would be protective of life normally found in waters where the summer weekly average temperatures frequently exceeds 20 °C. The Warm 2 designation means that it has been determined that these waters are not capable of sustaining a wide variety of warm water biota. Segment 13a is use protected; meaning that the anti-degradation review requirements are not applicable and only the numerical protection listed in Regulation No. 37 apply. This segment also has standards that are protective of recreation and agriculture, but not water supply.

Segment 12, White River, is protected for warm water aquatic life (Warm 1). The Warm 1 designation means that it has been determined that these waters are capable of sustaining a wide variety of warm water biota. Segment 12 and 13a are not listed on the 303d list of Colorado's impaired waters (WQCC 2012a). These segments are also protected for recreation, agricultural and in the case of the White River, water supply.

A number of sediment retention pits have been constructed near both pads. These are typically earthen dams on small tributaries to the gulley system. As these features age they may be compromised by unstable soils and uneven erosion of soils during storm-events and they can sometimes have a destabilizing effect on nearby soils. These features are especially close to the Wiley 32-3-9 pad, located along the southeastern edge of the fill slope for the pad.

Groundwater: Precipitation in this area generally moves from areas of recharge to surface waters via alluvial aquifers and on the surface during spring melt and rain storms. A portion of annual precipitation infiltrates to deeper bedrock aquifers that contribute to contact springs. Springs and ground water inputs generally occur in both bedrock and alluvial aquifers along valley bottoms.

Contact springs are common in the area and are often the result of upper bedrock aquifers consisting of fractured sandstones and shales. Perched groundwater zones occur locally when saturated zones contact differences in permeability and solubility of individual formations. These contact zones can occur in the ridges between surface water drainages and may be manifested as springs and seeps above the valley floor in outcrop areas especially near the badland soil types.

Environmental Consequences of the Proposed Action:

Direct and Indirect Effects: Surface Waters: Clearing, grading, and soil stockpiling activities associated with the Proposed Action would alter overland flow and natural infiltration patterns. Potential direct impacts include surface soil compaction caused by construction equipment and vehicles, removal of vegetation and disturbance of surface soils, which would increase rain-splash erosion and reduce the soil's ability to absorb water and increase the volume and rate of surface runoff, which in turn would increase surface erosion. The gulleys on the southeastern edge of the pad and along the access roads are the most likely areas for this surface erosion to occur. Stormwater measures and best management practices include periodic monitoring of any erosion problems would be essential to avoid erosion and increased sedimentation to surface waters.

Produced fluids and left over drilling fluids will be trucked to a Class II injection well (FRF C-1F) nearby and be disposed of. No hydrocarbons are expected to be produced from the verticle evaluation well. If the lateral well bore is completed and the well goes into production, oil and/or gas will be transported via the pipeline or it will be stored on site and trucked off.

Water use is estimated at 126,000 gallons and 141,850 gallons for the evaluation wells (total of 0.82 acre-feet) and 200,000 barrels of fresh water for each lateral well bore (total of 52 acre-feet for both). The proposed action indicates that the water will be withdrawn from a load-out point on County Road 77 where it crosses White River on private lands. The total potential water use could be as much as 53 acre-feet of water for the entire project. The average annual water yield for the White River at the Crooked Wash USGS Streamflow site is 645,000 acre-feet (1983-2011), This withdrawal amount is 0.008 % of this average annual yield and assuming the water is taken out at Crooked Wash bridge site over a one week time period for each well, the withdrawal amount is 1.9 cubic feet per second (cfs), this is 1.4 % of the lowest daily flow on record (See the Hydrology, Water Rights and Floodplains section). Therefore, these withdrawal rates are not likely to impact White River water quality.

It is likely some of this freshwater from the White River would be recycled between the two wells depending on the timing and therefore actual water use may be lower. Typical well drilling in the WRFO uses 2.62 acre-feet of fresh water per well, and a programmatic agreement was established with the US Fish and Wildlife (FWS) for depletions based on this amount. This programmatic agreement will be used for this project (See the Wildlife Section).

Surface runoff associated with storm events may increase sediment loads in surface waters down gradient of disturbed areas. Sediment can be deposited and stored in minor drainages and sediment retention pits where it would be moved into the White River during heavy convective storms. Surface erosion for this project is most likely during the construction and early production phases of the project and would be mitigated using BMPs for stormwater. The stability of the access roads and pad will need to be evaluated regularly due to the instability of the soils and the sediment pits built near the pad sites.

Groundwaters: Potential freshwater zones that are anticipated are the alluvium for the two gulches, and in the Wasatch and the Mesaverde formations. If the wells go into production, these potential freshwater zones will be protected by a conductor and surface casing, cementing behind these casing will be carried to the surface. Intermittent casing is planned to protect groundwaters and other production zones. The grade of cement used will vary but will be brought up to previously cemented intervals using standard drilling practices and checked to eliminate gaps between cement. Cement protects the well casings from leaking due to deterioration over the life of the well and allows casings to withstand pressure increases during completion and hydrologic fracturing activities.

Loss of drilling fluids may occur at any time in the drilling process due to changes in porosity or other properties of the rock being drilled. When this occurs, drilling fluids may be introduced into the surrounding formations which could include freshwater aquifers. If drilling fluids are lost to groundwater aquifers, aquifers may be contaminated by drilling additives. Using bentonite, freshwater and other additives that cannot contaminate groundwater mitigates the loss of drilling fluids that can be common during drilling since the introduction of these substances would not impact the quality of these groundwater features.

Impacts to groundwater resources could occur due to failure of well integrity, failed cement, surface spills, and/or the loss of drilling, completion and hydraulic fracturing fluids into groundwater. Types of chemical additives used in drilling activities may include acids, hydrocarbons, thickening agents, lubricants, and other additives that are operator and location specific. Concentrations of these additives also vary considerably and are not always known since different mixtures can be used for different purposes in gas development and even in the same well bore. According to COGCC requirements, all chemicals (greater than 500 pounds) used during drilling, completion, and work-over operations, including hydraulic fracturing treatments will be disclosed in a chemical disclosure form by well site. Also, chemicals and additives used for hydraulic fracturing will be disclosed on the public web site set up for this purpose.

Hydraulic fracturing is designed to change the producing formations' physical properties by increasing the flow of water and gas around the well bore. Hydraulic fracturing may also introduce chemical additives into the producing formations. Chemical additives used in completion activities will mostly be pumped back to surface tanks before production. Left over fluids will be injected in a Class II injection well nearby.

Known groundwater bearing zones in the project area would be protected by the drilling plan as described. Groundwater resources (including the contact springs, perched aquifers, and groundwater zones described in the Affected Environment) are all in elevations above the surface casing. With proper drilling and completion practices contamination of groundwater resources is unlikely.

Cumulative Effects: Well pads in the general area (Crooked Wash watershed) have been and are likely to continue to be exploratory in nature and would occur on average at one to three well pads per square mile. Exploratory wells would include surface disturbance for well pads, pipelines, roads and support facilities. Extensive development of oil and gas in this area has not

been proposed nor is foreseeable at this time. Livestock grazing and dispersed recreation occurs on public and private lands in the area and may reduce canopy cover and lead to localized erosion in some reclamation areas. Sediment retention pits have been built near the proposed locations, and the pits and access roads and may have a destabilizing impact on the surrounding soils, but are also likely to store and attenuate sediment production off the sites. No other impacts other than those caused by oil and gas development, livestock and reclamation are expected in the Crooked Wash watershed. In general, soil disturbance in the Proposed Action and other activities are likely to reduce soil productivity and may lead to increased erosion and increased salt or sedimentation loading.

Environmental Consequences of the No Action Alternative:

Direct and Indirect Effects: Neither ground nor surface water quality would be impacted by the No Action alternative.

Cumulative Effects: Impacts would be similar to those described for the action alternative, but would not include the impacts from the Proposed Action.

Mitigation:

1. To protect surface waters below the project area, keep road inlet and outlet ditches, sediment retention basins, and culverts free of obstructions, particularly before and during spring run-off and summer convective storms. Provide adequate drainage spacing to avoid accumulation of water in ditches or on road surfaces.
2. Install culverts and low-water crossings with adequate armoring of inlet and outlet. Patrol areas susceptible to road or watershed damage during periods of high runoff.
3. Locate drainage dips and drainage ditches in such a manner as to avoid discharge onto unstable terrain such as headwalls or slumps. Provide adequate spacing to avoid accumulation of water in ditches or dips.
4. When drilling to set the conductor and 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).

Finding on the Public Land Health Standard #5 for Water Quality: It is unlikely that construction of these well pads, access roads, installation of pipelines or drilling would result in an exceedence of state water quality standards.

VEGETATION

Affected Environment: The proposed Wiley 32-3-97-1 well pad, most of the pipeline, and access roads for both wells would be mostly through rolling loam range site and pinyon/juniper woodlands. The proposed Wiley 22-3-97-1 pad, and the northern ¼ mile of pipeline and access road would be in a deep clay loam site. The Wiley 32-3-97-1 site is generally an east facing sagebrush dominated park surrounded by pinyon/juniper slopes. Vegetation in this site that would be affected by the Proposed Action and occurs in the perimeter of the sagebrush park and on the PJ dominated toe slopes is primarily basin big sagebrush (*Artemisia tridentata)*,

Junegrass (*Koeleria machrantha*), needle and thread (*Stipa comata*), sandberg bluegrass (*Poa secunda*), western wheatgrass (*Pascopyrum smithii).* Indian ricegrass (*Achnatherum hymenoides*), and beardless wheatgrass (*Pseudoroegneria spicata*) The Wiley 22-3-97 site is a generally south facing slope near the valley bottom. Vegetation there is similar to the Wiley 32-3-97-1 though with more western wheatgrass. Portions of the pipeline traverse pinyon/juniper woodlands with a sparse herbaceous understory. There is a component of Russian thistle (*Salsola iberica*) and kochia (*Kochia scoparia*) along the existing roads. Cheatgrass (*Bromus tectorum*) occurs throughout the existing plant communities in the areas of both pads and adjacent to roadways and would readily spread into disturbed areas.

Environmental Consequences of the Proposed Action:

Direct and Indirect Effects: Implementation of the Proposed Action would result in the removal of all vegetation on a total of 11.1 acres for construction of the Wiley 32-3-97-1 pad, access road and pipeline initially. After interim reclamation approximately 2.3 acres of disturbance would remain for the life of the pad. Construction associated with the Wiley 22-3-97-1 pad would temporarily remove all vegetation on a total of 24.3 acres. After final reclamation of the pipeline corridor and interim reclamation associated with the pad and access road, approximately 2.6 acres of disturbance would remain for the life of the pad.

Direct impacts of vegetation removal include short-term loss of vegetation and the modification of plant community structure, species composition, and a short-term reduction of basal and aerial vegetative cover. Removal of vegetation also results in increased soil exposure, short-term loss of wildlife habitat, reduced plant diversity, and loss of livestock forage. Indirect impacts include the increased potential for non-native/noxious plant establishment and introduction, accelerated wind and water erosion, changes in water runoff due to facility/road/pipeline construction, soil impacts that affect plant growth (soil erosion or siltation), shifts in species composition and/or changes in vegetative density away from desirable conditions, and changes in visual aesthetics. Depending on the site, reestablishment of native shrubs may not begin for more than 20 years.

Environmental conditions could prevent initial reseeding efforts from being successful, resulting in an extended recovery period for native plant communities. Successful reclamation of the disturbance areas could improve the condition of the associated vegetation community. With prompt and successful reclamation, at the first appropriate seeding window, the project is anticipated to have no measurable effects on vegetative communities. Delaying interim reclamation activities as stated in the Proposed Action would likely result in dominance of disturbed areas by cheatgrass and other weedy annual species. Future reclamation would be difficult due to the established weeds and their seed bank in the soil. Because Wiley 22-3-97-1 is immediately adjacent to a reliable livestock watering pond reclamation success and the long-term plant community health could be influenced by livestock use in the area. Wiley 32-3-97-1 is also relatively close (0.3 mile) to a perennial water source that would result in potential livestock influence on reclamation and long term plant community health.

Cumulative Effects: The proposed projects, when added to other projects and developments near the project area, as well as within the larger area, including the Piceance Basin, would result in an increase in short-term removal of existing vegetation on 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 areas and the surrounding areas, the proposed projects would not result in a noteworthy increase in vegetation disturbance or long-term changes in plant community.

Environmental Consequences of the No Action Alternative:

Direct and Indirect Effects: Denial of the project would result in no impact to vegetation along the proposed pipeline corridor, access road, and pad site.

Cumulative Effects: 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 Colorow Gulch / Coyote Basin Unit area or in the larger surrounding area as a whole.

Mitigation:

1. As per Revised Onshore Order Number 1 Revised Onshore Order Number 1 requires that earthwork for interim reclamation is to be completed within six months of the conclusion of drilling. WRFO prefers to have re-contouring work either deferred or expedited so that seed can be applied to a fresh seedbed during the optimal seeding times (i.e., September through March), or as otherwise approved by the BLM. Topsoil redistribution and seedbed preparation should be accomplished immediately before seeding.
2. Phase I interim reclamation activities to stabilize soils, control erosion, label and protect topsoil, and prevent establishment of noxious and invasive weeds will be implemented within 24 hours after surface disturbing activities have ended. Topsoil stockpiles must be seeded immediately as part of Phase I interim reclamation.
3. Phase II interim reclamation will be initiated when one of the following applies:
   - The last well on a pad has been drilled and has undergone completion.
   - There are no drilling activities expected on the pad for the next six months.
   - There has been no activity on the pad within the last six months, regardless of whether or not there are outstanding approved APDs.
4. Pipelines and non-travel surfaces of access roads will be final-reclaimed at the first appropriate seeding window (between September and March) after construction.
5. BLM recommends Standard Seed Mix 3 for reclamation activities. Seed rates are shown for drill seeding rates (Table 7) and should be doubled where seed is broadcast. To preempt the establishment of invasive annual species such as cheatgrass, seeding shall occur at the first appropriate seeding window after construction (anytime between mid-September and mid-March).

Table 7. Native Seed Mix 3

Variety	Common Name	Scientific Name	Rate (Lbs. PLS/acre)
Rosana	Western wheatgrass	*Pascopyrum smithii*	4
Whitmar	Bluebunch wheatgrass	*Pseudoroegneria spicata*	3.5
Rimrock	Indian ricegrass	*Achnatherum hymenoides*	3
	Needle and Thread	*Hesperostipa comata*	2.5
Maple Grove	Lewis Flax	*Linum lewisii*	0.5
	Scarlet Globemallow	*Sphaeralcea coccinea*	0.5
	Utah Sweetvetch	*Hedysarum boreale*	0.5

6. If, after three growing seasons, the following success criteria are not achieved then the steps will be reassessed in consultation with the BLM WRFO and additional seeding at an appropriate seeding window will occur. Success criteria to achieve:
   - Vegetation monitoring (method approved by the BLM) reveals that the total vegetative ground cover in the reseeded area is no less than 80 percent of foliar cover of the desired plant community (as determined by the BLM).
   - The resulting plant community must have at least five desirable plant species, at least two of which must be a forb or shrub, each comprising at least three percent relative cover, none of which may exceed 70 percent relative cover individually.
7. An annual meeting will be held with the BLM Natural Resource Specialist (NRS) to review Reclamation Status and Vegetation monitoring reports. Any new information or future changes in the reporting process will be incorporated into the Reclamation Status Report.
8. Final reclamation of the pads will use the seed mix and reclamation practices recommended by BLM at that time.
9. The applicant shall use seed that is certified and free of noxious weeds. All seed tags will be submitted to the designated NRS within 14 calendar days from the time the seeding activities have ended via Sundry Notice (SN). The SN will include the purpose of the seeding activity (i.e., seeding well pad cut and fill slopes, seeding pipeline corridor, etc.). In addition, the SN will include the well or well pad number associated with the seeding activity, if applicable, the name of the contractor that performed the work, his or her phone number, the method used to apply the seed (e.g., broadcast, hydro-seeded, drilled), whether the seeding activity represents interim or final reclamation, an as-built shape-file of the area seeded, an attached map that clearly identifies all disturbed areas that were seeded, and the date the seed was applied.
10. Construction equipment shall be cleaned prior to entering public land at a location and in a manner that does not result in further weed spread.

Finding on the Public Land Health Standard #3 for Plant and Animal Communities: Upland plant communities in the project area, while somewhat degraded and at-risk due to the presence of cheatgrass throughout the area, currently do meet the Standard and are expected to meet the Standard in the future following project implementation and successful reclamation of disturbed areas as described in the SUPO that is incorporated in to the Proposed Action of this document.

INVASIVE, NON-NATIVE SPECIES

Affected Environment: Noxious weeds known to occur in the general project area include Cheatgrass (kochia, , Russian thistle (*Salsola australis*), and other weedy annual species. These species will aggressively establish in disturbed areas.

Environmental Consequences of the Proposed Action:

Direct and Indirect Effects: 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. Cheatgrass, kochia, and Russian thistle occurrences are scattered throughout the overall project area. Invasion and dominance by these species is very likely if disturbed areas are not reclaimed immediately following the construction. Once established, gaining control of weeds and establishing desirable vegetation would be difficult. There is also risk of weedy species expanding out into adjacent plant communities.

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

Environmental Consequences of the No Action Alternative:

Direct and Indirect Effects: Noxious and invasive plants would continue to be present within the vicinity of the project area and, depending on the effectiveness of weed treatment activities, may continue to spread.

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

Mitigation:

1. The operator will implement an integrated weed management plan according to BLM Manual 9015-Integrated Weed Management (BLM 1992). Prior to the season of construction, the operators should submit Pesticide Use Proposals for the use of herbicides appropriate for control/eradication of the known non-native invasive species including: cheatgrass, Russian thistle, and Kochia.
2. The operator will eliminate any noxious plants before seed production has occurred. Application of pesticides and herbicides on public lands will conform to BLM manual 9015 and Appendix B of the BLM White River ROD/RMP, Management of Noxious Weeds (BLM 1997). Eradication should make use of materials and methods approved in advance by the AO.
3. Additional mitigation is included in the Vegetation and Soils sections.

SPECIAL STATUS ANIMAL SPECIES

Affected Environment: The endangered Colorado pikeminnow occupies the lower White River below Taylor Draw Dam and Kenney Reservoir, approximately 27 miles downstream from the project area. The White River and its 100-year floodplain from Rio Blanco Lake to the Utah state line are designated critical habitat for the pikeminnow. The White River in Colorado does not appear to support spawning activity, young-of-year nurseries, or juvenile concentrations areas for the Colorado pikeminnow. The White River and its flow contributions to the lower White (Utah), Green, and Colorado Rivers remain important in the support of downstream habitat for the pikeminnow, as well as other endangered fish of the Upper Colorado River system, including humpback chub, bonytail, and razorback sucker and although these three species do not occur in the White River, water depletions in the White River adversely affect these species' downstream habitats in the Green River.

Greater sage-grouse: The greater sage-grouse is a candidate for listing under the Endangered Species Act (ESA) and considered a BLM sensitive species. BLM management of sage-grouse priority habitats were the subject of a recent Bureau-wide policy statement (BLM WO IM 2012-043) that seeks to maintain or improve the utility of these key habitats (through coordination with State agencies) as the basis for the species recovery and avoiding subsequent ESA listing actions, with the goal to minimize habitat loss, fragmentation and direct and indirect impacts to sage-grouse and sagebrush habitat. The FWS findings on petitions to list the greater sage-grouse have identified energy and infrastructure development as one of many threats to sage-grouse throughout its range. The BLM Instruction Memoranda (IM) states that energy development actions (through coordination with applicants) should "maintain, enhance or restore conditions for sage-grouse" and through consultation with the state wildlife agencies be shown to have "minor adverse effects to sage-grouse".

The Wiley 22-3-97-1-site is broadly encompassed by sagebrush communities classified as both priority and general sage-grouse habitat by Colorado Parks and Wildlife (CPW). The nearest active lek is approximately 2.75 miles from the proposed location. Access to the location will cross roughly one mile (0.70 mi priority and 0.30 mi general) of sage-grouse habitat. While there are several abandoned wells within four miles of the lek, there currently are almost no ongoing development activities. This action would likely be considered an initial incursion into occupied sage-grouse ranges.

BLM-sensitive species that have the potential to be influenced by the Proposed Action include: Brewer's sparrow, northern goshawk and sensitive bat species and white-tailed prairie dog. Each will be discussed below.

Brewer's sparrow: Brewer's sparrows are common and widely distributed in virtually all big sagebrush, greasewood, saltbush, and mixed brush communities throughout the Resource Area. These birds are typically one of the most common members of these avian communities and breeding densities generally range between 10-40 pairs per 100 acres. Although most abundant in extensive stands of sagebrush, the birds appear regularly in small (one to two acre) sagebrush parks scattered among area woodlands and it is extremely likely that the sagebrush communities

surrounding the project area provide nesting habitat for this species. Typical of most migratory passerines in this area, nesting activities normally take place between mid-May and mid-July.

Northern goshawk and BLM sensitive bat species: It is unlikely the open-canopied, younger-aged pinyon/juniper woodlands which surround both well locations would provide suitable nest substrate for northern goshawk. This species typically prefers to nest in contiguous aspen or mixed coniferous forests. Based on BLM's experience, goshawks nest at low densities throughout the Basin in mature pinyon-juniper woodlands above 6,500ft and Douglas-fir and aspen stands. The WRFO has about eight recent records of goshawk nesting in the Piceance Basin, the nearest being over 10 miles from the project area.

White-tailed prairie dog and associated species: Small, isolated colonies of white-tailed prairie dogs are located in the vicinity of the Wiley 22-3-97-1ocation and proposed access route (BLM mapping 2008). Prairie dogs and their burrow systems provide a food and cover source for a number of wildlife species including burrowing owl, ferruginous hawk and the endangered black-footed ferret, although these colonies are largely incapable of supporting these species due to their size and isolated nature. There was no evidence of prairie dog occupation during onsite inspections conducted in July 2012, most likely due to a plague epizootic in 2008.

Environmental Consequences of the Proposed Action:

Direct and Indirect Effects:

Endangered Colorado River fish and BLM sensitive fish/aquatic species:

The Proposed Action would indirectly influence critical habitat designated for the endangered Colorado River fish in terms of water depletion alone. 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 May 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 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. Water use for this project is estimated to be 53 acre-ft, which is relatively higher than most wells, but still falls within the threshold outlined in the PBA. Water use 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.

Implementation of State and federally-imposed design measures to control erosion and spills would limit the risk of contaminants migrating off-site and degrading water quality in the White

River. Due to the proximity of the project area from the White River (separated by three miles of ephemeral channel), it is unlikely the Proposed Action would have any measurable sediment contribution the White River which could impact endangered or BLM sensitive aquatic species.

Greater sage-grouse: Sage-grouse populations generally require large expanses of intact sagebrush habitat (Connelly et al. 2004). Fragmented or altered landscapes can lead to a diminished habitat base and have been shown to influence lek activity, nesting and brood-rearing success, adult and chick survival, and winter habitat selection (Holloran et al. 2010). Recent studies have consistently demonstrated that oil and gas development activity and its infrastructure exert influences on sage-grouse behavior and demographics at distances up to four miles, prompting declines in lek persistence and male attendance, yearling and adult hen survival, and nest initiation rates and eliciting strong avoidance response in yearling age classes, nesting/brooding hens, and wintering birds. Most sage-grouse research has used various measures of lek use to infer population responses in sage-grouse subjected to development-related disturbances. Without exception, this work documents increased rates of lek inactivity and declining male attendance in response to increased frequency (vehicle use), intensity (well density), duration, and proximity of development activity and infrastructure (Doherty 2008; Lyon and Anderson 2003; Walker et al. 2007; Harju et al. 2010; Holloran 2005). Research has shown that noise associated with fluid minerals development (drilling activities and vehicle travel etc.) can behaviorally influence sage-grouse up to one mile from the disturbance, causing birds to avoid otherwise functional sagebrush habitats (Naugle et al. 2006a, Naugle et al. 2006b, Doherty 2008, Harju et al. 2009 and Carpenter 2010). Research has also identified that leking behavior is affected when noise exceeds 10 decibels above the ambient noise levels during peak leking around sunrise (Patricelli et al. 2010). Noise decreases with increasing distance from a source. The BLM estimates noise levels at a given distance using the Inverse Square Law of Noise Propagation. Therefore, noises at the well site greater than 60 decibels could impact sage grouse utilization of the lek.

The Wiley 22-3-97-1 location lies 2.75 miles from an active lek. Approximately 10,670 acres of mapped priority sage-grouse habitat are located within four miles of the lek. Development of the this location would directly remove 8.3 acres of predominately sagebrush habitats; however, indirect impacts associated with development activities (including vehicle travel, noise, human activity etc.) could influence up to 1122 acres or 10 percent of functional priority habitat within the four mile area. This would be expected to have a substantial influence on grouse in the area, particularly if activities took place during reproductive timeframes.

Mitigation measures including eliminating/minimizing disruptive activities, particularly during the reproductive period, minimizing surface disturbing activities, minimum development requirements for access roads, and prompt and successful interim reclamation would be expected to help reduce direct habitat loss and indirect impacts associated with the development of this well. A CPW biologist was present at the onsite and was involved in subsequent discussions regarding measures that would best minimize the amount of disturbance to sage-grouse and sagebrush habitat. State and BLM biologists agreed eliminating activity during the nesting and brood-rearing period would reduce impacts to grouse. Furthermore, to minimize direct habitat loss and accelerate future reclamation it was also agreed that the road from the C-1W injection well pad to the 22-3-97 well pad be kept to the minimum standard necessary (minimum width,

native surface) until the longevity of development and technology is proven. The road will then be brought back to a two-track standard following completion of the well. Interim reclamation should take place within six months of conclusion of drilling (see also Vegetation section).

Brewer's sparrow:
The Proposed Action would involve the direct removal of approximately 35 acres of predominately sagebrush habitat which may potentially provide forage, cover and nesting resources for Brewer's sparrow. Following natural succession regimes, these communities would take anywhere from 20-30 years to return to preconstruction conditions. Impacts to this species would vary depending on construction timeframes and are discussed in detail in the Migratory Bird section.

Northern goshawk: Discussions regarding woodland raptors in the Terrestrial Wildlife section would be directly applicable to northern goshawk. See Terrestrial Wildlife section for raptor survey requirements. Similarly, younger stature stands typically do not provide suitable roost substrate for BLM sensitive bat species.

White-tailed prairie dog: Construction of the Wiley 22-3-97-1 location would involve less than 0.50 acre of mapped prairie dog colonies. Road upgrades would have only minor involvement with prairie dog colonies and are not expected to have substantial influence on local prairie dog populations. Timing limitations required for sage-grouse would effectively avoid the prairie dog reproductive season.

Cumulative Effects: The Proposed Action is not anticipated to add substantially to existing or proposed disturbances and would represent an incremental reduction in available sagebrush habitat for local wildlife populations. As mitigated, the removal of 35 acres of sagebrush communities is not anticipated to impact special status species or detract from continued use of the area by local wildlife. Prompt and effective interim reclamation would promote a healthier, diverse plant community which may potentially benefit local wildlife populations in the short-term.

Environmental Consequences of the No Action Alternative:

Direct and Indirect Effects: There would be no direct or indirect impacts to special status animal species under the No Action Alternative.

Cumulative Effects: There would be no contribution to previous or existing disturbances that would potentially impact special status species or habitats under the No Action Alternative.

Mitigation:

1. Any activities associated with well pad development of the Wiley 23-3-97-1 location including: construction, drilling, vehicle travel etc. will take place outside of the sage-grouse nesting and brood-rearing periods of April 15 – July 7.
2. The proposed access road to the Wiley 23-3-97-1 location should be kept to the minimum standard necessary (minimum width, native surface) to reduce the amount of direct habitat loss and hasten reclamation during the development of the vertical well. If determined to

develop the horizontal well the operator will upgrade the road to a graveled road surface of 14 ft with necessary turn-outs to accommodate the development.
3. During final abandonment the access road should be returned to a two-track standard. All gravel will be removed to improve reclamation.
4. In the event that the wells become productive the operator will utilize BMPs to reduce the level of noise, vehicular trips to the locations, and overall improvement of interim reclamation. These could include mufflers on any onsite equipment, utilization of screening (i.e. buildings, fencing, etc.).
5. See mitigation in Vegetation section regarding interim reclamation.

Finding on the Public Land Health Standard #4 for Special Status Species: The Land Health Standards for special status animal communities are currently being met in the project area. Neither the Proposed nor No Action Alternatives are expected to detract from continued meeting of these standards.

SPECIAL STATUS PLANT SPECIES

Affected Environment: Potential habitat for debris milkvetch (*Astragalus detritali*) and narrow-stem gilia (*Aliciella stenothyrsa*) occurs within the vicinity of the Proposed Action. Abor clay loam and Moyerson stony clay loam soil types occur in the project area; both of which have the capability of supporting debris milkvetch and narrow-stem gilia. The closest known population of debris milkvetch occurs 12.4 miles to the northwest of the Proposed Action. The closest known population of narrow-stem gilia occurs 6.5 miles to the southeast.

Table 8. Special Status Plant Species Within the Vicinity of the Proposed Action

Species	Status[1]	Habitat Description	Potential to Occur in the Proposed Project Area
Aliciella stenothyrsa (Gilia stenothyrsa) (Narrow-stem gilia)	S	Grassland, sagebrush, mountain mahogany or pinyon-juniper; silty to gravelly loam soils of the Green River formation (6,200 -8,600 ft)	This species has the potential to occur in the vicinity of the proposed project activities. The action occurs over Abor clay loam and Moyerson stony clay loam soil types
Astragalus detritalis (Debris milkvetch)	S	Pinyon-juniper and mixed desert shrub, often on rocky soils ranging from sandy clays to sandy loams. Also alluvial terraces with cobbles (5,400-7,200 ft)	This species has the potential to occur in the vicinity of the proposed project activities. The action occurs over Abor clay loam and Moyerson stony clay loam soil types

[1] S = Sensitive

Environmental Consequences of the Proposed Action:

Direct and Indirect Effects:

There should be no conceivable direct impacts to the special status plant species because of the distance of the Proposed Action to the nearest known population. The proposed project will directly disturb three acres of soils that support special status plant species (Table 8) in pipeline construction. The loss of potential habitat may slightly reduce the range of the species.

If special status plant species colonize any of the soils near the Proposed Action, the fragmentation of the surrounding vegetative communities may impact the new populations. Some impacts may include an increase in non-native species invasion, fragmentation of pollinator habitat, and possible increase of human disturbance because of easier access on roads used by energy proponents.

Cumulative Effects: There are no known cumulative impacts from the development of this pad, pipeline, and associated access route.

Environmental Consequences of the No Action Alternative:

Direct and Indirect Effects: There would be no direct or indirect impacts to special status plant species or associated habitats under the No Action Alternative.

Cumulative Effects: There would be no contribution to previous or existing disturbances under the No Action Alternative.

Mitigation:

1. Since the Proposed Action occurs on soils that are known to support special status plant species, plant surveys may be required for future ground disturbing maintenance or day-to-day operation activities on the well pads and pipelines.

MIGRATORY BIRDS

Affected Environment: Both well pads are broadly encompassed by open canopied Wyoming big sagebrush with an herbaceous understory dominated by crested wheatgrass and low density cheatgrass. The adjacent slopes are comprised of mixed-age pinyon-juniper woodlands. These shrubland and woodland communities provide nesting habitat for a number of bird species during the breeding season (typically mid-May through mid-July) including Brewer's sparrow, vesper sparrow, meadowlark, blue-gray gnatcatcher (sagebrush associates), black-throated gray warbler, Bewick's wren, and gray flycatcher. The Wiley 22-3-97-1 location is located approximately 80 meters from a small reservoir. Based on onsite inspections, this reservoir did not support and form of riparian vegetation, nor did it contain water, therefore it is unlikely riparian obligate bird species would make use of the area.

The BLM lends increased management attention to migratory birds listed by the FWS as Birds of Conservation Concern (BCC). These are bird populations that monitoring suggests are undergoing range-wide declining trends and are considered at risk for becoming candidates for listing under the ESA if not given due consideration in land use decisions. Pinyon jay and juniper titmouse, BCC associated with pinyon-juniper habitats, have potential to occur in the project area but likely at lower densities. BCC associated with sagebrush shrubland habitats is limited to the BLM-sensitive Brewer's sparrow, which is addressed in the Special Status Animal Species section. Discussions below are directly applicable to this species as well.

Although these locations have no open water or wetland areas that support or attract waterfowl use, the development of reserve pits that contain drilling fluids have attracted waterfowl use, at least during the migratory period (i.e., local records: mid-March through late May; mid-October through late November).

Environmental Consequences of the Proposed Action:

Direct and Indirect Effects: Well pad, road and pipeline construction would initially remove approximately 35.5 acres of predominately Wyoming big sagebrush communities, which under natural successional regimes would take upwards of 20 years to return to preconstruction conditions. Grassland communities would be shorter term, taking one to three years following reclamation. The functionality of these communities (in regards to forage and cover availability) to support migratory birds would depend greatly on the timing and effectiveness of interim reclamation. Surface disturbing activities can lead to the proliferation of noxious weeds and invasive plant species. Delays in interim reclamation could promote the spread of invasive plants which in general do not provide effective cover or forage resources for most migratory bird species.

Impacts to migratory birds would vary depending on construction timeframes. Construction during the fall and winter months would effectively avoid any direct impacts to nesting activities. If drilling activities extend into the spring or summer months, returning birds would select nest sites in the face of ongoing activities. Should construction and drilling activities be initiated during the nesting season (typically mid-May through mid to late-July) there would be greater potential to influence nesting activities/outcomes including bird displacement, nest abandonment and possible nestling mortality. Activities which take place during the breeding season may indirectly influence up to an additional 90 acres of functional forage and nesting habitats due to avoidance associated with construction activities, vehicle traffic and increased human activity.

It has been brought to BLM's attention that in certain situations migratory waterfowl have contacted drilling or frac fluids (i.e., stored in reserve pits) during or after completion operations and are suffering mortality in violation of the Migratory Bird Treaty Act. The extent and nature of the problem is not well defined, but is being actively investigated by the federal agencies and the companies. Until the vectors of mortality are better understood, management measures must be conservative and relegated to preventing bird contact with frac and drilling fluids that may pose a problem.

Cumulative Effects: The Proposed Action is not anticipated to add substantially to existing or proposed disturbances. Currently, there is limited oil and gas-related disturbance in and around the project area. Although long term (after interim reclamation), the removal of approximately five acres of sagebrush shrublands is not anticipated to have a measureable influence on local bird populations as there is considerable suitable habitat adjacent to the project area. Prompt and effective reclamation would promote a healthier, diverse plant community which would benefit local wildlife populations as a whole.

Environmental Consequences of the No Action Alternative:

Direct and Indirect Effects: There would be no direct or indirect impacts to migratory bird species or associated habitats under the No Action Alternative.

Cumulative Effects: There would be no contribution to previous or existing disturbances that would potentially impact migratory bird species or habitats under the No Action Alternative.

Mitigation:

1. The operator shall prevent use by migratory birds of reserve pits that store or are expected to store fluids which may pose a risk to migratory waterfowl, shorebirds, wading birds and raptors during completion and after completion activities have ceased. Methods may include netting or other alternative methods that effectively prevent use and that meet BLM approval. It will be the responsibility of the operator to notify the BLM of the method that will be used to prevent use two weeks prior to when completion activities are expected to begin. The BLM approved method will be applied within 24 hours after completion.
2. Vegetation removal associated with development of the Wiley 32-3-97-1 and 22-3-97-1 locations will take place outside of the migratory bird nesting season of May 15 through July 15.
3. Interim reclamation associated with well pad development will be initiated within six months of completion of drilling activities or as described in Vegetation section.

TERRESTRIAL WILDLIFE

Affected Environment: The lower elevation big sagebrush and pinyon-juniper communities that encompass the project area are categorized as mule deer critical winter range. Critical winter range is specialized component of winter range which typically supports an entire herd through the most severe winters (heavy snowfall, temperature). These ranges generally receive the heaviest use from December through May.

Pinyon-juniper woodlands and rock out crops adjacent to both well locations may provide suitable nesting substrate for woodland and cliff nesting raptors.

The distribution and abundance of small mammal populations are poorly documented within the Resource Area. Recent trapping efforts undertaken throughout Piceance Basin indicate a high tendency in both sagebrush and pinyon-juniper communities for more generalized species such as deer mouse and least chipmunk and it is suspected that these species would be relatively abundant in the project area. There are no small mammal species that are narrowly endemic or highly specialized species known to inhabit the project area.

Environmental Consequences of the Proposed Action:

Direct and Indirect Effects: The Proposed Action would remove approximately 35 acres of predominantly Wyoming big sagebrush habitat which provides forage resources for big game particularly during the winter months. Under natural succession regimes these sagebrush communities would take anywhere from 20 – 30 years to return to preconstruction conditions. Pad development during the winter months would have greater potential to displace big game as both deer and elk tend to congregate in the surrounding lower elevation pinyon-juniper and sagebrush habitats during these time frames. Increased vehicle traffic, noise and human activity, particularly during the construction and drilling phase, would have the greatest potential to displace local wildlife (contributing to increased energetic demands); however due to the limited

amount of activity in the immediate vicinity, it is suspected that local big game populations would have adequate forage and cover resources available. Local wildlife would be expected to return to the area once drilling has ceased. Prompt and effective reclamation would offset forage losses for big game in the short term. Additionally, effective reclamation (i.e., diverse perennial component) would benefit small mammal and nongame bird species as well.

Well pad construction would not involve the direct removal of woodland habitats, and only limited involvement would be associated with pipeline and road upgrades. Indirectly, noise and activity associated with construction, traffic and drilling activities could influence nesting outcomes – including displacement and possible nest abandonment - if these activities were to take place during the breeding/nesting season (typically mid-March through mid-August). Should construction and drilling occur outside of the breeding/nesting season, the Proposed Action would have no direct influence on nesting activities. A raptor survey will be required and the report submitted to the BLM wildlife staff prior to construction initiation. Appropriate timing stipulations would be applied if an active nest is located.

Cumulative Effects: The Proposed Action in and of itself is not anticipated to contribute substantially to existing or proposed disturbances, nor is expected to have any measureable influence on local wildlife populations. Currently there is limited oil and gas development in the area. Development of these two locations would represent an incremental reduction in big game critical winter range, however prompt and effective reclamation would offset forage loss (to a degree) in the short term.

Environmental Consequences of the No Action Alternative:

Direct and Indirect Effects: There would be no direct or indirect impacts to terrestrial wildlife species under the No Action Alternative.

Cumulative Effects: There would be no contribution to previous or existing disturbances that would potentially impact terrestrial wildlife species or habitats under the No Action Alternative.

Mitigation:

1. See reclamation provisions outlined in Vegetation, Special Status Animal Species and Migratory Bird sections.
2. No activities (construction, drilling, or any activities associated with pad/well development) will be allowed on the Wiley 32-3-97-1 or the Wiley 22-3-97-1 locations from December 1 through April 30 to avoid the big game critical winter period.
3. Raptor surveys will be required prior to construction initiation on the Wiley 32-3-97-1 and 22-3-97-1 locations. Surveys will follow established BLM WRFO raptor survey protocol. Surveys will be required for woodland habitats within 300 meters of the edge of disturbance and for cliff faces and rock outcrops within ¼ mile of edge of disturbance. Surveys results (written report) will be submitted to BLM wildlife staff for review. Well pad, road and pipeline construction will not be allowed to commence until survey results are reviewed and approved by BLM wildlife staff. If an active nest is located, appropriate timing stipulations would be applied (TL-01 and 04 WRRO-ROD; NSO-02 and 03 WRRO-ROD). Initiation of

pad construction or any work associated with pad development is prohibited pending a raptor survey and submittal of a written report approved by the BLM wildlife staff.

Finding on the Public Land Health Standard #3 for Plant and Animal Communities: The Land Health Standards for animal communities are generally being met in the project area. Neither the Proposed nor No Action Alternatives are expected to detract from the continued meeting of the Land Health Standards.

CULTURAL RESOURCES

Affected Environment: Wiley 22-3-97-1 well pad and access road: The proposed well pad location and access route have been inventoried at the Class III (100 percent pedestrian) level (Davenport 2012b compliance dated 10/1/2012). The inventory only identified three isolated surface finds along the proposed access route. Isolated finds are not, in and of themselves, considered significant. The question that cannot be answered regarding isolated finds is whether or not buried remains might be present within the projects area of potential effect unless some subsurface testing is undertaken during the inventory.

Wiley 32-3-97-1 well pad location: The proposed well pad location has been inventoried at the Class III (100 percent pedestrian) level (Davenport 2012a compliance dated 10/1/2012) which did not identify any archaeological remains within the forty acre well pad inventory area. However, the proposed well pad location is located within the view shed of a wickiup village that is in the area as performed for the Mesa Energy CBU 29-15-397 well location.

Environmental Consequences of the Proposed Action:

Direct and Indirect Effects: Well pad 22-3-97-1 and access road: The proposed well pad and access road should not impact any historic properties as far as can be determined from surface inventory techniques. Isolate Finds are categorically not eligible for the National Register of Historic Places and do not have to be protected. However, there is a potential for subsurface remains which could be seriously damaged or destroyed during the construction process if not identified during construction work.

Upgrading of the access road to the proposed well pad location could lead to increased human activity in the area which could result in a potential for increases in unauthorized artifact collection or possible looting excavations to sites that may not be in the project area but made more easily accessible by the road improvements. At the present time inventory data are not sufficient to know whether there are additional sites located within 3,280 feet (1,000 meters) of the proposed access or well pad except for the previously identified wickiup village.

Well 32-3-97-1: No surface manifestations of cultural resources were identified during inventory for the project therefore, unless previously unrecorded subsurface remains are present, it does not appear that archaeological resources will be directly impacted by the ground disturbance involved with pad construction. However, there is a potential for the presence of undetectable subsurface remains, though the potential might be limited. Any archaeological resources that might be present could be seriously damaged or destroyed if not quickly recognized and protected during construction.

Additional impacts that can occur to cultural resources outside of ground disturbance associated with construction are actions that introduce visual or audible elements out of character with the property; alter its setting; and fragment the landscape of which sites are part. If the well should be determined to be a producer and placed into commercial production there is a potential for visual impacts and auditory impacts to the feeling and setting of the wickiup village unless mitigation takes place and is effective in reducing the visual and auditory impacts.

Cumulatives Effects: If this Proposed Action is approved it will add on to other development in the area, and cause more traffic into the area, all which introduces potential vandalism and collection at any nearby site, alter site settings for any cultural resources in the area; and fragment the landscape of which the cultural resources are all part.

Environmental Consequences of the No Action Alternative:

Direct and Indirect Effects: There would be no potential new construction related impacts to any surface or subsurface archaeological resources under the No Action Alternative. Not upgrading any roads in the area under the No Action Alternative would not result in the potential increase in human activity, beyond the traditional big game hunting activity in the area and thus would not increase the potential for unauthorized collection of artifacts.

Cumulative Effects: Under the No Action Alternative the only impacts to cultural resources would be the natural weathering process that normally occurs plus any impacts that may result from hunter activity in the area. These losses are slow and limited but still irreversible and irretrievable resulting in an overall loss of data for the regional archaeological database.

Mitigation:

1. The applicant 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 applicant 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 applicant, 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 applicant 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

applicant must stop activities in the vicinity of the discovery and protect it for 30 days or until notified to proceed by the AO.

4. Well 32-3-97-1: If the well should become a producer and placed into commercial production, tankless production facilities will be required if practicable. If tankless production is not practicable visual mitigation measures such as low profile production facilities with a BLM approved digital camouflage paint pattern are required.
5. Additional effective mitigation to reduce the auditory impact of the well is also required. Endeavour must submit a plan on how they will lessen auditory levels that has to be approved by the BLM.

PALEONTOLOGICAL RESOURCES

Affected Environment: Wiley 22-3-97-1 well pad and access road: the proposed well pad location and access route are located in an area generally mapped as the Paleocene Fort Union Formation (Tweto 1979) which the BLM, WRFO has classified as a Potential Fossil Yield classification (PFYC) 4 formation. The Fort Union formation is known to produce a variety of vertebrates including mammals, fish, amphibians, and invertebrates such as mollusks and plants (c. f. Armstrong and Wolny 1989).

Wiley 32-3-97-1 well pad: the proposed well pad location and access route are located in an area generally mapped as the Paleocene Fort Union Formation (Tweto 1979) which the BLM, WRFO has classified as a PFYC 4 formation. The Fort Union formation is known to produce a variety of vertebrates including mammals, fish, amphibians, and invertebrates such as mollusks and plants (c. f. Armstrong and Wolny 1989).

Environmental Consequences of the Proposed Action:

Direct and Indirect Effects: Wiley 22-3-97-1 well pad and access road: If it becomes necessary to excavate into the underlying sedimentary rock to level the well pad, excavate the reserve/blooie/cuttings pit or upgrade the access road there is a potential to impact scientifically noteworthy fossil resources. In addition, improved access into the area could result in increased human presence and activity could lead to loss of fossil resources due to unauthorized collection of fossils. If interim reclamation is delayed then increased erosion could potentially result in loss of fossil resources, particularly the smaller, more fragile ones, due to erosion.

Wiley 32-3-97-1 well pad: If it becomes necessary to excavate into the underlying sedimentary rock to level the well pad, excavate the reserve/blooie/cuttings pit or upgrade the access road there is a potential to impact scientifically noteworthy fossil resources. In addition, improved access into the area could result in increased human presence and activity could lead to loss of fossil resources due to unauthorized collection of fossils. If interim reclamation is delayed then increased erosion could potentially result in loss of fossil resources, particularly the smaller, more fragile ones, due to erosion.

Cumulative Effects: If excavations into the underlying sedimentary rock occurs for either or both of proposed Wiley wells 32-3-97-1 and 23-3-97-1 wells there is a high potential to impact fossil resources which, even with monitoring and data or fossil recovery, could result in

an irreversible and irretrievable loss of some scientific data from the regional paleontological database. The loss would be from the context of the fossils as well as loss of fossils, particularly smaller fossils that are easily crushed or masked by dust and dirt during operations and not recovered.

Environmental Consequences of the No Action Alternative:

Direct and Indirect Effects:: There would be no new loss of paleontological data from oil and gas development under the No Action Alternative. Human presence and activity in the area would not increase as a result of increased development and the potential for increased unauthorized collection would not be as high. The natural slow weathering process that has been occurring for centuries would continue slowly exposing the formation and any fossil that might be there resulting in weathering and eventual erosional loss of the fossils and their contextual data.

Cumulative Effects:: There is a very slow, irreversible, irretrievable loss of scientific paleontological data from the regional paleontological database as a result of the slow natural weathering of the formation that has occurred for centuries. Periodic prospecting by paleontologists can mitigate the impacts to a limited extent when exposed fossils are identified and recovered along with as much contextual data as possible.

Mitigation:

1. Well pad 22-3-97-1 and access plus well pad 32-3-97-1: Endeavour is responsible for informing all persons who are associated with the project operations that they will be subject to prosecution for disturbing or collecting vertebrate fossils, collecting large amounts of petrified wood (over 25lbs./day, up to 250lbs./year), or collecting fossils for commercial purposes on public lands.
2. If any paleontological resources are discovered as a result of operations under this authorization, Endeavour 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.

VISUAL RESOURCES

Affected Environment: Visual resources are the visible physical features of a landscape that convey scenic value. Scenic values in the BLM White River Resource Area have been classified according to the Visual Resource Management (VRM) system, and VRM objectives were established in the 1997 White River ROD/RMP. 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 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.

Generally, the landscape character in the project area of Wiley 32-3-97-1 Wiley 22-3-97-1 consists of flat to sloping and undulating terrain, with soft sloping sides and the occasional sharp line from rocky outcrops. This area is primarily covered with sagebrush and grasses along with mixed stands of mountain shrub species with juniper and pinyon on the adjacent slopes. Color tones of the landscape are typical of the area, with a contrast of soil and vegetation. Generally the soils are tan and grey with dark and light green colors in the more heavily vegetated areas. Some existing roads, oil and gas facilities, and utility ROWs have created impacts to the form, line, and color that affect the natural appearance of the landscape.

Environmental Consequences of the Proposed Action:

Direct and Indirect Effects: Implementation of the Proposed Action would cause some visual impacts, primarily through the removal of existing vegetation causing unnatural vegetation/soil color contrasts at proposed new well pads and newly constructed roads and pipelines. This would introduce sharp visual contrasts on the landscape from these linear disturbances. The degree of impact would depend on the type of vegetation affected. In grasslands, the visual impacts would be shorter in duration after reclamation efforts are complete and vegetation has returned to its original state. Areas cleared of sagebrush, woodland, and forested vegetation would cause the most visual impact, and these impacts could persist for years. In areas where the proposed project parallels an existing pipeline or road corridor, the visual impacts would be an incremental increase in already existing effects. The amount of unnatural soil/vegetation color contrasts would be greatly reduced after the construction phase is reclaimed and revegetated to the production phase. The total disturbed acreage of Wiley 32-3-97-1 and Wiley 22-3-97-1 during construction phase is 35.4 acres which would be reduced to 4.9 acres during the operation phase. Combined with painting all above ground facilities Juniper Green, the overall level of change to the characteristic landscape would be low to moderate and the objectives of the VRM III classification would be retained.

Cumulative Effects: Combined with other ongoing oil and gas development activities in the area, the proposed action may begin to contribute to an increasingly impacted visual landscape.

Environmental Consequences of the No Action Alternative:

Direct and Indirect Effects: As the proposed action would not occur, no impacts are expected.

Cumulative Effects: None have been identified.

Mitigation:

1. Restore the appearance of naturally rocky slopes and areas that have a natural gravel, cobble, or boulder veneer on the surface by layering or scattering rock across the impacted area.
2. Paint all aboveground facilities Juniper Green from the BLM Standards Environmental Color Chart CC-001: June 2008.

HAZARDOUS OR SOLID WASTES

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.

Environmental Consequences of the Proposed Action: Environmental Consequences of the Proposed Action: The proposed activities may use regulated materials and will generate some solid and sanitary wastes. The ..otential for harm to human health or the environment is presented by the risks associated with spills of fuel, oil and/or hazardous substances used during oil and gas operations. Other accidents and mechanical breakdowns of machinery are also possible.

Substances used in the hydraulic fracturing process may be harmful to human health or the environment. However, freshwater-bearing formations and other resources suitable for human use or consumption are isolated from man made materials used in oil and gas operations through the use and cementing of surface casing, see 43 CFR §3162.5-2(d).

Environmental Consequences of the No Action Alternative: No hazardous or other solid wastes would be generated under the no-action alternative.

Mitigation:

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, shall 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 shall 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, shall 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 shall be lined with a minimum 24 mil impermeable liner.

5. Construction sites and all facilities shall be maintained in a sanitary condition at all times; waste materials shall 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.
7. 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.

FIRE MANAGEMENT

Affected Environment: Both proposed pads are located in areas of light fuels within the B4 Crooked Wash/Indian Valley fire management unit. This polygon consists of Wyoming big sagebrush and pinyon juniper woodlands. A modified suppression strategy may be utilized where the potential to burn less than 200 acres of sagebrush exists. This strategy may promote a vegetation mosaic representing a spectrum of successional stages in continuous sagebrush stands. Local preparedness levels and proximity to infrastructure may limit fire management strategies to direct control by full suppression. The proposed pipeline to pad 22-3-97- will affect approximately eight acres of mature juniper woodland. The area to the west of pad 32-3-97-1 was thinned as part of a hazardous fuels treatment in 2005. The fire regime/condition class for this fire management polygon is currently at a two, or is land considered to have been moderately altered from its' historical fire return interval.

Environmental Consequences of the Proposed Action:

Direct and Indirect Effects: Direct and Indirect Effects: During a wildfire event, the primary objective is firefighter and public safety. While in the construction phase of the proposed project, the appropriate management response may be full suppression. Stock piled vegetation which is stored on site for future purposes creates jack pots of fuel which are susceptible to fire brands. A direct effect of the proposed project will be the temporary suspension of the use of naturally ignited fire to meet multiple resource management objectives. Once the project is complete, the man-made vegetation breaks would alter the behavior of wildfires in the area, and help to create areas that may be suitable for use as fire breaks to help control wildfires.

Cumulative Effects: A continued increase in natural gas drilling within the area may cause difficulties in full implementation of the Northwest Colorado Fire Program Area Fire Management Plan. Only when drilling operations decrease will fire and resource managers allow naturally ignited fire to create a vegetation mosaic representing various plant communities in different successional stages. If the exploratory well goes into production and additional gathering lines are added, as stated in the Proposed Action, the associated construction will further restrict the full implantation of the Fire Management Plan.

Environmental Consequences of the No Action Alternative:

Direct and Indirect Effects: No vegetation alteration or construction would occur under this alternative. Due to the known frequency of natural fire ignitions in the area of the proposed project, fire may again impact the site in 35 to 100 years. This natural return interval could return the site to a fire regime/condition class one.

Cumulative Effects: Without new oil and gas development and infrastructure, there would be less human related vegetation breaks which when combined with natural mosaic vegetation patterns have been used to contain fires in the past. This could lead to increased future fire suppression costs.

Mitigation:

1. When working on lands administered by the BLM WRFO, notify Craig Interagency Dispatch (970-826-5037) in the event of any fire.
   - The reporting party will inform the dispatch center of fire location, size, status, smoke color, aspect, fuel type, and provide their contact information.
   - The reporting party, or a representative of, should remain nearby, in a safe location, in order to make contact with incoming fire resources to expedite actions taken towards an appropriate management response.
2. The applicant and contractors will not engage in any fire suppression activities outside the approved project area. Accidental ignitions caused by welding, cutting, grinding, etc. will be suppressed by the applicant only if employee safety is not endangered and if the fire can be safely contained using hand tools and portable hand pumps. If chemical fire extinguishers are used the applicant must notify incoming fire resources on extinguisher type and the location of use.
3. Natural ignitions caused by lightning will be managed by Federal fire personnel. The use of heavy equiment for fire suppression is prohibited, unless authorized by the Field Office Manager.
4. Piled vegetation retained for reclamation as part of forest management mitigations shall be located at least thirty feet from other receptive fuels.

FOREST MANAGEMENT

Affected Environment: The Proposed Action is located within a productive exposure stand classes of juniper woodlands as defined by a survey performed by WRFO personnel from 2003-2005. Productive exposure types occur on primarily lower gradient slopes and north and east aspects. Growth rates are higher in these areas due to soil features which allow for effective use

of precipitation. This habitat type is further broken down based on the age class of the stand. In this case the affected juniper stand is mature. Mature juniper trees on productive exposure establish themselves as the dominant plant community on the site. Mature stands are valuable locally as a source of fire wood.

Environmental Consequences of the Proposed Action:
Direct and Indirect Effects: Table 8 below shows the estimated loss of woodland acres as a result of the Proposed Action. Following reclamation it is expected that juniper will invade the site within 50-70 years and would develop a mature stand within 250-350 years. Under the Proposed Action on location Wiley 32-3-97-1 about 0.7 acres of woodlands would be removed. On location Wiley 22-3-97-1 about 7.8 acres of woodlands would be removed. The loss of juniper woodland would adversely affect wildlife and nesting habitat. Impacts would be long-term until woodlands regenerate successfully.

Table 8. Woodland Acreage in the Proposed Area of Disturbance

Well Name	Acreage In Woodlands				
	Pad Acres	Access Rd. and Pipeline (Ac)	Acres Disturbed (Total)	Stand Class	Total Cords
Wiley 32-3-97-1	0.4	0.3	0.7	J-PE-M	3.5
Wiley 22-3-97-1	0	7.8	7.8	J-PE-M	39
TOTAL		8.1	8.5		42.5

Cumulative Effects: Removal of mature juniper trees would reduce the potential for outbreak of woodland diseases and pest infestations. By reducing the stand size of juniper trees in areas historically included in sagebrush and grass communities, it would increase the open areas preferred as foraging areas by wildlife and livestock.

Environmental Consequences of the No Action Alternative: Under this alternative there would be no construction of wellpads or pipeline installation and no removal of juniper woodlands.

Mitigation:

1. In accordance with the 1997 White River RMP/ROD, all trees removed in the process of construction shall be purchased from the BLM. Trees should first be used in reclamation efforts and then any excess material made available for firewood or other uses.
    - First, woody material will be chipped and stockpiled for later use in reclamation. Woods chips can be incorporated into the topsoil layer to add an organic component to the soil to aid in reclamation success.
    - Woody materials, not used for woods chips, required for reclamation shall be removed in whole with limbs intact and shall be stockpiled along the margins of the

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

- Woody materials that are to be stockpiled along margins and not used in the topsoil should not exceed pile dimensions of 8 x 8 x 8 feet. Materials used in the stockpiles should be a variety of diameters, but should be no smaller than 6 inches in diameter. Additionally the piles should be no less than 30 feet apart.

2. Trees that must be removed for construction and are not required for reclamation shall be cut down to a stump height of 6 inches or less prior to other heavy equipment operation. These trees shall be cut in four foot lengths (down to 4 inches diameter) and placed in manageable stacks immediately adjacent to a public road to facilitate removal for company use or removal by the public.
3. During pad, road, and pipeline layout, consideration will be given to maintaining old-growth stands in their entirety. Old-growth stands will be those with trees containing individuals of age greater than 300 years and having old-growth stature and development.

RANGELAND MANAGEMENT

Affected Environment: The entire proposed project is on public land within the Blue Haven pasture of the Keystone livestock grazing allotment (#06605). This pasture contains a total of 7,968 acres including 6,373 acres of BLM land, 646 acres of state land, and 949 acres of private land. The south half of this pasture, including the general project area for Wiley 32-3-97-1, is grazed from November through December yearly. The north half of the pasture including the area of Wiley 22-3-97-1 is grazed from January through March every other year. The total disturbance short term on public lands within this pasture would be 35.4 acres but after successful reclamation would be reduced to approximately 5 acres. The total permitted livestock use in this pasture is 679 animal unit months (AUM) or approximately 12 acres/AUM (an AUM equals the amount of forage required by one mature cow and one calf for one month). There is a long term trend monitoring site adjacent to BLM Road 1511 approximately 1,500 feet east of the proposed Wiley 32-3-97-1 pad.
There is a cattleguard at the intersection of RBC 77 and BLM 1509. There is a pond (200539 – Deep Channel Retention Dam) less than 700 ft west of the proposed Wiley 22-3-97-1 pad site. There are no other range improvement projects that would be affected by this proposed project.

Environmental Consequences of the Proposed Action:

Direct and Indirect Effects: Until disturbed areas are successfully reclaimed there would be a short term loss of less than one AUM in the Blue Haven pasture. There would be a longer-term forage loss associated with the 5 acres of surface disturbance that would not be reclaimed for the life of the pads.

The short-term forage loss within the allotment would be far less than the annual fluctuation in forage production, and is not expected to result in any need for changes in livestock numbers or grazing periods. Reclamation of disturbed areas would likely offset the short-term forage loss on the allotment within two to three years through increased herbaceous production above current production levels.

Dust from increased travel on BLM Road 1511 during construction could affect vegetation associated with the long term trend plot. Damage to the allotment boundary fence, cattleguard, or associated gate at RBC 77 and BLM 1509 could interfere with control of cattle and ultimately with proper utilization of the rangeland resource. Sediment or changed surface flow from construction of Wiley 32-3-97-1 could impact the Deep Channel Retention Dam pond. These impacts would be greatest during the construction phases, especially if construction coincides with livestock use of the area.

Cumulative Effects: Agriculture, road development, and oil and gas development, which have the potential to impact rangeland management would continue to occur. The Proposed Action would remove forage temporarily in the Keystone Allotment. After project construction has been completed and grass/forb communities have returned the portions of the Proposed Action that traverse sites previously vegetated with pinyon/juniper would contribute to a broader grass/forb corridor that would provide additional forage for livestock in the area.

Environmental Consequences of the No Action Alternative:

Direct and Indirect Effects: There would be no direct and/or indirect effects to rangeland management under the No Action Alternative.

Cumulative Effects: Activities associated with agriculture, road development, and oil and gas development would continue to occur in the area, which has the potential to impact rangeland management by removal of forage, impacts to range improvements, etc.

Mitigation:

1. Assure that the cattleguard, fence, and associated gate at RBC 77 and BLM 1509 are not damaged and are kept in a functional manner to keep cattle from straying into other areas.
2. If it becomes apparent that livestock use is hampering revegetation success BLM recommends that the entire reclaimed area associated with either pad is temporarily fenced (electric or barbwire fencing) for a minimum of three growing seasons to preclude livestock grazing. Fence construction, maintenance, and removal upon achieving successful reclamation are the responsibility of the project proponent.
3. The operator must coordinate with the livestock grazing permittee (Lopez Ranch and Buffalo Horn Ranch) authorized to graze livestock within the project area a minimum of 72 hours prior to construction activities associated with this permit. Livestock grazing permittee contact information may be found at www.blm.gov/ras/ or by contacting the WRFO Range staff (970-878-3800). The operator will provide the grazing permittee the location, nature, and extent of the anticipated activity being completed.
4. Any range improvement projects such as fences, water developments, cattleguards, gates, or other livestock handling/distribution facilities that are damaged or destroyed either directly or indirectly as a result of implementation of the Proposed Action shall be promptly (at least prior to the livestock grazing permittee's need to utilize the range improvement) be repaired or

replaced by the operator to restore it to at least its pre-disturbance functionality. If the operator damages any range improvement project(s) the operator will notify the Authorized Officer through sundry notice (Form 3160-5) and identify the actions taken to repair the feature(s).

5. See the Vegetation section of this document for additional mitigation.

FLOODPLAINS, HYDROLOGY, AND WATER RIGHTS

Affected Environment: Drainage patterns around the pad site, stormwater and the improved access roads have been considered in the designs submitted with the SUP.

The proposed water used for drilling the vertical assessment wells is less than typical of oil and gas activities in the area (0.82 acre-ft). The potential lateral wells to be drilled later would use relatively high volumes of water for drilling and completion activities (52 acre-ft). A programmatic agreement with FWS to protect Colorado River threatened and endangered fish species that are impacted by depletions has been established to address water used from oil and gas activities with 2.62 acre-ft of water per well average assumed for this water use (See Aquatic Wildlife section). This agreement also assumed a certain number of wells would be drilled and completed each year; therefore, the total volume of depletions expected from all oil and gas activities per year is the key consideration. It is expected that this water use will be addressed through this programmatic agreement and be below annual estimates as part of the agreement.

Along the White River below Piceance Creek to the Utah border there are few water withdrawals and there has not been a call on this section of the river. A call is when a water rights holder downstream of the proposed use informs the State of Colorado that they will not be able to fulfill their water rights. The call may result in a curtailment of junior water rights upstream and may preclude the withdrawal of water from the White River. The operator must have approval from the land owner at the withdrawal point, but unless there is a call on the river by Colorado water law they may pull water for this use from the river without prior approval.

Environmental Consequences of the Proposed Action:

Direct and Indirect Effects: Designs submitted by the operator with the mitigation applied in the soils and water quality sections are likely to be adequate to protect surface hydrology and no impacts are expected. No disturbance in identified floodplains is planned and culvert sizing is adequate to avoid restricting flow during storm events on the road crossings.

Freshwater withdrawals from the White River were compared to the annual yields (total volume of water in a year) and to daily average flows to determine if withdrawals would impact the hydrology of the White River or impact water rights downstream. It is possible that produced water might be used for completing the lateral well bores, if this is done the impact to freshwater in the White River would be reduced.

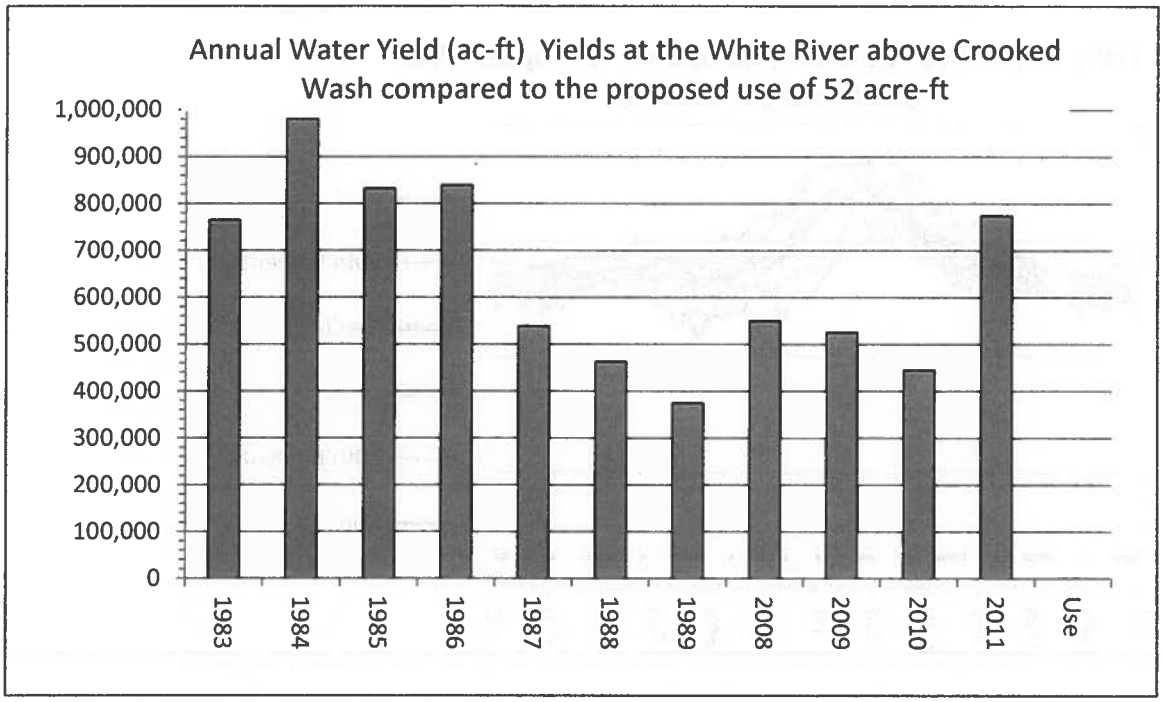

Figure 1: Annual Water Yields Compared to the Proposed Use for the White River above Crooked Wash.

As shown in Figure 1. Above, the proposed use would be 0.008% of the average annual yield of the White River, and therefore is likely to be trivial in itself. Assuming that the withdrawal of water to support the lateral well bores would take place over at least one week and be continuous, the withdrawal rate would be 1.86 cfs, this amount is well below the minimum flows measured at the is site. The lowest daily average flow measured at the White River site above Crooked Wash was 132 cfs and occurred on September 7, 1989. At this withdrawal rate the use would be 1.4 % of the daily flow, and would be difficult to detect and is unlikely to impact the hydrology of the White River. Note that the daily flow statistics indicated in Figure 1 are in a base 10 logarithmic scale to better show the data.

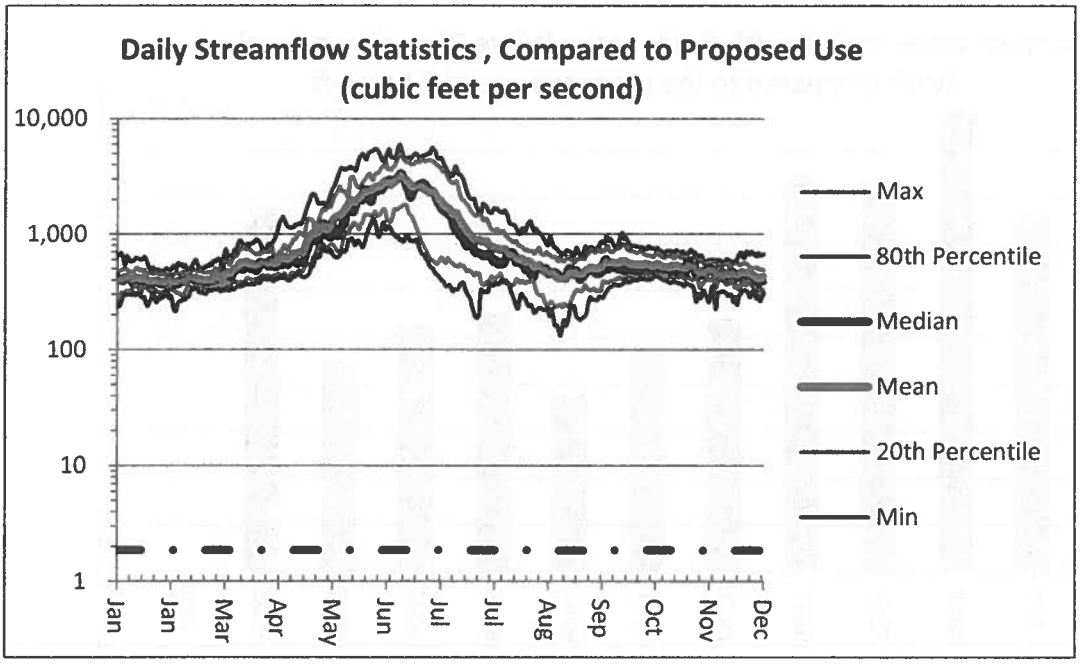

Figure 2: Daily Streamflow Statistics for Daily Mean as Compared to the Proposed Use for the White River above Crooked Wash.

The pipelines would be installed after the access roads are built and must cross gullies with the potential for flood events to expose the pipeline through channel scour. Based on Fogg and Hadley (2007), it is important that the pipeline is installed below any potential channel scour. In the absence of location specific modeling or analysis installing the pipeline at least four feet below the active channel is likely to be adequate. Not installing the pipeline deep enough would lead to exposure at some point and may require additional disturbance to re-install the pipeline deeper or some other mitigation.

Cumulative Effects: Well pads in the general area (Crooked Wash watershed) have been and are likely to be single pads like this one and would likely occur on average at one to three well pads per square mile. Additional production wells would include surface disturbance for well pads, pipelines, roads and support facilities. Extensive development of oil and gas in this area is not foreseeable. Livestock grazing and dispersed recreation occurs on public and private lands in the area and may reduce canopy cover and lead to localized erosion in some reclamation areas. No other impacts other than oil and gas development, livestock and recreation are expected in the Crooked Wash Creek watershed. If the lateral well bores are successful and water use is needed for more lateral well bores in the future, this may become a significant use of freshwater depending on the operator's ability to reuse and recycle freshwater and/or the use of produced water for drilling and completion. Due to these uncertainties it is difficult to anticipate future potential water use out of the White River.

Environmental Consequences of the No Action Alternative:

Direct and Indirect Effects: No impacts to floodplains, hydrology or water rights would occur.

Cumulative Effects: Impacts would be similar to those described for the action alternative.

Mitigation:

1. Endeavor or their contractor will install the pipeline at least four feet below the active channel bottom on the unnamed gulley to the west of BLM road 1511 to protect the pipeline from potential channel scour. Substrate in these sections will be segregated from other spoils and be replaced in a first out, last in method to maintain channel bedload size and distribution on channel bottoms.

REALTY AUTHORIZATIONS

Affected Environment: The off-unit portion of the pipeline and access road will require a ROW. The following table describes the existing ROWs in the area of the proposed water pipelines.

Table 9. Existing ROWS in the Project Area

Case File	Holder	Authorized Use
COC54858	Sonterra Energy LLC	Access road
COC69536		Natural gas pipeline
COC66436	Dschaak Consulting	Disposal well and access road
COC72907	Rocky Mountain Power	Transmission power line *(pending)*
COC75193	Mesa Energy Partners LLC	Access road
COC75626		Access road *(pending)*
COC75627		Natural gas pipeline *(pending)*
COC75631		Natural gas pipeline *(pending)*
COC75631-01		Temporary use permit *(pending)*

Environmental Consequences of the Proposed Action:

Direct and Indirect Effects: The ROW for the natural gas pipeline (COC75990) pipeline would be 13,610 ft long, 30 ft wide, and contain approximately 9.37 acres. The ROW for the off-unit access road (COC75989) from RBC Road 77 to the Wiley 22-3-97-1 well pad would be 15,222 ft long, 30 ft wide, and contain approximately 10.48 acres. The running surface of the access road would be 16 ft. The access road and pipeline would be constructed within a total width of 50 ft. No additional work areas would be necessary. 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 Effects: 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.

Environmental Consequences of the No Action Alternative:

Direct and Indirect Effects: Failure to authorize the proposed project would not result in any increased impacts to realty authorizations in the area.

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

Mitigation:

1) All activities would be required to comply with all applicable local, state, and federal laws, statutes, regulations, standards, and implementation plans. This would include acquiring all required State and Rio Blanco County permits, implementing all applicable mitigation measures required by each permit, and effectively coordinating with existing facility ROW holders.
2) 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.
3) Construction activity should take place entirely within the areas authorized in the ROW grants.
4) At least 90 days prior to termination of the ROW, the holder shall 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 shall 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 AO must approve the plan in writing prior to the holder's commencement of any termination activities.
5) For the purpose of determining joint maintenance responsibilities, the holder shall make road use plans known to all other authorized users of the common access road. Upon request, the AO shall be provided with copies of any maintenance agreement entered into.

RECREATION

Affected Environment: The proposed project area is located within the White River Extensive Recreation Management Area (ERMA) on BLM lands administered by the WRFO. The WRFO manages the ERMA to provide for unstructured recreation activities, and a diversity of outdoor recreation opportunities; hunting, dispersed camping, hiking, horseback riding, wildlife viewing, and off-highway vehicle (OHV) use are to be maintained and protected. There are no Special Recreation Management Areas (SRMAs) identified within WRFO lands.

On BLM-administered lands, the Recreation Opportunity Spectrum (ROS) is a classification system and a prescriptive tool for recreation planning and management. ROS classes within the WRFO ERMA are not specified at the proposed project area. However, the proposed project area most closely resembles a ROS class of Semi-Primitive Motorized (SPM). The SPM

physical and social recreation setting is typically characterized by a natural appearing environment with few administrative controls and low interaction between users (but evidence of other users may be present). SPM recreational experience is characterized by a high probability of isolation from the sights and sounds of humans within a setting that offers challenge and risk.

Current recreation activities in the project area include a moderate amount of elk and deer hunting during the fall, with some minimal lion hunting through the fall and winter. Other uses include a low amount of dispersed camping associated primarily with hunting and a low amount OHV use of the nearby roads and trails during the summer and fall.

Environmental Consequences of the Proposed Action:

Direct and Indirect Effects: During construction of the well pads, road, and pipeline, the public may temporarily lose some dispersed recreation potential. Traffic, noise, human activity, and associated construction activities would temporarily increase and could affect the quality of some users' recreational experiences. Increased contact between recreationists and construction crews, the sights and sounds associated with construction activities, and a less naturally appearing environment near the project area would be temporary, occurring during the construction phase and then later during the reclamation efforts. When these activities occur, the public would most likely not recreate near the project and would disperse elsewhere.

Construction activities during big game hunting seasons may temporarily displace wildlife to habitat away from the pipeline corridor. Since hunting relies on the presence of game species and hunters generally prefer relatively quiet settings, it is likely that construction activities could disrupt hunting in localized areas within close proximity of active construction. Although construction may temporarily generate disruptions to nearby recreation activities, it is likely that hunters could find relatively undisturbed settings on adjacent public lands. Further discussion of wildlife displacement is discussed in the Terrestrial Wildlife section.

Cumulative Effects: Combined with other ongoing oil and gas development activities, the Proposed Action may incrementally contribute to reduced opportunities for dispersed recreation and increase wildlife displacement.

Environmental Consequences of the No Action Alternative:

Direct and Indirect Effects: Since the proposed action would not occur, no effects to recreation are expected.

Cumulative Effects: None have been identified.

Mitigation: None.

ACCESS AND TRANSPORTATION

Affected Environment: Access to the proposed project area requires utilizing a variety of state, county, and BLM roads. Primary access to the project area is 28 miles west of Meeker, CO on State Highway 64 and then north onto County Road 77 for 3 miles then left or north onto BLM road 1509 for 3 miles to the project area. Most roads in this project area are used primarily for oil and gas production, local ranching operations, and to a lesser extent, dispersed recreation.

Environmental Consequences of the Proposed Action:
Direct and Indirect Effects: Some portions of existing roads and ROWs will be used to perform construction activities and where this occurs it is likely there may be minor disruptions and delays to the normal flow of traffic along the above named roads, particularly BLM Road 1509. Where new roads are proposed there will be no impacts to existing access or transportation use.

Cumulative Effects: None have been identified.

Environmental Consequences of the No Action Alternative:
Direct and Indirect Effects: Since the Proposed Action would not be implemented, no effects to access and transportation are anticipated.

Cumulative Effects: None.

Mitigation:
1) The project proponent will ensure that thru traffic along all roads remains open at all times and will also ensure that traffic delays due to project construction along BLM Road 1509 last no longer than ten minutes at any one time. The project proponent will post signs along BLM Road 1509 alerting the public of possible delays due to construction activities.
2) Any damage to existing roads as a result of the Proposed Action will be repaired to a condition that is similar to the original state or better than what existed prior to the commencement of construction or recoating. Access off of existing roads through vegetation to the pipeline route will be reclaimed in its entirety to as described in the Vegetation section.

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2012b Class III Cultural Resources Inventory for the Proposed Wiley 22-3-97-1 Well Location and Related Linear Route (3.2 miles) in Rio Blanco County, Colorado for Endeavour International Corporation. Grand River Institute, grand Junction, Colorado. (12-11-33: SHPO # RB.LM.R1302)

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TRIBES, INDIVIDUALS, ORGANIZATIONS, OR AGENCIES CONSULTED:
Consultation with the Ute Tribe of the Uintah and Ouray Reservation was conducted in the summer of 2012. Impacts to the sights, settings, and feeling at wickiups sites were identified as a tribal concern.

SHPO was consulted.

INTERDISCIPLINARY REVIEW:

Name	Title	Area of Responsibility	Date Signed
Bob Lange	Hydrologist	Air Quality; Surface and Ground Water Quality; Floodplains, Hydrology, and Water Rights; Soils	1/29/2013
Baili Foster	Ecologist Intern	Areas of Critical Environmental Concern; Special Status Plant Species; Forest Management	1/8/2013
Michael Selle & Kristin Bowen	Archaeologist	Cultural Resources; Native American Religious Concerns; Paleontological Resources	11/21/2012
Mary Taylor	Rangeland Management Specialist	Invasive, Non-Native Species; Vegetation; Rangeland Management	1/23/2013
Lisa Belmonte	Wildlife Biologist	Migratory Birds; Special Status Animal Species; Terrestrial and Aquatic Wildlife; Wetlands and Riparian Zones	2/04/2013
Christina Ashley	Natural Resource Specialist	Hazardous or Solid Wastes	2/6/2013
Aaron Grimes	Outdoor Recreation Planner	Wilderness; Visual Resources; Access and Transportation; Recreation	11/20/2012
Scott Nilson	Fuels Specialist	Fire Management	12/13/2012
Paul Daggett	Mining Engineer	Geology and Minerals	12/10/2012
Stacey Burke	Realty Specialist	Realty	1/14/2013
Melissa J. Kindall	Range Technician	Wild Horse Management	12/11/2012
Christina Ashley	Natural Resource Specialist	Project Lead – Document Preparer	2/6/2013
Ester McCullough	Associate Field Manager	NEPA Compliance	3/18/2013

ATTACHMENTS:
Figure 1: Map of the Project

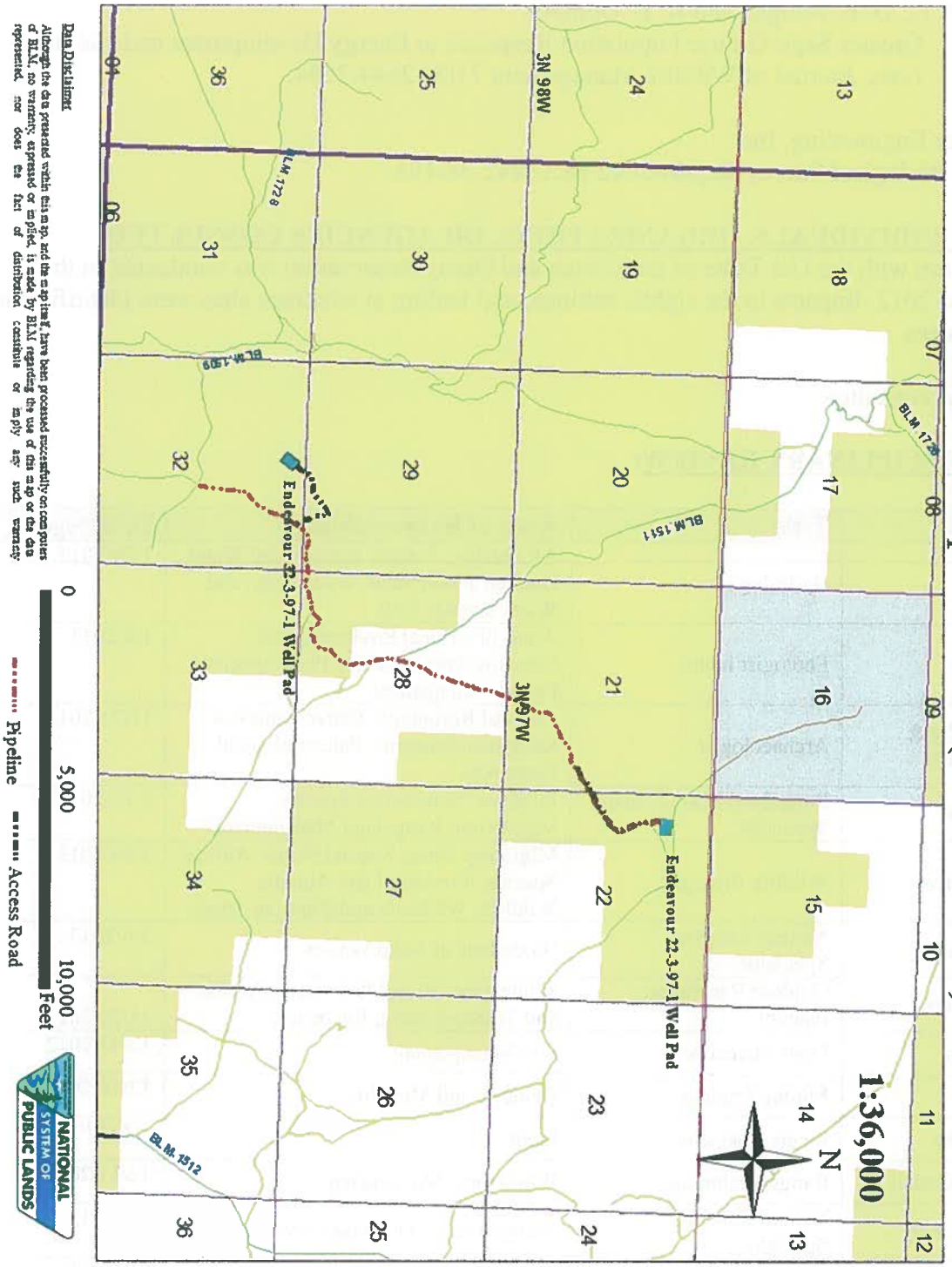

Figure 1: Map of the Project

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)

DOI-BLM-CO-110-2012-0100-EA

BACKGROUND

Endeavour proposes to drill the Wiley 32-3-97-1 and 22-3-97-1 vertical wells to determine the extent and recovery potential for both the Niobrara and Frontier formation. Testing results from the proposed exploratory well would be used to identify if subsequent drilling for one or more horizontal wells is warranted. If testing results do not indicate that drilling subsequent horizontal wells would be warranted, the wells would be placed into final reclamation.

FINDING OF NO SIGNFICANT IMPACT

Based on the analysis of potential environmental impacts contained in the attached environmental assessment, and considering the significance criteria in 40 CFR 1508.27, I have determined that the Proposed Action will not have a significant effect on the human environment. An environmental impact statement is therefore not required.

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.

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 depletion of the subsurface petroleum reservoir in general is a beneficial impact that adds to domestic energy reserves. While surface impacts would be short-term and of low intensity, improper implementation of approved techniques for construction and reclamation has potential to adversely impact surface resources at a higher intensity and time duration than anticipated.

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. The operator has self-certified their knowledge of rules and regulations related to all aspects of the proposed action, and those rules and regulations necessarily include those designed to protect public health and safety. The WRFO inspection program is designed to identify compliance issues. Drilling, production, and environmental inspections are preformed to ensure compliance with the conditions under which the operations are permitted.

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 prime farmlands, parklands, or scenic rivers occur in the project area.

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 well 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 community compositions, if the proposed reclamation is not effective.

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 inventory identified no new cultural resources in the proposed project area. Potential for any impacts to known cultural sites have been mitigated.

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 concerns have been identified for plant species listed as threatened or endangered under the Endangered Speices Act. Mitigation is provided to reduce impact to special status animal species.

The greater sage-grouse is a candidate for listing under the Endangered Species Act (ESA) and considered a BLM sensitive species. Mitigation measures including eliminating/minimizing disruptive activities, particularly during the reproductive period, minimizing surface disturbing activities, minimum development requirements for access roads, and prompt and successful interim reclamation would be expected to help reduce direct habitat loss and indirect impacts associated with the development of this well.

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 impacts associated with it violate any laws or requirements imposed for the protection of the environment.

SIGNATURE OF AUTHORIZED OFFICIAL: Kent T. Walter
Field Manager

DATE SIGNED: 04/04/13

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

DECISION RECORD

PROJECT NAME: Endeavour Proposed Wells 32-3-97-1 and 22-3-97-1

ENVIRONMENTAL ASSESSMENT NUMBER: DOI-BLM-CO-2012-0100-EA

DECISION

It is my decision to implement the Proposed Action (Alternative A), as mitigated in DOI-BLM-CO-2012-0100-EA, authorizing the construction, operation, and maintenance of Endeavour's Wiley 32-3-97-1 and 22-3-97-1 vertical wells.

Mitigation Measures

Timing Limitations

1. Any activities associated with well pad development of the Wiley 23-3-97-1 location including: construction, drilling, vehicle travel etc. will take place outside of the sage-grouse nesting and brood-rearing periods of April 15 – July 7.
2. Vegetation removal associated with development of the Wiley 32-3-97-1 and 22-3-97-1 locations will take place outside of the migratory bird nesting season of May 15 through July 15.
3. No activities (construction, drilling, or any activities associated with pad/well development) will be allowed on the Wiley 32-3-97-1 or the Wiley 22-3-97-1 locations from December 1 through April 30 to avoid the big game critical winter period.

Pre-Construction Notifications

4. Raptor surveys will be required prior to construction initiation on the Wiley 32-3-97-1 and 22-3-97-1 locations. Surveys will follow established BLM WRFO raptor survey protocol. Surveys will be required for woodland habitats within 300 meters of the edge of disturbance and for cliff faces and rock outcrops within ¼ mile of edge of disturbance. Surveys results (written report) will be submitted to BLM wildlife staff for review. Well pad, road and pipeline construction will not be allowed to commence until survey results are reviewed and approved by BLM wildlife staff. If an active nest is located, appropriate timing stipulations would be applied (TL-01 and 04 WRRO-ROD; NSO-02 and 03 WRRO-ROD). Initiation of pad construction or any work associated with pad development is prohibited pending a raptor survey and submittal of a written report approved by the BLM wildlife staff.
5. Since the Proposed Action occurs on soils that are known to support special status plant species, plant surveys may be required for future ground disturbing maintenance or day-to-day operation activities on the well pads and pipelines.

6. The operator must coordinate with the livestock grazing permittee (Lopez Ranch and Buffalo Horn Ranch) authorized to graze livestock within the project area a minimum of 72 hours prior to construction activities associated with this permit. Livestock grazing permittee contact information may be found at www.blm.gov/ras/ or by contacting the WRFO Range staff (970-878-3800). The operator will provide the grazing permittee the location, nature, and extent of the anticipated activity being completed.
7. Construction equipment shall be cleaned prior to entering public land at a location and in a manner that does not result in further weed spread.
8. Any range improvement projects such as fences, water developments, cattleguards, gates, or other livestock handling/distribution facilities that are damaged or destroyed either directly or indirectly as a result of implementation of the Proposed Action shall be promptly (at least prior to the livestock grazing permittee's need to utilize the range improvement) be repaired or replaced by the operator to restore it to at least its pre-disturbance functionality. If the operator damages any range improvement project(s) the operator will notify the Authorized Officer through sundry notice (Form 3160-5) and identify the actions taken to repair the feature(s).
9. The operator will implement an integrated weed management plan according to BLM Manual 9015-Integrated Weed Management (BLM 1992). Prior to the season of construction, the operators should submit Pesticide Use Proposals for the use of herbicides appropriate for control/eradication of the known non-native invasive species including: cheatgrass, Russian thistle, and Kochia.
10. 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.
11. All activities would be required to comply with all applicable local, state, and federal laws, statutes, regulations, standards, and implementation plans. This would include acquiring all required State and Rio Blanco County permits, implementing all applicable mitigation measures required by each permit, and effectively coordinating with existing facility ROW holders.
12. Construction activity should take place entirely within the areas authorized in the ROW grants.

Cultural and Paleontological Resources

13. The applicant 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.
14. 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 applicant 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 applicant, 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.

15. Pursuant to 43 CFR 10.4(g), the applicant 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 applicant must stop activities in the vicinity of the discovery and protect it for 30 days or until notified to proceed by the AO.
16. Well pad 22-3-97-1 and access plus well pad 32-3-97-1: Endeavour is responsible for informing all persons who are associated with the project operations that they will be subject to prosecution for disturbing or collecting vertebrate fossils, collecting large amounts of petrified wood (over 25lbs./day, up to 250lbs./year), or collecting fossils for commercial purposes on public lands.
17. If any paleontological resources are discovered as a result of operations under this authorization, Endeavour 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.

Construction Activities

18. During pad, road, and pipeline layout, consideration will be given to maintaining old-growth stands in their entirety. Old-growth stands will be those with trees containing individuals of age greater than 300 years and having old-growth stature and development.
19. Trees that must be removed for construction and are not required for reclamation shall be cut down to a stump height of 6 inches or less prior to other heavy equipment operation. These trees shall be cut in four foot lengths (down to 4 inches diameter) and placed in manageable stacks immediately adjacent to a public road to facilitate removal for company use or removal by the public.
20. Assure that the cattleguard, fence, and associated gate at RBC 77 and BLM 1509 are not damaged and are kept in a functional manner to keep cattle from straying into other areas.
21. In accordance with the 1997 White River RMP/ROD, all trees removed in the process of construction shall be purchased from the BLM. Trees should first be used in reclamation efforts and then any excess material made available for firewood or other uses.
    - First, woody material will be chipped and stockpiled for later use in reclamation. Woods chips can be incorporated into the topsoil layer to add an organic component to the soil to aid in reclamation success.
    - Woody materials, not used for woods chips, required for reclamation shall be removed in whole with limbs intact and shall be stockpiled along the margins of the authorized use area separate from the topsoil piles. Once the disturbance has been recontoured and reseeded, stockpiled woody material shall be scattered across the reclaimed area where the material originated. Redistribution of woody debris will not exceed 20-30% ground cover. Limbed material shall be scattered across reclaimed areas in a manner that

avoids the development of a mulch layer that suppresses growth or reproduction of desirable vegetation. Woody material will be distributed in such a way to avoid large concentrations of heavy fuels and to effectively deter vehicle use.

- Woody materials that are to be stockpiled along margins and not used in the topsoil should not exceed pile dimensions of 8 x 8 x 8 feet. Materials used in the stockpiles should be a variety of diameters, but should be no smaller than 6 inches in diameter. Additionally the piles should be no less than 30 feet apart.

Access Road

22. The project proponent will ensure that thru traffic along all roads remains open at all times and will also ensure that traffic delays due to project construction along BLM Road 1509 last no longer than ten minutes at any one time. The project proponent will post signs along BLM Road 1509 alerting the public of possible delays due to construction activities.
23. During the vertical test well development of the Wiley 22-3-97 and the 32-3-97, the proposed access roads will be constructed to the minimum standard necessary (i.e. minimum width, native surface) to reduce the amount of direct habitat loss and hasten reclamation. If testing results in no further actions and the horizontal wells are not drilled the roads will be reclaimed to the original two-track standard. If testing results in the determination that further development of the horizontal wells is warranted, the Operator must surface the roads with six inches of road base and/or gravel aggregate prior to commencing the horizontal well development. Access roads will be constructed to develop a crown and ditched design as submitted Application for Permit to Drill, however, modifying the overall travel surface to a 14 ft. running surface with necessary turn-outs to accommodate the level of development. During final abandonment, the gravel road surfacing will be removed and the access road will be returned to a two-track.
24. Endeavor will treat all access roads with water and/or a chemical dust suppressant during construction and drilling activities so that there is not a visible dust trail behind vehicles. Any technique other than the use of freshwater as a dust suppressant on BLM lands will require prior written approval from BLM.
25. To protect surface waters below the project area, keep road inlet and outlet ditches, sediment retention basins, and culverts free of obstructions, particularly before and during spring run-off and summer convective storms. Provide adequate drainage spacing to avoid accumulation of water in ditches or on road surfaces.
26. Install culverts and low-water crossings with adequate armoring of inlet and outlet. Patrol areas susceptible to road or watershed damage during periods of high runoff.
27. Locate drainage dips and drainage ditches in such a manner as to avoid discharge onto unstable terrain such as headwalls or slumps. Provide adequate spacing to avoid accumulation of water in ditches or dips.
28. All construction activity shall cease when soils or road surfaces become saturated to a depth of three inches unless approved by the AO.
29. Any damage to existing roads as a result of the Proposed Action will be repaired to a condition that is similar to the original state or better than what existed prior to the commencement of construction or recoating. Access off of existing roads through vegetation to the pipeline route will be reclaimed in its entirety to as described in the Vegetation section.

Pipeline

30. Endeavor or their contractor will install the pipeline at least four feet below the active channel bottom on the unnamed gulley to the west of BLM road 1511 to protect the pipeline from potential channel scour. Substrate in these sections will be segregated from other spoils and be replaced in a first out, last in method to maintain channel bedload size and distribution on channel bottoms.

Drilling and Completions Notifications

31. When drilling to set the conductor and 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).
32. The operator shall prevent use by migratory birds of reserve pits that store or are expected to store fluids which may pose a risk to migratory waterfowl, shorebirds, wading birds and raptors during completion and after completion activities have ceased. Methods may include netting or other alternative methods that effectively prevent use and that meet BLM approval. It will be the responsibility of the operator to notify the BLM of the method that will be used to prevent use two weeks prior to when completion activities are expected to begin. The BLM approved method will be applied within 24 hours after completion.

Operations

33. Endeavor will limit unnecessary emissions from point or nonpoint pollution sources and prevent air quality deterioration from necessary pollution sources in accordance with all applicable state, federal and local air quality law and regulation.

Auditory Reductions

34. In the event that the wells become productive the operator will utilize BMPs to reduce the level of noise, vehicular trips to the locations, and overall improvement of interim reclamation. These could include mufflers on any onsite equipment, utilization of screening (i.e. buildings, fencing, etc.). In addition, prior to installing equipment on the well pad location with an anticipated decibel level of greater than 60, the operator will request authorization via sundry notice (form 3160-5) to place such equipment. This request must detail the precise location of the equipment, decibel levels and hertz, and any mitigation measures and BMPs to be utilized to reduce the auditory impacts to both sage-grouse lek and the known cultural resource values within the area.

Visual Resources

35. Well 32-3-97-1: If the well should become a producer and placed into commercial production, tankless production facilities will be required if practicable. If tankless production is not practicable visual mitigation measures such as low profile production facilities with a BLM approved digital camouflage paint pattern are required.
36. Restore the appearance of naturally rocky slopes and areas that have a natural gravel, cobble, or boulder veneer on the surface by layering or scattering rock across the impacted area.

Reclamation and Weed Management

37. Pipelines and non-travel surfaces of access roads will be final-reclaimed at the first appropriate seeding window (between September and March) after construction.
38. Interim reclamation associated with well pad development will be initiated within six months of completion of drilling activities or as described in Vegetation section.
39. The operator will eliminate any noxious plants before seed production has occurred. Application of pesticides and herbicides on public lands will conform to BLM manual 9015 and Appendix B of the BLM White River ROD/RMP, Management of Noxious Weeds (BLM 1997). Eradication should make use of materials and methods approved in advance by the AO.
40. Revised Onshore Order Number 1 requires that earthwork for interim reclamation is to be completed within six months of the conclusion of drilling. WRFO prefers to have re-contouring work either deferred or expedited so that seed can be applied to a fresh seedbed during the optimal seeding times (i.e., September through March), or as otherwise approved by the BLM. Topsoil redistribution and seedbed preparation should be accomplished immediately before seeding.
41. Phase I interim reclamation activities to stabilize soils, control erosion, label and protect topsoil, and prevent establishment of noxious and invasive weeds will be implemented within 24 hours after surface disturbing activities have ended. Topsoil stockpiles must be seeded immediately as part of Phase I interim reclamation.
42. Phase II interim reclamation will be initiated when one of the following applies:
    - The last well on a pad has been drilled and has undergone completion.
    - There are no drilling activities expected on the pad for the next six months.
    - There has been no activity on the pad within the last six months, regardless of whether or not there are outstanding approved APDs.
43. BLM recommends Standard Seed Mix 3 for reclamation activities. Seed rates are shown for drill seeding rates (Table 7) and should be doubled where seed is broadcast. To preempt the establishment of invasive annual species such as cheatgrass, seeding shall occur at the first appropriate seeding window after construction (anytime between mid-September and mid-March).

Variety	Common Name	Scientific Name	Rate (Lbs. PLS/acre)
Rosana	Western wheatgrass	*Pascopyrum smithii*	4
Whitmar	Bluebunch wheatgrass	*Pseudoroegneria spicata*	3.5
Rimrock	Indian ricegrass	*Achnatherum hymenoides*	3
	Needle and Thread	*Hesperostipa comata*	2.5
Maple Grove	Lewis Flax	*Linum lewisii*	0.5
	Scarlet Globemallow	*Sphaeralcea coccinea*	0.5
	Utah Sweetvetch	*Hedysarum boreale*	0.5

44. If, after three growing seasons, the following success criteria are not achieved then the steps will be reassessed in consultation with the BLM WRFO and additional seeding at an appropriate seeding window will occur. Success criteria to achieve:
    - Vegetation monitoring (method approved by the BLM) reveals that the total vegetative ground cover in the reseeded area is no less than 80 percent of foliar cover of the desired plant community (as determined by the BLM).
    - The resulting plant community must have at least five desirable plant species, at least two of which must be a forb or shrub, each comprising at least three percent relative cover, none of which may exceed 70 percent relative cover individually.
45. Final reclamation of the pads will use the seed mix and reclamation practices recommended by BLM at that time.
46. The applicant shall use seed that is certified and free of noxious weeds. All seed tags will be submitted to the designated NRS within 14 calendar days from the time the seeding activities have ended via Sundry Notice (SN). The SN will include the purpose of the seeding activity (i.e., seeding well pad cut and fill slopes, seeding pipeline corridor, etc.). In addition, the SN will include the well or well pad number associated with the seeding activity, if applicable, the name of the contractor that performed the work, his or her phone number, the method used to apply the seed (e.g., broadcast, hydro-seeded, drilled), whether the seeding activity represents interim or final reclamation, an as-built shape-file of the area seeded, an attached map that clearly identifies all disturbed areas that were seeded, and the date the seed was applied.
47. If it becomes apparent that livestock use is hampering revegetation success BLM recommends that the entire reclaimed area associated with either pad is temporarily fenced (electric or barbwire fencing) for a minimum of three growing seasons to preclude livestock grazing. Fence construction, maintenance, and removal upon achieving successful reclamation are the responsibility of the project proponent.

Hazardous and/or Solid Wastes

48. 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, shall be reported by the operator in accordance with the regulations and as prescribed in applicable orders or notices .
49. 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.
50. 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).
51. All substances that pose a risk of harm to human health or the environment shall 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, shall 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 shall be lined with a minimum 24 mil impermeable liner.

52. Construction sites and all facilities shall be maintained in a sanitary condition at all times; waste materials shall 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.
53. 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.
54. 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.

Fire Management

55. When working on lands administered by the BLM WRFO, notify Craig Interagency Dispatch (970-826-5037) in the event of any fire.
    - The reporting party will inform the dispatch center of fire location, size, status, smoke color, aspect, fuel type, and provide their contact information.
    - The reporting party, or a representative of, should remain nearby, in a safe location, in order to make contact with incoming fire resources to expedite actions taken towards an appropriate management response.
56. The applicant and contractors will not engage in any fire suppression activities outside the approved project area. Accidental ignitions caused by welding, cutting, grinding, etc. will be suppressed by the applicant only if employee safety is not endangered and if the fire can be safely contained using hand tools and portable hand pumps. If chemical fire extinguishers are used the applicant must notify incoming fire resources on extinguisher type and the location of use.
57. Natural ignitions caused by lightning will be managed by Federal fire personnel. The use of heavy equiment for fire suppression is prohibited, unless authorized by the Field Office Manager.
58. Piled vegetation retained for reclamation as part of forest management mitigations shall be located at least thirty feet from other receptive fuels.

Information Sharing & Reclamation Monitoring

59. For the purpose of determining joint maintenance responsibilities, the holder shall make road use plans known to all other authorized users of the common access road. Upon request, the AO shall be provided with copies of any maintenance agreement entered into.

60. An annual meeting will be held with the BLM Natural Resource Specialist (NRS) to review Reclamation Status and Vegetation monitoring reports. Any new information or future changes in the reporting process will be incorporated into the Reclamation Status Report.
61. 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.
62. At least 90 days prior to termination of the ROW, the holder shall 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 shall 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 AO must approve the plan in writing prior to the holder's commencement of any termination activities.

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-2012-0100-EA and it was found to have no significant impacts, thus an EIS is not required.

PUBLIC INVOLVEMENT

Internal scoping was initiated when the project was presented to the White River Field Office (WRFO) interdisciplinary team on 6/15/2012. External scoping was conducted by posting this project on the WRFO's on-line National Environmental Policy Act (NEPA) register on 10/10/2012.

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.

ADMINISTRATIVE REMEDIES

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 CRF Part 4.

SIGNATURE OF AUTHORIZED OFFICIAL: Kurt T. Walter

Field Manager

DATE SIGNED: 04/04/13