

**U.S. Department of the Interior
Bureau of Land Management**

**Finding of No Significant Impact, Decision Record
and Environmental Assessment**

**DOI-BLM-UT-G010-2015-0148-EA
GMBU Private-State APDs
Infill Development within the
Greater Monument Butte Unit**

July, 2015

**Ten Directional Wells Proposed to be Drilled from
Seven Existing Pads and One New Pad in
Duchesne County, Utah**

Location:

**Township 9 South Range 15 East Section 2
Township 9 South Range 16 East Section 16
Township 8 South Range 17 East Sections 20, 21 and 23.**

Applicant/Address:

**Newfield Production Company
10530 South County Road #33
Myton, Utah 84052**

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Greater Monument Butte Unit**

**Prepared by
U.S. Department of the Interior
Bureau of Land Management**

July, 2015

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Finding of No Significant Impact

Finding of No Significant 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, with implementation of the mitigation measures listed below, Newfield Production Company's proposal to directionally drill ten wells from eight existing well pads in the Greater Monument Butte Unit, Duchesne County, Utah, as described in the proposed action alternative of DOI-BLM-UT-G010-2015-0148-EA will not have a significant effect on the human environment. An environmental impact statement is therefore not required.

Mitigation Measures

Air Quality

1. All internal combustion equipment shall be kept in good working order.
2. Water or other approved dust suppressants will be used at construction sites and along roads, as determined appropriate by the Authorized Officer. Dust suppressant such as magnesium chloride or fresh water may be used, as needed, during the drilling phase.
3. Open burning of garbage or refuse shall not occur at well sites or other facilities.
4. Drill rigs shall be equipped with Tier II or better diesel engines.
5. Low bleed pneumatics will be installed on separator dump valves and other controllers.
6. During completion, no venting can occur, and flaring will be limited as much as possible. Production equipment and gathering lines will be installed as soon as possible.
7. Telemetry will be installed to remotely monitor and control production.
8. All new and replacement internal combustion gas field engines of less than or equal to 300 design-rated horse power must not emit more than 2 grams of χ per horsepower-hour. This requirement does not apply to gas field engines of less than or equal to 40 design-rated horsepower-hour.
9. All new and replacement internal combustion gas field engines of less than or equal to 300 design-rated horse power must not emit more than 1.0 grams of NO_x per horsepower-hour.
10. Green completions will be used for all well completion activities where technically feasible.
11. Enhanced VOC emission controls with 95% control efficiency would be employed on production equipment having a potential to emit greater than 5 tons per year.

Threatened and Endangered Plants

- Newfield will perform ground disturbing activities in *Sclerocactus ssp.* Core Conservation Areas (CCAs) outside of the flowering period, (April 1 through May 30) for all three well pads. This applies to all ground disturbance, including previously disturbed areas on existing well pads.
- Only water (no chemicals, reclaimed production water or oil field brine) will be used for dust abatement measures within all cactus habitats.
- Dust abatement will be employed in suitable *Sclerocactus ssp.* habitat over the life of the project during the time of the year when *Sclerocactus ssp.* species are most vulnerable to dust-related impacts (March through August) within all cactus habitats.

- Reclamation seed mixes will exclude introduced species and species non-native to Utah when used in suitable habitat for *Sclerocactus ssp.*
- Erosion control measures (i.e. silt fencing) will be implemented to minimize sedimentation to *Sclerocactus ssp.* plants and populations located down slope of proposed surface disturbance activities when working in all cactus habitats.
- Application for Pesticide Use Permit will include provisions for mechanical removal, as opposed to chemical removal, for Utah Class A, B and C noxious weeds within 50 feet of individual/populations of *Sclerocactus*.
- Equipment and vehicles entering the project area from outside the Uinta Basin will be power-washed to remove seeds and plant material.
- Employees and contractors of the operator will remain on designated routes and other cleared/approved areas.
- From one year of the date forward of 100% *Sclerocactus* clearance survey for this project, spot checks will be conducted and approved for all planned disturbance areas on an annual basis. (The *S. brevispinus* survey period is defined as mid-March to June 30, and the *S. wetlandicus* survey period is defined as anytime without snow cover prior.) Results of spot checks may require additional pre-construction plant surveys as directed by the BLM. If the Proposed Action or parts thereof have not occurred within four years of the original survey, 100% clearance re-survey will be required prior to ground disturbing activities.

Discovery Stipulation: Re-initiation of Section 7 consultation with the USFWS will be sought immediately if any loss of plants or occupied habitat for Pariette cactus or Uinta Basin hookless cactus is anticipated as a result of project activities.

Water

During reconstruction of the 16–16–9–16 pad, it should be built in a manner to divert water around it.

Fish and Wildlife: Threatened, Endangered, or Candidate Species

Colorado River Fish Species

For protection of T&E Fish if drawing water from the Green River

1. The best method to avoid entrainment is to pump from an off-channel location – one that does not connect to the river during high spring flows. An infiltration gallery constructed in a service approved location is best.
2. If the pump head is located in the river channel the following stipulations apply:
 - a. Do not situate the pump in a low-flow or no-flow area as these habitats tend to concentrate larval fishes.
 - b. Limit the amount of pumping, to the greatest extent possible, during that period of the year when larval fish may be present (April 1 to August 1).
 - c. Limit the amount of pumping, to the greatest extent possible, during the midnight hours (10pm to 2 am), as larval drift studies indicate that this is a period of greatest daily activity. Dusk is the preferred pumping time, as larval drift abundance is lowest during this time.
3. Screen all pump intakes with 3/32” mesh material.

4. Approach velocities for intake structures should follow the National Marine Fisheries Service's document "fish screening criteria for anadromous salmonids". For projects with an in-stream intake that operate in stream reaches where larval fish may be present, the approach velocity should not exceed 0.33 feet per second (ft/s).
5. Report any fish impinged on the intake screen or entrained into irrigation canals to the service (801.975.3330) or the Utah Division of Wildlife Resources:

Northeastern Region
318 N Vernal Ave,
Vernal, UT 84078
Phone: (435)781-9453

Signature:

Approved by:

/s/ Michelle Brown

Authorized Officer
Vernal Field Manager (Acting)

7/28/2015

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Decision Record - Memorandum

Selected Action:

It is my decision to authorize Newfield Production Company's proposal to directionally drill seven wells from seven existing well pads and three wells from one new pad in the Greater Monument Butte Unit, Duchesne County, Utah, as described in the proposed action alternative of DOI-BLM-UT-G010-2015-0148-EA.

This decision is contingent on the implementation of the applicant committed measures listed in the EA and the conditions of approval, listed below.

Summary of the Selected Alternative:

- Vertical drilling of one oil well and directional drilling of two oil wells from one well new pad. The pad would disturb 1.74 acres of surface disturbance; about 0.45 acres would be reclaimed upon closing the fluids pits.
- Directional drilling of seven oil wells from six existing pads. The fluids pits would be reopened and some of the pads would be expanded, resulting in 2.25 acres of redisturbance, 0.75 of which would be reclaimed upon closing the fluids pits.
- Construction of 322 feet of new road and upgrading an existing road that would result in 0.25 acres of new disturbance.
- Construction of 390 feet of 3-6 inch water pipeline that would be buried adjacent to the new or existing roads resulting in 0.01 acres of disturbance that would be immediately reclaimed.
- Placement of 1709 feet of gas line along newly constructed, or upgraded road.
- Eventually converting one host well to a water injection well.

All other components of the proposed action as described in Section 2.1, "Description of the Proposed Action" (p. 5) of DOI-BLM-UT-G010-2015-0148-EA.

Conditions of Approval:

Air Quality

1. All internal combustion equipment shall be kept in good working order.
2. Water or other approved dust suppressants will be used at construction sites and along roads, as determined appropriate by the Authorized Officer. Dust suppressant such as magnesium chloride or fresh water may be used, as needed, during the drilling phase.
3. Open burning of garbage or refuse shall not occur at well sites or other facilities.
4. Drill rigs shall be equipped with Tier II or better diesel engines.
5. Low bleed pneumatics will be installed on separator dump valves and other controllers.
6. During completion, no venting can occur, and flaring will be limited as much as possible. Production equipment and gathering lines will be installed as soon as possible.
7. Telemetry will be installed to remotely monitor and control production.

8. All new and replacement internal combustion gas field engines of less than or equal to 300 design-rated horse power must not emit more than 2 grams of x per horsepower-hour. This requirement does not apply to gas field engines of less than or equal to 40 design-rated horsepower-hour.
9. All new and replacement internal combustion gas field engines of less than or equal to 300 design-rated horse power must not emit more than 1.0 grams of NO_x per horsepower-hour.
10. Green completions will be used for all well completion activities where technically feasible.
11. Enhanced VOC emission controls with 95% control efficiency would be employed on production equipment having a potential to emit greater than 5 tons per year.

Threatened and Endangered Plants

- Newfield will perform ground disturbing activities in *Sclerocactus ssp.* Core Conservation Areas (CCAs) outside of the flowering period, (April 1 through May 30) for all three well pads. This applies to all ground disturbance, including previously disturbed areas on existing well pads.
- Only water (no chemicals, reclaimed production water or oil field brine) will be used for dust abatement measures within all cactus habitats.
- Dust abatement will be employed in suitable *Sclerocactus ssp.* habitat over the life of the project during the time of the year when *Sclerocactus ssp.* species are most vulnerable to dust-related impacts (March through August) within all cactus habitats.
- Reclamation seed mixes will exclude introduced species and species non-native to Utah when used in suitable habitat for *Sclerocactus ssp.*
- Erosion control measures (i.e. silt fencing) will be implemented to minimize sedimentation to *Sclerocactus ssp.* plants and populations located down slope of proposed surface disturbance activities when working in all cactus habitats.
- Application for Pesticide Use Permit will include provisions for mechanical removal, as opposed to chemical removal, for Utah Class A, B and C noxious weeds within 50 feet of individual/populations of *Sclerocactus*.
- Equipment and vehicles entering the project area from outside the Uinta Basin will be power-washed to remove seeds and plant material.
- Employees and contractors of the operator will remain on designated routes and other cleared/approved areas.
- From one year of the date forward of 100% *Sclerocactus* clearance survey for this project, spot checks will be conducted and approved for all planned disturbance areas on an annual basis. (The *S. brevispinus* survey period is defined as mid-March to June 30, and the *S. wetlandicus* survey period is defined as anytime without snow cover prior.) Results of spot checks may require additional pre-construction plant surveys as directed by the BLM. If the Proposed Action or parts thereof have not occurred within four years of the original survey, 100% clearance re-survey will be required prior to ground disturbing activities.

Discovery Stipulation: Re-initiation of Section 7 consultation with the USFWS will be sought immediately if any loss of plants or occupied habitat for Pariette cactus or Uinta Basin hookless cactus is anticipated as a result of project activities.

Water

During reconstruction of the 16–16–9–16 pad, it should be built in a manner to divert water around it.

Fish and Wildlife: Threatened, Endangered, or Candidate Species

Wildlife COAs from the Castle Peak, Eight Mile flat EIS

- On level or gently sloping ground (5 percent slope or less) Newfield will elevate surface pipelines (4 inches or greater in diameter) a minimum of 6 inches above the ground to allow passage of small animals beneath the pipe. This ground clearance will be achieved by placing the pipeline on blocks at intervals of 150 to 200 feet.
- Newfield will install noise reduction devices on all pump jacks to reduce intermittent noise to 45 dBA at 660 feet from the source.

Colorado River Fish Species

For protection of T&E Fish if drawing water from the Green River

1. The best method to avoid entrainment is to pump from an off-channel location – one that does not connect to the river during high spring flows. An infiltration gallery constructed in a service approved location is best.
2. If the pump head is located in the river channel the following stipulations apply:
 - a. Do not situate the pump in a low-flow or no-flow area as these habitats tend to concentrate larval fishes.
 - b. Limit the amount of pumping, to the greatest extent possible, during that period of the year when larval fish may be present (April 1 to August 1).
 - c. Limit the amount of pumping, to the greatest extent possible, during the midnight hours (10pm to 2 am), as larval drift studies indicate that this is a period of greatest daily activity. Dusk is the preferred pumping time, as larval drift abundance is lowest during this time.
3. Screen all pump intakes with 3/32” mesh material.
4. Approach velocities for intake structures should follow the National Marine Fisheries Service's document "fish screening criteria for anadromous salmonids". For projects with an in-stream intake that operate in stream reaches where larval fish may be present, the approach velocity should not exceed 0.33 feet per second (ft/s).
5. Report any fish impinged on the intake screen or entrained into irrigation canals to the service (801.975.3330) or the Utah Division of Wildlife Resources:

Northeastern Region
318 N Vernal Ave,
Vernal, UT 84078
Phone: (435)781-9453

Rationale:

The subject lands were leased for oil or gas development under authority of the Mineral Leasing Act of 1920, as modified by the Federal Land Policy and Management Act of 1976, and the Federal Onshore Oil and Gas Leasing Reform Act of 1987. The lessee/operator has the right to explore for oil and gas on the lease as specified in 43 CFR 3103.1-2, and if a discovery is made, to produce oil and/or natural gas for economic gain.

The selected alternative meets the BLM's need to acknowledge and allow development of valid existing leases. The BLM objective to reduce impacts is met by the imposing of resource protection measures to protect other resource values.

Onsite visits were conducted by Vernal Field Office Personnel. The onsite inspection reports do not indicate that any other locations be proposed for analysis.

Endangered Species Act Section 7 consultation, National Historic Preservation Act consultation, and Native American Tribes consultation were completed as described in Chapter 6, *Consultation and Coordination*: (p. 43) of the EA.

Land Use Plan Conformance:

The selected alternative is in conformance with the BLM Utah Vernal Field Office Approved Resource Management Plan and Record of Decision [BLM 2008 (p. 47)] and the terms of the applicable leases.

The Proposed Action is consistent with the Duchesne County General Plan [Duchesne County 1997 (p. 47)] which encompasses the Project Area. The county's plans contain specific policy statements addressing public lands (i.e. multiple-use, resource use and development, access, and wildlife management). In general, the county's plan indicate support for development proposals, such as the Proposed Action, through its emphasis of multiple-use of public land management practices, responsible use, and optimum utilization of public land resources. The county, through its plan, supports the development of natural resources as they become available or as new technology allows.

There are no comprehensive State of Utah plans for the vicinity of the selected alternative. However, the State of Utah School and Institutional Trust Lands Administration (SITLA) have leased much of the nearby state land for oil and gas production. Because the objectives of SITLA are to produce funding for the state school system, and because production on federal leases could further interest in drilling on state leases in the area, it is assumed that the selected alternative is consistent with the objectives of the State.

Public Involvement:

The proposed project was posted on BLM's National Land Use Planning and NEPA Register on July 15, 2015. No public requests for information on the project or public comments were received.

Signature:

Authorizing Official:

/s/ Michelle Brown
Vernal Field Manager (Acting)

7/28/2015

Appeal or Protest Opportunities:

This decision is effective upon the date it is signed by the authorized officer. The decision is subject to appeal. Under BLM regulation, this decision is subject to administrative review in accordance with 43 CFR 3165. Any request for administrative review of this decision must include information required under 43 CFR 3165.3(b) (State Director Review), including all supporting documentation. Such a request must be filed in writing with the State Director, Bureau of Land Management, Utah State Office, P.O. Box 45155, Salt Lake City, Utah, 84145-0155, within 20 business days of the date this Decision is received or considered to have been received.

If you wish to file a petition for stay, the petition for stay should accompany your notice of appeal and shall show sufficient justification based on the following standards:

1. The relative harm to the parties if the stay is granted or denied;
2. The likelihood of the appellant's success on the merits;
3. The likelihood of irreparable harm to the appellant or resources if the stay is not granted; and,
4. Whether the public interest favors granting the stay.

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Chapter 1. Introduction

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1.0 Introduction

This Environmental Assessment (EA) has been prepared to analyze Newfield Production Company's (Newfield) proposed infill development and water flood projects within the Greater Monument Butte Unit (GMBU). The EA is a site-specific analysis of potential impacts that could result from the implementation of the Proposed Action or alternatives to the Proposed Action. The EA assists the Bureau of Land Management (BLM) in ensuring compliance with the National Environmental Policy Act (NEPA), and in making a determination as to whether any "significant" impacts could result from the analyzed actions. "Significance" is defined by NEPA and is found in regulation 40 CFR (Code of Federal Register) 1508.27. An EA provides evidence for determining whether to prepare an Environmental Impact Statement (EIS) or a statement of Finding of No Significant Impact (FONSI). A FONSI statement documents the reasons why implementation of the selected alternative would not result in "significant" environmental impacts (effects). If the decision maker determines that this project has "significant" impacts following the analysis in the EA, then an EIS would be prepared for the project. If not, a Decision Record (DR) would be signed for the EA approving the selected alternative, whether the Proposed Action or another alternative.

During past development of the GMBU, wells were distributed on 40-acre downhole spacing with one well being analyzed per pad. But, since oil and gas reservoirs in the GMBU are contained in low permeability, tight sand formations, production from these reservoirs is hindered by the formations' capability to allow oil and gas to flow to the wellbore. Therefore, to cost-effectively drain a reservoir, additional infill wells must be drilled to increase access to the formation and water must be injected into the older unproductive wells to "push" the oil and gas towards the producing wells in order to optimize recovery of oil and gas from these reservoirs. Newfield has applied to directionally drill ten wells from eight existing well pads located in:

Township 9 South Range 15 East Section 2
Township 9 South Range 16 East Section 16
Township 8 South Range 17 East Sections 20, 21 and 23.

The wells would be located within Newfield's GMBU, approximately 7 miles southeast of Myton, Utah. The objective for this project is to increase oil recovery from their leases by attaining complete downhole spacing in the GMBU, while minimizing or mitigating to the extent feasible the environmental impacts associated with such development.

1.1. Purpose and Need for Action:

BLM's need is to respond to the applicant's proposal. BLM's purpose is to allow Newfield to develop its existing Federal leases in order to meet domestic demands for oil while also preventing undue and unnecessary degradation to public land. Development of oil and gas resources is consistent with the mission of the BLM. The Mineral Leasing Act of 1920 (MLA), as amended and its implementing regulations are to allow lessees or potential lessees to explore for oil and gas or other mineral reserves on Federally-administered lands. The Federal Land Policy and Management Act of 1976 (FLPMA) mandates that the BLM manage public lands on the basis of multiple use [43 U.S.C. § 1701(a)(7)], and that lease rights must be permitted in a manner that assures adequate protection of other resource values. Minerals are identified as one of the principal uses of public lands in Section 103 of FLPMA [43 U.S.C. § 1702(c)].

1.2. Identification of Issues

The Interdisciplinary Checklist contained within the Utah NEPA Guidebook was not completed for this EA because many of the resources/concerns included in it are not relevant to non-Federal surface. The relevant resources/concerns listed within Appendix 1 of the BLM NEPA Handbook were considered. The following resources/concerns were found to not be impacted to a degree requiring detailed analysis:

- Cultural Resources
- Native American Religious concerns
- Wastes, Hazardous or Solid
- Water Quality Drinking-Ground
- Floodplains
- Wetlands/Riparian Zones
- Migratory Birds

Two existing well pads are located on Utah State Institutional Trust Lands...

1.2.1. Air Quality Including Greenhouse Gas Emissions

Issue 1: Emissions from earth-moving equipment, vehicle traffic, drilling and completion activities, separators, oil storage tanks, dehydration units, and daily tailpipe and fugitive dust emissions would adversely affect air quality.

Issue 2: Emissions associated with the proposed action may contribute greenhouse gases to the atmosphere.

1.2.2. USFWS Threatened, Endangered or Proposed Plant Species

Issue: One of the wells is located within the Sclerocactus habitat polygon.

1.2.3. Water:

Issue: Water flows onto and is retained on the 16-16-9-16 well pad.

1.2.4. Fish and Wildlife: Threatened or Endangered Animal Species

Issue: Pumping water from the Green River results in a potential for entrapment of larval fish, both of which could adversely affect listed fish species.

Chapter 2. Proposed Action and Alternatives

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2.0 Proposed Action and Alternatives

BLM resource specialists reviewed Newfield's Proposed Action and assessed the type and magnitude of potential impacts to the Project Area. Based on this review, the following alternatives were developed for analysis in this EA:

- Alternative A – Proposed Action: This alternative outlines the action Newfield proposes to take in order to drill ten directional wells from seven existing well and one new well pads.
- Alternative B – No Action Alternative: Analysis of this alternative provides a baseline for the impact analysis.

These alternatives are discussed in detail in this chapter.

2.1. Description of the Proposed Action

Due to the extensive amount of pre-existing development via vertical drilling in the Project Area, Newfield has gained an intricate understanding of the sub-surface formations and associated pay zones. Based upon this knowledge, Newfield is able to target additional pay zones via directional drilling in a technically and economically feasible manner, with lower risks for missing these targets.

Specifically, Newfield's Proposed Action includes the following primary components:

- Vertical drilling of one oil well and directional drilling of two oil wells from one well new pad. The pad would disturb 1.74 acres of surface disturbance; about 0.45 acres would be reclaimed upon closing the fluids pits.
- Directional drilling of seven oil wells from six existing pads. The fluids pits would be reopened and some of the pads would be expanded, resulting in 2.25 acres of redisturbance, 0.75 of which would be reclaimed upon closing the fluids pits.
- Construction of 322 feet of new road and upgrading an existing road that would result in 0.25 acres of new disturbance.
- Construction of 390 feet of 3-6 inch water pipeline that would be buried adjacent to the new or existing roads resulting in 0.01 acres of disturbance that would be immediately reclaimed.
- Placement of 1709 feet of gas line along newly constructed, or upgraded road.
- Eventually converting one host well to a water injection well.

Construction activities would follow guidelines described in the Surface Operating Standards for Oil and Gas Extraction and Development 4th Edition (Gold Book)[BLM and USFS 2007 (p. 47)], as appropriate. **Table 2.1** summarizes the proposed wells.

2.1.1. Well Pad Construction and Expansion

As mentioned previously, Newfield plans to utilize eight existing well pads in order to drill seven wells, and build one new pad to drill three wells. Approximately 0.15 acre per pad would be redisturbed. The existing topsoil and any existing vegetation would be cleared and topsoil would be stockpiled at predetermined storage sites (i.e., areas where original soil piles were located).

Table 2.1. Proposed Wells

Well Number	Pad Disturbance	Pad disturbance/ redisturbance	Road (feet/ acres)	Gas Line	Buried Water Line (feet/acres)	Total Surface Distur-bance (acres)*
P-1-9-15	9-2-9-15	0.28				0.28
B-21-9-16	16-16-9-16	0				0
5-20-8-17	N/A	1.74	322/0.22	685	390/0.01	1.97
G-20-8-17	5-20-8-17					
J-19-8-17	5-20-8-17					
10-20-8-17	9-20-8-17	1.26	0.3	1024		1.29
11-20-8-17	12-20-8-17	0.38		1709		0.38
N-20-8-17						
B-28-8-17	16-21-8-17	0.18				0.18
C-26-8-17	14-23-8-17	0.15				0.15
H-21-8-17 Sundry		1.66				1.66
Total						5.91

2.1.2. Access Roads

Existing roads would be utilized to access the proposed drilling locations and no upgrades would be required. All County road maintenance activities implemented by Newfield would be coordinated with Duchesne and Uintah Counties, as appropriate. Utilized roads would be maintained in good repair during all drilling, completion, and production operations. All required road upgrades would follow guidelines described in the Gold Book [BLM and USFS 2007 (p. 47)].

2.1.3. Drilling Operations

Wells would be drilled utilizing a conventional, mechanically-powered mobile drilling rig. The exact type and size of drilling rig would be dependent upon rig availability at the time of project implementation. Newfield anticipates that no more than one drilling rig would be operating in the Project Area at any one time. Each well would take approximately 3 days to drill.

The proposed wells would target sandstone intervals within the Green River Formation and the average depth of each well would be approximately 6,300 feet. Any shallow water zones encountered during drilling would be isolated by both casing and cement. All potentially productive hydrocarbon zones would be cemented and tested. The casing and cementing program would be designed to isolate and protect the shallower formations encountered in the well bore and to prohibit pressure communication or fluid migration between zones. In addition, the cement would protect the well by preventing formation pressure from damaging the casing and retarding corrosion by minimizing contact between the casing and formation fluids. The type of casing used and the depth to which it is set would depend upon the physical characteristics of the formations that are drilled. Surface casing would be installed to protect near-surface aquifers. Production casing would subsequently be installed to the total depth. All casing would be new or reconditioned and tested in accordance with applicable regulations. Site-specific descriptions of drilling procedures are included in the Applications for Permits to Drill (APDs) previously submitted to the BLM.

2.1.4. Well Completion and Production

If drilled wells indicate economic potential, completion operations would commence. Completion operations would involve setting production casing to the total drilled depth and perforating the casing in target production zones, followed by hydraulically fracturing (fracing) the productive formation under high pressure. The fracing material would likely contain sand or other proppant material to keep the fractures open, thereby allowing hydrocarbons to flow more freely into the casing. The next phase would be to flow and test the well to determine rates of production. Completion and testing would take approximately 18 days per well.

Should testing suggest the potential for commercial production, facilities including a wellhead, pumping unit, separator, dehydrator, and condensate tanks would be installed at each location. All permanent (on site for 6 months or longer) structures constructed or installed would be painted Covert Green. All facilities would be painted within 6 months of installation.

Periodically, a workover or recompletion on a well may be required to ensure that efficient production is maintained. Workovers can include repairs to the well bore equipment (casing, tubing, rods, or pump), the wellhead, or the production facilities. These repairs would usually be completed in 7 days per well, during daylight hours. The frequency for this type of work cannot be accurately projected because workovers vary by well; however, an average work time may be one workover per well per year after about five years of production. In the case of a recompletion, where the wellbore casing is worked on or valves and fittings are replaced to stimulate production, all byproducts would be stored in tanks and hauled from the location. For workover operations, it may be necessary to rework the existing surface location to accommodate equipment. At the completion of the work, the surface location would be re-graded to pre-work contours and reclaimed.

2.1.5. Water Pipelines

In order to facilitate present and future water injection capabilities at existing well pad locations, one water pipelines would be buried in a 4-5' deep trench leading from one well pads to existing or proposed infrastructure. The pipelines would consist of a 3" steel water injection line and a 3" water return line. They would be buried within 15-foot wide corridors next to existing roads in trenches excavated with a trencher or backhoe. The trench would be as close to the road as possible to minimize surface disturbance, but might be located anywhere within the 15' corridor depending on terrain. An average 10' width within the corridor would be disturbed; new surface disturbance associated with installation of 390 feet of water pipeline would equal approximately 0.01 acres. Pipeline disturbance areas will be reclaimed within 120 days for the date of construction, weather permitting. Surface reclamation of the disturbance areas will be completed by 1) recontouring the surface to approximate natural contours and spreading topsoil over disturbed areas, 2) broadcasting the seed mix described in **Table 2.2** over the topsoil in the fall time period of August 1 to groundfreezing, and 3) crimping the seed into the topsoil with a dozer or other tracked heavy equipment to plant the seed. Alternatively, the seed may be mechanically drilled into the soil or broadcast and worked into the soil with a harrow. [Newfield 2008 (p. 47)]

No clearing or grading along the pipeline corridors would occur unless the terrain requires it.

2.1.6. Conversion of Wells to Waterflood Injection Wells

To increase the ultimate recovery of hydrocarbon resources, Newfield would use waterflooding technology on the host pad well associated with the proposed water pipeline (see **Table 2.1**). The conversion of one producing well to an injection wells would occur after installation of the proposed water pipeline.

During the injection well conversion process, oil production equipment (anchor, sucker rods, pump jacks, well head valves, flow lines, treater, water tank, and oil tanks) are removed from the well pad. A packer is installed on the end of the tubing and set no more than 100 feet above the top perforation. Pressure monitoring gauges are installed on the wellhead and casing annulus to monitor the casing pressure and the pressure at which water is injected.

The water injection lines (see **Table 2.1**) would be installed to connect an existing pipeline network to individual wells to provide water to triplex injection pumps. Waterflood injection wells would be equipped with flow meters and choke valves to regulate injected water volumes. After all water injection pipelines are installed, pressurized water would be injected into the oil-bearing formation.

2.1.7. Water

Water Supply

Fresh water used for drilling, dust control and injection comes from various sources, including the Green River (Newfield Collector Well - Water Right 47-1817), Two of the sources have historic water rights attached to them, and depletion fees have been paid for the use of water from non-historic sources (see ??? and Section 6.1.1, “Consultation for Water Depletion” (p. 45)). Water would be hauled by a licensed trucking company. Water wells would not be drilled on the leases.

Newfield anticipates that water would be used for dust suppression during construction and operational activities for a small percentage of the proposed project. Use of water for dust suppression would typically be performed under hot, windy, and/or dry conditions, and would depend on soil types and the moisture content of soils where activities are taking place. Dust suppression would most commonly be implemented during the summer months. Water-based dust abatement would be implemented using standard commercial water trucks, which hold approximately 130 barrels (bbls) of water (0.017 acre-feet).

Produced Water Disposal

Upon completion of a productive well, all produced water would be confined to a steel storage tank. If the production water meets water quality standards, it would then be transported to the Ashley, Monument Butte, Jonah, South Wells Draw, or Beluga water injection facilities by company or contract trucks unless and until the well is serviced by a waterline. The produced water would then be supplemented by fresh water (an approximate 1:1 ratio) and injected into approved Class II wells to enhance Newfield’s secondary recovery water flood project. Water not meeting water quality standards would be disposed of at Newfield’s Pariette No. 4 disposal well (Section 7, T9S R19E). Federally approved surface disposal facilities or at State of Utah approved surface disposal facilities [Newfield 2008 (p. 47)].

2.1.8. Noxious Weeds

Newfield will control noxious weeds along access roads, pipelines, well sites, or other applicable facilities. Any invasive or noxious weed outbreaks directly attributed to the activities of Newfield will be the responsibility of Newfield to control. On BLM administered lands, a Pesticide Use Proposal (PUP) will be submitted and approved prior to the application of herbicides or other pesticides or possibly hazardous chemicals. [Newfield 2008 (p. 47)]

2.1.9. Waste Management

Drill cuttings would be contained and buried in the reserve pit. Drilling fluids, including salts and chemicals, would be contained in the reserve pit. In accordance with Onshore Order No. 7, the surface of the pit will be kept reasonably free from surface accumulation of liquid hydrocarbons and immediately upon well completion, any hydrocarbons would be removed [Newfield 2008 (p. 47)]. Any oil that accumulates in the pit will be handled in accordance with 43 CFR 3160.7-1(b). Drilling fluids would be removed from the pit within 120 days of completion [Newfield 2008 (p. 47)] .

No hazardous wastes (as defined in 40 CFR 355 or subject to reporting under SARA Title III) would be used, produced, stored, transported, or disposed of annually in association with the drilling, testing, or completing of this well [Newfield 2008 (p. 47)].

Self-contained, chemical portable toilets would be provided for human waste disposal. Upon completion of operations, or as needed, the toilet holding tanks would be pumped and the contents disposed of in the nearest, approved, sewage disposal facility.

Garbage, trash, and other waste materials would be collected in portable, self-contained, fully enclosed trash cages during operations. Accumulated trash would be disposed of at an authorized sanitary landfill. Trash would not be burned on location.

All debris and other waste materials not contained in the trash cage would be cleaned up and removed from the location promptly after removal of the completion rig, weather permitting.

2.1.10. Spill Procedures

As each new well is completed, Newfield would update their field-wide existing Spill Prevention Control and Countermeasure (SPCC) Plans. If spills of condensate, produced water, or other fluids were to occur in reportable amounts, as defined in BLM Notice to Lessees (NTL) 3A, Newfield or their contractors or sub-contractors would immediately contact the BLM and any other regulatory agencies (e.g., EPA National Response Center, State of Utah) as required by law or regulation. Strict cleanup efforts would be initiated immediately.

2.1.11. Reclamation

Interim Reclamation

Interim reclamation will begin within 6 months of well completion. Interim reclamation activities will consist of spreading the stockpiled topside around the perimeter and areas of the well not needed for active operations. The topsoil seed will be broadcast and harrowed or drilled into the

soil in the fall time period of August 1 to ground freezing. The well pad will not be ripped or recontoured as part of interim reclamation.

Interim reclamation monitoring will be conducted as directed by the authorized office with the objective of restoring a sufficient vegetative cover to maintain active topsoil and control erosion.

Reserve Pit Reclamation

Reserve pits shall be reclaimed within 120 days for the date of well completion, weather permitting. Before any dirt work occurs the pit shall be as dry as possible. If a synthetic, nylon-reinforced liner is used, the excess liner will be cut and removed and the remaining liner torn and perforated while backfilling the reserve pit. Alternatively, the pit will be pumped dry, the liner folded into the pit and buried to a minimum of four (4) feet deep.

Reclamation will be completed by 1) recontouring the surface to the approximate natural contours and spreading topsoil over the disturbed areas; 2) seeding the topsoil. The topsoil seed will be broadcast and harrowed into the soil or drilled into the soil in the fall time of August 1 to ground freezing.

Final Reclamation of Well Locations at the End of Project Life

Final reclamation of well locations and roads would take place within 180 days after the last well on the pad is plugged and abandoned. All production equipment and surface pipeline would be removed and the well locations, access roads, and other disturbed areas would be restored to their approximate original condition. All well casings would be cut off and capped according to BLM requirements. The cap would be welded in place and the well location and identity would be permanently inscribed on the cap. The cap would also be constructed with a weep hole. If requested, GPS coordinates of the cap would be provided to the BLM. Well locations, associated roads that would no longer be used, and other disturbed areas would be restored as near as practical to their original condition. All disturbed areas would be re-contoured to the approximate natural contours.

Reseeding: Reclaimed areas would be seeded with the following stock seed mixture obtained from Utah Seed. The mix is certified free of noxious weeds. [Foote, 2013 (p. 47)]

Table 2.2. Seed Mix

Common Name	Latin Name	Lbs/acre
Grasses		
Squirreltail Bottlebrush	<i>Elymus elymoides</i>	2.44
Snake River Wheatgrass	<i>Elymus wawawaiensis</i>	2.22
Siberian Wheatgrass	<i>Agropyron fragile</i>	2.13
Indian Ricegrass	<i>Oryzopsis hymenoides</i>	2.07
Galleta Grass	<i>Pleuraphis jamesii</i>	1.56
Needle & Threadgrass	<i>Hesperostipa comata</i>	1.20
Forbs		
Blue Flax	<i>Linum Lewisii</i>	0.27
Munro Globemallow	<i>Sphaeralcea munroana</i>	0.27
Shrubs		
Mat Saltbrush	<i>Atriplex corrugata</i>	4.76
Fourwing Saltbrush	<i>Atriplex canescens</i>	4.55
Shadscale Saltbrush	<i>Atriplex confertifolia</i>	4.35

Common Name	Latin Name	Lbs/acre
Gardner Saltbrush	<i>Atriplex gardnerii</i>	4.35
Greasewood	<i>Sarcobatus vermiculatus</i>	0.56
Black Sagebrush	<i>Artemisia nova</i>	0.30
Rubber Rabbitbrush	<i>Chrysothamnus nauseosus</i>	0.28
Total		31.31

1 In addition, if reclamation occurs in the spring or summer sterile barley is planted to compete with weeds, stabilize the soil and act as a mulch for the emerging perennials.

2.1.12. Applicant Committed Environmental Protection Measures

2.1.12.1. Cultural Resources

- Newfield is responsible for informing all persons in the area who are associated with this project that they may be subject to prosecution for knowingly disturbing historic or archaeological sites or for collecting artifacts.

2.1.13. Standard Stipulations Added to All APDs

Minerals and Paleontology

- If there is an active Gilsonite mining operation within 2 miles of the well location, operator shall notify the Gilsonite operator at least 48 hours prior to any blasting during construction.
- If paleontological materials are uncovered during construction, the operator is to immediately stop work and contact the Authorized Officer (AO). A determination will be made by the AO as to what mitigation may be necessary for the discovered paleontologic material before construction can continue.

2.2. Alternative B — No Action Alternative

Under the No Action Alternative, the proposed infill project would not be approved. Selection of this alternative would not preclude other oil and gas activities or proposals within the Project Area. The host well pads would continue to exist until the wells on those pads are plugged.

2.3. Alternatives Considered but Eliminated from Further Analysis

No other alternatives were identified by the BLM.

2.4. Conformance

Land Use Plan

The management of BLM public resources within the Project Area is directed and guided by the UT - Vernal RMP Resource Management Plan Record of Decision (RMP/ROD) [BLM

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2008 (p. 47)] . Although the proposed action is not specifically mentioned in the RMP, it is consistent with its goals and objectives, particularly the following:

- Meet local and national non-renewable and renewable energy and other public mineral needs. (p. 97)
- The BLM recognizes that not all activities authorized by implementation of the Approved RMP will comply with *BLM Utah Standards for Rangeland Health and Guidelines for Grazing Management*. All authorized activities will require reclamation and rehabilitation to ensure sustainability and productivity of the site. (p. 65)

The RMP/ROD recognizes the valid existing rights connected with oil and gas leases that were issued prior to approval of the existing RMP (RMP/ROD p. 21), such as leases in the GMBU. Also, under the no action alternative, oil and gas development within the Castle Peak and Eightmile Flat project area would still be permitted as authorized in the *Record of Decision for the Final Environmental Impact Statement for the Castle Peak and Eightmile Flat Oil and Gas Expansion Project* [BLM 2005. (p. 47)]. The no action alternative is also consistent with the objectives and goals of the RMP.

Relation to Statutes, Regulations, and Other Plans

The Project Area lands were leased for oil or gas development under authority of the MLA, as modified by the FLMPA, the Federal Onshore Oil and Gas Leasing Reform Act of 1987, and the Energy Policy Act of 2005. A lessee/operator has the right to explore for oil and gas on its leases as specified in 43 CFR §3101.1-2, and if a discovery is made, to produce oil and/or natural gas for economic gain, so long as those operations are conducted in conformance with the lease terms and 43 CFR §3160.

There is no comprehensive State of Utah plan for the vicinity of the Proposed Action. The State of Utah School and Institutional Trust Lands Administration (SITLA) have leased much of the nearby State land for oil and gas production. Because the objectives of SITLA are to produce funding for the State school system, and because production on Federal leases could further interest in drilling on state leases in the area, it is assumed that the alternatives analyzed, except the No Action Alternative, are consistent with the objectives of the State.

The Proposed Action is consistent with the both the 1997 Duchesne County General Plan, as amended, [Duchesne County 1997 (p. 47)] which encompasses the Project Area. The county plans contain specific policy statements addressing public lands (i.e. multiple-use, resource use and development, access, and wildlife management). In general, the county's plan indicate support for development proposals, such as the Proposed Action, through its emphasis of multiple-use of public land management practices, responsible use, and optimum utilization of public land resources. The county, through its plans, support the development of natural resources as they become available or as new technology allows.

Threatened, endangered, and sensitive species in or near the Project Area are managed in accordance with the Endangered Species Act of 1973, the Migratory Bird Act of 1918, and the BLM Special Status Species Manual 6840. The Proposed Action and alternatives carried through in this assessment are in compliance with these Acts, and Manual.

The proposed action is also consistent with the Record of Decision of the *Environmental Impact Statement Castle Peak and Eightmile Flat Oil and Gas Expansion Project Newfield Rocky Mountains Inc.* [BLM 2005. (p. 47)] , which analyzed a well field development scenario similar to the proposed. After drilling approximately half the wells approved, in 2009 Newfield began concentrating the remaining undrilled wells into already developed areas using existing well pads, thereby reducing impacts to resources of concern. This analysis is tiered to the 2005 EIS.

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Chapter 3. Affected Environment:

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3.0 Affected Environment

This section discusses the physical, biological, and social factors, as they currently exist within the Project Area. All resources considered during preparation of this EA are listed in ???, the Interdisciplinary Team Analysis Record Checklist. Resources that were considered but dismissed from further analysis are also listed **Appendix A**. This chapter provides the baseline for comparison of impacts/consequences described in Chapter 4, *Environmental Effects*: (p. 23).

Mineral extraction activities, transportation corridors, agricultural and ranching activities, livestock grazing, and erosion have historically affected the project area. The geology of the Project Area consists of Tertiary Eocene member B of the Uinta formation and some Quaternary Holocene undivided Piedmont alluvium. The soils range from fine sandy loam to extremely channery loam that is shallow to moderately deep and well drained, with rocky material on the surface and with a number of rocky outcrops in some locations. The vegetation community types of the proposed well locations include desert shrub, black sagebrush, Wyoming big sagebrush, and badland. Terrain is generally flat, with rolling hills and drainages in some locations. Average annual precipitation ranges from 8 to 12 inches.

3.1. Air Quality Including Greenhouse Gas Emissions

The Project Area is located in the Uinta Basin, a semiarid, mid-continental climate regime typified by dry, windy conditions, limited precipitation and wide seasonal temperature variations subject to abundant sunshine and rapid nighttime cooling. The Uinta Basin is designated as unclassified/attainment by the EPA under the Clean Air Act. This classification indicates that the concentration of criteria pollutants in the ambient air is below National Ambient Air Quality Standards (NAAQS), or that adequate air monitoring is not available to determine attainment.

NAAQS are standards that have been set for the purpose of protecting human health and welfare with an adequate margin of safety. Pollutants for which standards have been set include ground level ozone, (O₃), sulfur dioxide (SO₂), nitrogen dioxide (NO₂), and carbon monoxide (CO), and particulate matter less than 10 microns in diameter (PM₁₀) or 2.5 microns in diameter (PM_{2.5}). Airborne particulate matter consists of tiny coarse-mode (PM₁₀) or fine-mode (PM_{2.5}) particles or aerosols combined with dust, dirt, smoke, and liquid droplets. PM_{2.5} is derived primarily from the incomplete combustion of fuel sources and secondarily formed aerosols, whereas PM₁₀ is primarily from crushing, grinding, or abrasion of surfaces. **Table 3-1** lists ambient air quality background values for the Uinta Basin and NAAQS standards.

Table 3.1. Ambient Air Quality Background Values

Pollutant	Averaging Period(s)	Uinta Basin Background Concentration (µg/m ³)	NAAQS (µg/m ³)
SO ₂	Annual	0.8 ²	-- ¹
	24-hour	3.9 ²	-- ¹
	3-hour	10.1 ²	1,300
	1-hour	19.0 ²	197
NO ₂	Annual	8.1 ³	100
	1-hour	60.2 ³	188
PM ₁₀	Annual	7.0 ⁴	-- ⁶
	24-hour	16.0 ⁴	150
PM _{2.5}	Annual	9.4 ³	15
	24-hour	17.8 ³	35

Pollutant	Averaging Period(s)	Uinta Basin Background Concentration ($\mu\text{g}/\text{m}^3$)	NAAQS ($\mu\text{g}/\text{m}^3$)
CO	8-hour	3,450 ⁴	10,000
	1-hour	6,325 ⁴	40,000
O ₃	8-hour	100.0 ^{3,5}	75

1– The 24-hour and annual SO₂ NAAQS have been revoked by USEPA
2– Based on 2009 data from Wamsutter Monitoring Station Data (USEPA AQS Database)
3– Based on 2010/2011 data from Redwash Monitoring Station (USEPA AQS Database)
4– Based on 2006 data disclosed in the Greater Natural Buttes FEIS. [BLM 2012 (p. 47)](BLM, 2012)
5– Ozone is measured in parts per billion (ppb)
6– The annual PM₁₀ NAAQS has been revoked by USEPA

Existing point and area sources of air pollution within the Uinta Basin include the following:

- Exhaust emissions (primarily CO, NO_x, PM_{2.5}, and HAPs) from existing natural gas fired compressor engines used in transportation of natural gas in pipelines;
- Natural gas dehydrator still-vent emissions of CO, NO_x, PM_{2.5}, and HAPs;
- Gasoline and diesel-fueled vehicle tailpipe emissions of VOCs, NO_x, CO, SO₂, PM₁₀, and PM_{2.5};
- Oxides of sulfur (SO_x), NO_x, fugitive dust emissions from coal-fired power plants, and coal mining/ processing;
- Fugitive dust (in the form of PM₁₀ and PM_{2.5}) from vehicle traffic on unpaved roads, wind erosion in areas of soil disturbance, and road sanding during winter months; and,
- Long-range transport of pollutants from distant sources.

Two year-round air quality monitoring sites were established in summer 2009 near Red Wash (southeast of Vernal, Utah) and Ouray (southwest of Vernal). The monitors were certified as Federal Reference Monitors in fall of 2011. These monitors can be used to make NAAQS compliance determinations. The complete EPA Ouray and Redwash monitoring data can be found at: <http://www.epa.gov/airexplorer/index.htm>.

Both monitoring sites have recorded numerous exceedences of the 8-hour ozone standard during the winter months (January through March 2010, 2011, 2013 and 2014). It is thought that high concentrations of ozone are being formed under a “cold pool” process. This process occurs when stagnate air conditions form with very low mixing heights under clear skies, with snow-covered ground, and abundant sunlight. These conditions, combined with area precursor emissions (NO_x and VOCs), can create intense episodes of ozone. These episodes didn’t occur in January through March 2012 due to lack of snow cover. This phenomenon has also been observed in similar locations in Wyoming. Winter ozone formation is a newly recognized issue, and the methods of analyzing and managing this problem are still being developed. Existing photochemical models are currently unable to reliably replicate winter ozone formation. This is due to the very low mixing heights associated with unique meteorology of the ambient conditions. Further research is needed to definitively identify ozone precursor sources that contribute to observed ozone concentrations.

The Castlepeak-Eightmile Flat EIS [BLM 2005. (p. 47)] analyzed air quality impacts, including estimates of VOC and NO_x emissions, for existing and future activities in the Greater Monument Butte Unit. A VOC and NO_x emissions inventory of Newfield’s existing operations was

completed to determine if emissions associated with current and near future infrastructure, drilling, and production is within the scope of the Castlepeak-Eightmile Flat EIS. As shown in **Table 3.2**, and due to changing technology, the current emissions for the Greater Monument Butte Unit are within the scope of the referenced EIS.

Table 3.2. Castlepeak-Eightmile Flat EIS Emissions vs. Current Emissions

Source	Source Subset	VOC Emissions (tons per year)	NO _x Emissions (tons per year)
EIS Predicted Emissions	Existing Permitted Infrastructure	108	230
	Drilling ¹	45	568
	Production	1,037	4,311
	Total	1,190	5,109
Infrastructure Emissions	Current	57	202
	Proposed to 2014	18	80
	Total	75	282
Drill Rig Emissions	Total	29	129²
Production Emissions	Pumpjack Engines ³	125	1,003
	Natural Gas Fueled Burners	59	488
	Stock Tanks	557	--
	Total	741	1,491
Total Current Emissions		845	1,902
<small>1 - Assumed six Tier 0 rigs drilling 130 wells per year at an engine load factor of 0.47 2 - Assumes three Tier II rigs drilling 200 wells per year at an engine load factor of 0.47. 3 - Based upon 1.8 tons per year NO_x and 0.58 tons per year VOC per engine.</small>			

The UDAQ conducted limited monitoring of PM_{2.5} in Vernal, Utah in December 2006. During the 2006-2007 winter season, PM_{2.5} levels were higher than the PM_{2.5} health standards that became effective in December 2006. The PM_{2.5} levels recorded in Vernal were similar to other areas in northern Utah that experience wintertime inversions. The most likely causes of elevated PM_{2.5} at the Vernal monitoring station are those common to other areas of the western U.S. (combustion and dust) plus nitrates and organics from oil and gas activities in the Basin. PM_{2.5} monitoring that has been conducted in the vicinity of oil and gas operations in the Uinta Basin by the Red Wash and Ouray monitors beginning in summer 2009 have not recorded any exceedences of either the 24 hour or annual NAAQS.

HAPs are pollutants that are known or suspected to cause cancer or other serious health effects, such as reproductive effects or birth defects, or adverse environmental impacts. The EPA has classified 187 air pollutants as HAPs. Examples of listed HAPs associated with the oil and gas industry include formaldehyde, benzene, toluene, ethylbenzene, isomers of xylene (BTEX) compounds, and normal-hexane (n-hexane). There are no applicable Federal or State of Utah ambient air quality standards for assessing potential HAP impacts to human health.

Greenhouse Gases

Greenhouse gases keep the planet's surface warmer than it otherwise would be. However, as concentrations of these gases increase the Earth's temperature is climbing above past levels. According to NOAA and NASA data, the Earth's average surface temperature has increased by about 1.2 to 1.4° F in the last 100 years. The eight warmest years on record (since 1850) have all occurred since 1998, with the warmest year being 1998. However, according to the British Meteorological Office's Hadley Centre [BMO 2009 (p. 47)], the United Kingdom's foremost

climate change research center, the mean global temperature has been relatively constant for the past nine years after the warming trend from 1950 through 2000. Predictions of the ultimate outcome of global warming remain to be seen.

The analysis of the Regional Climate Impacts prepared by the U.S. Global Change Research Program (USGCRP) [USGCRP 2009 (p. 48)] suggests that recent warming in the region (including the project area) was nationally among the most rapid. Past records and future projections predict an overall increase in regional temperatures, largely in the form of warmer nights and effectively higher average daily minimum temperatures. They conclude that this warming is causing a decline in spring snowpack and reduced flows in the Colorado River. The USGCRP projects a region-wide decrease in precipitation, although with substantial variability in interannual conditions. For eastern Utah, the projections range from an approximate 5 percent decrease in annual precipitation to decreases as high as 40 percent of annual precipitation.

Equilibrium climate sensitivity quantifies the response of the climate system to constant radiative forcing on multicentury time scales. It is defined as the change in global mean surface temperature at equilibrium that is caused by a doubling of the atmospheric CO₂ concentration. Equilibrium climate sensitivity is likely in the range 1.5°C to 4.5°C (high confidence), extremely unlikely less than 1°C (high confidence), and very unlikely greater than 6°C (medium confidence). The lower temperature limit of the assessed likely range is thus less than the 2°C in the AR4, but the upper limit is the same. This assessment reflects improved understanding, the extended temperature record in the atmosphere and ocean, and new estimates of radiative forcing. No best estimate for equilibrium climate sensitivity can now be given because of a lack of agreement on values across assessed lines of evidence and studies [IPCC, 2013 (p. 47)](IPCC, 2013).

3.2. Threatened, Endangered, Candidate or Proposed (TECP) Plant Species

Uinta Basin Hookless Cactus (*Sclerocactus wetlandicus*) and Pariette Cactus (*Sclerocactus brevispinus*)

Two cactus species listed as threatened under the Endangered Species Act, *Sclerocactus wetlandicus* and *Sclerocactus brevispinus*, have potential habitat and individuals and populations of *Sclerocactus ssp.* have been previously documented in the Project Area.

The proposed C-26-8-17 well (to be located on the existing 14-23-8-17 well pad), is within the 2013 potential habitat polygon established by U.S. Fish and Wildlife Service for the threatened species Pariette cactus (*Sclerocactus brevispinus*) and Uinta Basin hookless cactus (*Sclerocactus wetlandicus*). The C-26-8-17 well would also be located within potential habitat designated as a Core Conservation Area (CCA) Level 2, Upper Pariette. No new surface disturbance is proposed with this location. The remaining proposed wells and infrastructure would not be located within potential habitat for *Sclerocactus ssp.* Habitat modelling and aerial photography reveal no to low potential for suitable *Sclerocactus ssp.* habitat within the rest of the Project Area.

3.3. Water:

Surface water on the GMBU consists mostly of runoff into ephemeral streams that eventually empty into the Green River.

3.4. Fish and Wildlife: Threatened, Endangered, or Candidate Species

3.4.1. Fish and Wildlife Excluding USFWS Designated Species

Colorado River Fish Species

The USFWS has identified four Federally listed fish species historically associated with the Upper Colorado River Basin, including the Green River: Colorado pikeminnow (*Ptychocheilus lucius*), humpback chub (*Gila cypha*), bonytail (*Gila elegans*), and razorback sucker (*Xyrauchen texanus*). These fish are Federally and State-listed as endangered and have experienced severe population declines due to flow alterations, habitat loss or alteration, and introduction of non-native fish species. Portions of the Green River and its 100-year floodplain have been designated Critical Habitat for these four endangered fish species [USFWS 1994 (p. 48)]. The Project Area does not occur within critical habitat for the Colorado endangered fish species. The average downstream distance (following natural washes and drainages) from the Project Area to razorback sucker and Colorado pikeminnow habitat within the Green River is approximately 16 miles, and to humpback chub and bonytail chub habitat within the Green River is 51 miles. Three additional species are endemic to the Colorado River Basin, including the Green River: roundtail chub (*Gila robusta*), flannelmouth sucker (*Catostomus latipinnis*), and bluehead sucker (*Catostomus discobolus*). The roundtail chub is a State-listed threatened species, while the two suckers are species of special concern due to declining population numbers and distribution.

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Chapter 4. Environmental Effects:

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4.0 Environmental Effects

This chapter describes the impacts that are anticipated to occur upon implementation of the Proposed Action and No Action alternatives to the resources described in Chapter 3.

4.1. Proposed Action

4.1.1. Air Quality Including Greenhouse Gas Emissions

This Proposed Action is considered to be a minor source under the Clean Air Act and is not controlled by regulatory agencies. At present, control technology is not required by regulatory agencies since the Uinta Basin is designated as unclassified/attainment. The Proposed Action would result in different emission sources associated with two project phases: well development and well production. Annual estimated emissions from the Proposed Action are summarized in **Table 4.1**.

Table 4.1. New Wells Annual Emissions (tons/year)

Pollutant	Development	Production	Total
NO _x	34.72	9.73	44.45
CO	11.01	18.34	29.35
VOC	3.32	18.33	21.65
SO ₂	0.18	0.04	0.22
PM ₁₀	4.06	54.30	58.36
PM _{2.5}	1.02	6.00	7.02
Benzene	0.01	0.04	0.06
Toluene	0.01	0.03	0.04
Ethylbenzene	0.00	0.00	0.00
Xylene	0.00	0.00	0.01
n-Hexane	0.00	0.02	0.02
Formaldehyde	0.00	0.40	0.40

Emissions include development and production from ten wells and associated operations traffic during the year in which the project is developed.

Well development includes NO_x, SO₂, and CO tailpipe emissions from earth-moving equipment, vehicle traffic, drilling, and completion activities. Fugitive dust concentrations would occur from vehicle traffic on unpaved roads and from wind erosion where soils are disturbed. Drill rig and fracturing engine operations would result mainly in NO_x and CO emissions, with lesser amounts of SO₂. These emissions would be short-term during the drilling and completion phases.

During well production, continuous NO_x, CO, VOC, and HAP emissions would originate from well pad separators, condensate storage tank vents, and daily tailpipe and fugitive dust emissions from operations traffic. Road dust (PM₁₀ and PM_{2.5}) would also be produced by vehicles servicing the wells.

Under the proposed action, emissions of NO_x and VOC, ozone precursors from the producing wells would be 9.73 tons/yr for NO_x, and 3.32 tons/yr of VOC (**Table 4.1**). Emissions would be dispersed and/ or diluted to the extent where any local ozone impacts from the Proposed Action would be indistinguishable from background conditions.

The primary sources of HAPs are from oil storage tanks and smaller amounts from other production equipment. Small amounts of HAPs are emitted by construction equipment. These emissions are estimated to be minor and less than 1 ton per year.

Emission offsets from well conversions

Once the water pipelines are installed, the existing wells on the well pads will be converted to waterflood injection wells and connected to the water pipeline network. Water pipeline installation includes emissions from earth-moving equipment and vehicle traffic. NO_x, SO₂, and CO would be emitted from vehicle tailpipes. Fugitive dust concentrations would increase with additional vehicle traffic on unpaved roads and from wind erosion in areas of soil disturbance. During the well conversion process, the wells will no longer produce and oil and gas production equipment from the well sites will be removed resulting in a reduction of NO_x, CO, VOC, and HAP emissions as described in **Table 4.2**. Equipment that will be removed includes: separators, storage tanks, pumping units, and heaters. Additionally, a reduction in fugitive dust and tailpipe emissions will occur due to the reduction of oil and gas operations vehicle traffic.

Table 4.2. Emissions Offsets(tons/year)

Pollutant	Development	Production	Total
NO _x	0.00	-0.92	-0.92
CO	0.00	-1.72	-1.72
VOC	0.00	-1.62	-1.62
SO ₂	0.00	0.00	0.00
PM ₁₀	0.06	-6.52	-6.46
PM _{2.5}	0.01	-0.71	-0.70
Benzene	0.00	0.00	0.00
Toluene	0.00	0.00	0.00
Ethylbenzene	0.00	0.00	0.00
Xylene	0.00	0.00	0.00
n-Hexane	0.00	0.00	0.00
Formaldehyde	0.00	-0.04	-0.04

Emissions offset from one well converted to water injection.

Greenhouse Gases

It is not currently possible to determine a climate change impact from project specific GHG emissions, nor is it possible to assign a significance value to project specific GHG emissions. GHG emissions will be reported per guidance established by CEQ and the Interagency Air Quality MOU (USDA/USDOJ, 2011). Drilling and development activities from the Proposed Action are anticipated to release a negligible amount of greenhouse gases, into the local airshed, resulting in a negligible cumulative impact. The No Action Alternative would not result in an accumulation of impacts.

Mitigation:

1. All internal combustion equipment shall be kept in good working order.
2. Water or other approved dust suppressants will be used at construction sites and along roads, as determined appropriate by the Authorized Officer. Dust suppressant such as magnesium chloride or fresh water may be used, as needed, during the drilling phase.
3. Open burning of garbage or refuse shall not occur at well sites or other facilities.
4. Drill rigs shall be equipped with Tier II or better diesel engines.

5. Low bleed pneumatics will be installed on separator dump valves and other controllers.
6. During completion, no venting can occur, and flaring will be limited as much as possible. Production equipment and gathering lines will be installed as soon as possible.
7. Telemetry will be installed to remotely monitor and control production.
8. All new and replacement internal combustion gas field engines of less than or equal to 300 design-rated horse power must not emit more than 2 grams of χ per horsepower-hour. This requirement does not apply to gas field engines of less than or equal to 40 design-rated horsepower-hour.
9. All new and replacement internal combustion gas field engines of less than or equal to 300 design-rated horse power must not emit more than 1.0 grams of NO_x per horsepower-hour.
10. Green completions will be used for all well completion activities where technically feasible.
11. Enhanced VOC emission controls with 95% control efficiency would be employed on production equipment having a potential to emit greater than 5 tons per year.

4.1.2. Threatened, Endangered, Candidate and Proposed (TECP) Plant Species

Uinta Basin Hookless Cactus (*Sclerocactus wetlandicus*) and Pariette Cactus (*Sclerocactus brevispinus*)

Surveys for Pariette cactus (*Sclerocactus brevispinus*) and Uinta Basin hookless cactus (*Sclerocactus wetlandicus*) were conducted for the proposed location (C-26-8-17) within *Sclerocactus ssp.* potential habitat for in August 2013. No individuals or populations of cactus were found during the survey within 120 feet of proposed wells. A review of BLM GIS data showed a low probability for cactus to occur in the area.

The Proposed Action would result in new surface disturbance totaling 5.91 acres; however, no new surface disturbance would occur within potential habitat for *Sclerocactus ssp.* Since no cacti were documented within the survey buffers, and no new surface disturbance would occur within potential habitat for *Sclerocactus ssp.*, no direct damage to the two species are expected as a result of the Proposed Action. However, some impacts to the species could still occur.

Possible dispersed direct and indirect negative impacts which may result from implementation of the Proposed Action include: loss of suitable habitat, habitat modification by invasive weed species which may compete with individuals, accidental spray or drift of herbicides used during invasive plant control, and deposition of fugitive dust from construction activities and vehicle traffic on unpaved roads. Although no new surface disturbance is proposed, fugitive dust and other secondary pollinator effects could also occur from re-disturbance on the existing well pad, increased vehicle traffic, spoil stockpiling, and drilling on site.

Due to these indirect and direct negative impacts the Proposed Action warrants a “*may affect, is not likely to adversely affect*” determination for *Sclerocactus wetlandicus* and *S. brevispinus*. Informal Section 7 consultation with the USFWS was completed in November 2011, and clarifying discussions between the BLM and USFWS, including a decision matrix, and management prescription guidance for use in Core areas (based on recent concurrence documents) occurred from March-May 2014. These discussions and applications were specific to Newfield development, within the scope of the 2011 BO continued use, up to and until the Monument Butte EIS consultation or other programmatic NEPA supplants the document. The current project is within the scope of the 2011 BO; no additional Section 7 consultation is required for this project.

Chapter 4 Environmental Effects:
Threatened, Endangered, Candidate and
Proposed (TECP) Plant Species

Mitigation

- Newfield will perform ground disturbing activities in *Sclerocactus ssp.* Core Conservation Areas (CCAs) outside of the flowering period (April 1 through May 30). This applies to all ground disturbance, including previously disturbed areas on existing well pads.
- Only water (no chemicals, reclaimed production water or oil field brine) will be used for dust abatement measures within all cactus habitats.
- Dust abatement will be employed in suitable *Sclerocactus ssp.* habitat over the life of the project during the time of the year when *Sclerocactus ssp.* species are most vulnerable to dust-related impacts (March through August) within all cactus habitats.
- Reclamation seed mixes will exclude introduced species and species non-native to Utah when used in suitable habitat for *Sclerocactus ssp.*
- Erosion control measures (i.e. silt fencing) will be implemented to minimize sedimentation to *Sclerocactus ssp.* plants and populations located down slope of proposed surface disturbance activities when working in all cactus habitats.
- Application for Pesticide Use Permit will include provisions for mechanical removal, as opposed to chemical removal, for Utah Class A, B and C noxious weeds within 50 feet of individual/populations of *Sclerocactus*.
- Equipment and vehicles entering the project area from outside the Uinta Basin will be power-washed to remove seeds and plant material.
- Employees and contractors of the operator will remain on designated routes and other cleared/approved areas.
- From one year of the date forward of 100% *Sclerocactus* clearance survey for this project, spot checks will be conducted and approved for all planned disturbance areas on an annual basis. (The *S. brevispinus* survey period is defined as mid-March to June 30, and the *S. wetlandicus* survey period is defined as anytime without snow cover prior.) Results of spot checks may require additional pre-construction plant surveys as directed by the BLM. If the Proposed Action or parts thereof have not occurred within four years of the original survey, 100% clearance re-survey will be required prior to ground disturbing activities.

Discovery Stipulation: Re-initiation of Section 7 consultation with the USFWS will be sought immediately if any loss of plants or occupied habitat for Pariette cactus or Uinta Basin hookless cactus is anticipated as a result of project activities.

4.1.3. Water

Water flowing onto the pad diverts it from replenishing the downstream system and flood the pad.

Mitigation:

During reconstruction of the 16–16–9–16 pad, it should be built in a manner to divert water around it.

4.1.4. Fish and Wildlife: Threatened, Endangered, or Candidate Animal Species

Colorado River Fish Species

Food supply, predation, and competition are important elements of the biological environment. Food supply is a function of nutrient supply and productivity, which could be limited by reduction of high spring flows brought about by water depletions. Water depletions also contribute to alterations in flow regimes that favor nonnative species. Predation and competition from nonnative fish species have been identified as factors in the decline of the endangered fishes. Depletions from the Upper Colorado River Drainage System, along with a number of other factors, have resulted in such drastic reductions in the populations of the Colorado pikeminnow, humpback chub, bonytail, and razorback sucker that the USFWS has listed these species as endangered and has implemented programs to prevent them from becoming extinct.

On January 21-22, 1988, the Secretary of the Interior; the Governors of Wyoming, Colorado, and Utah; and the Administrator of the Western Area Power Administration were cosigners of a Cooperative Agreement to implement the "Recovery Implementation Program for Endangered Fish Species in the Upper Colorado River Basin" (Recovery Program) (Service 1987). An objective of the Recovery Program is to recover the listed species while providing for new water development in the Upper Colorado River Basin. Under the Section 7 agreement of March 11, 1993, users of water rights granted after the signing of the Cooperative Agreement pay a depletion fee to the Fish and Wildlife Service to fund the Recovery Program. The depletion from the current action was considered under previous consultations and depletion fees previously paid, (see Section 6.1.1, "Consultation for Water Depletion" (p. 45)) therefore no water depletion is considered to occur under the proposed action.

However, the potential exists for water intake structures placed in the Upper Colorado River Drainage System (flowing rivers and streams) to result in mortality to eggs, larvae, young-of-the-year, and juvenile life stages. Key habitat components for foraging or cover may be removed or altered due to equipment, including decreased water quantity for aquatic species from dewatering during low flow periods.

Therefore, the Proposed Action would have a "*may affect, likely to adversely affect*" determination for the endangered Colorado pikeminnow, humpback chub, bonytail, and razorback sucker. The Proposed Action would also adversely affect the bluehead sucker, flannelmouth sucker, and the roundtail chub, but it is not likely to result in a trend toward the listing of the species. However, upon implementation of the following mitigation measures from the Final Biological Opinion for the Newfield Productions's 20-acre Infield Development Project [USFWS 2011 (p. 48)] the impacts would be minimized, and consultation precluded.

Mitigation

For protection of T&E Fish if drawing water from the Green River

1. The best method to avoid entrainment is to pump from an off-channel location – one that does not connect to the river during high spring flows. An infiltration gallery constructed in a service approved location is best.
2. If the pump head is located in the river channel the following stipulations apply:

*Chapter 4 Environmental Effects:
Fish and Wildlife: Threatened, Endangered,
or Candidate Animal Species*

- a. Do not situate the pump in a low-flow or no-flow area as these habitats tend to concentrate larval fishes.
 - b. Limit the amount of pumping, to the greatest extent possible, during that period of the year when larval fish may be present (April 1 to August 1).
 - c. Limit the amount of pumping, to the greatest extent possible, during the midnight hours (10pm to 2 am), as larval drift studies indicate that this is a period of greatest daily activity. Dusk is the preferred pumping time, as larval drift abundance is lowest during this time.
3. Screen all pump intakes with 3/32" mesh material.
 4. Approach velocities for intake structures should follow the National Marine Fisheries Service's document "fish screening criteria for anadromous salmonids". For projects with an in-stream intake that operate in stream reaches where larval fish may be present, the approach velocity should not exceed 0.33 feet per second (ft/s).
 5. Report any fish impinged on the intake screen or entrained into irrigation canals to the service (801.975.3330) or the Utah Division of Wildlife Resources:

Northeastern Region
318 N Vernal Ave,
Vernal, UT 84078
Phone: (435)781-9453

4.2. No Action Alternative

4.2.1. Air Quality and Greenhouse Gas Emissions

Under the No Action Alternative, the proposed gas wells would not be drilled and the existing wells would not be converted to injection. There would be no emissions increases or reductions to air quality. Effects on ambient air quality would continue at present levels from existing oil and gas development in the region and other emission producing sources. The host well pads would continue to exist until the wells on those pads are plugged. Dust and other emissions from the existing wells will continue at current higher levels because the liquids gathering system would not be installed.

4.2.2. Threatened, Endangered, Candidate and Proposed (TECP) Plant Species

Uinta Basin Hookless Cactus (*Sclerocactus wetlandicus*) and Pariette Cactus (*Sclerocactus brevispinus*)

Under the No Action Alternative, there would be no direct disturbance or indirect effects to *Sclerocactus ssp.* or associated habitat from surface-disturbing activities associated with the proposed project. Current land use trends in the area would continue, including increased industrial development, increased off-highway vehicles (OHV) traffic, and increased recreation use.

4.2.3. Water:

Under the No Action Alternative, water would continue to flow onto the 16–16–9–16 pad.

4.2.4. Fish and Wildlife: Threatened, Endangered, or Candidate Species

Under the No Action alternative, there would be no direct disturbance and mortality or indirect effects to threatened, endangered, and proposed, candidate, or sensitive fish and wildlife species/habitat, migratory birds and non-listed wildlife from construction, drilling, and completion activities associated with the Proposed Action. However, the host well pads would continue to exist until the wells on those pads are plugged. Surface disturbance, human activity, displacement, and weed impacts will continue as a result of the maintenance of the existing wells, pads, roads, and pipelines.

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Chapter 5. Cumulative Impacts

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5.0 Cumulative Impacts

Cumulative impacts are those impacts that result from the incremental impact of an action when added to other past, present, and reasonably foreseeable actions, regardless of which agency or person undertakes such other actions.

Cumulative effects under the ESA include the effects of the future State, Tribal, local, or private actions that are reasonably certain to occur in the project area; future Federal actions that are unrelated to the Proposed Action are not required to be considered because they require separate consultation pursuant to Section 7 of the ESA. However, NEPA requires the full disclosure of all past, present, and reasonably foreseeable activities regardless of surface owner so this analysis includes future federal actions.

5.1. Air Quality Including Greenhouse Gas Emissions

The cumulative impact area for air quality is the Uinta Basin, plus all regional Class I areas and other environmentally sensitive areas (e.g., national parks and monuments, wilderness areas, etc.) near the Uinta Basin. The Air Resource Management Strategy (ARMS) Modeling Project is a cumulative assessment of potential future air quality impacts associated with predicted oil and gas activity in the Uinta Basin [BLM 2011(a) (p. 47)]. Consequently, past, present and reasonably foreseeable wells in the Uinta Basin are a part of the cumulative actions considered in this analysis. The ARMS is incorporated by reference and summarized below.

The ARMS Modeling Project predicted the following impacts to air quality and air quality related values for the 2010 typical year and four 2021 future year scenarios: 2021 on-the-books (OTB); 2021 Scenario 1 (NO_x controls); 2021 Scenario 2 (VOC controls); and 2021 Scenario 3 (NO_x and VOC controls).

- Ozone
 - The highest modeled ozone occurs in the Uinta Basin study area regardless of model scenario, and all scenarios predict exceedences of the ozone NAAQS and state AAQS in the Uinta Basin.
 - In the Uinta Basin, the ozone concentrations are highest during the winter period. In Class I and Class II areas outside the Uinta Basin study area, ozone concentrations are highest during the summer period.
 - During non-winter months in the Uinta Basin the model predicts that ozone may exceed the NAAQS and state AAQS (Ambient Air Quality Standards); however, model-adjusted results from the MATS tool (which accounts for model performance biases) indicate that non-winter ozone concentrations are below the NAAQS and state AAQS for all monitors and areas analyzed. Also, the 2021 scenarios have minimal effect on model-predicted ozone concentrations during non-winter months.
 - 2021 Scenario 2 tends to have the lowest 8-hour ozone concentration relative to all other 2021 scenarios (4th highest daily maximum is 3 ppb lower compared to the 2021 OTB Scenario). When comparing Scenario 2 to the OTB Scenario, a potential reduction in ozone concentrations occurs in the vicinity of the Ouray site (where the concentrations are already largest). There is no predicted ozone disbenefit associated with Scenario 2 mitigation

measures (i.e., there is no area with predicted ozone increases relative to the OTB Scenario). This supports the assessment that peak ozone impacts are in VOC-limited areas.

- 2021 Scenarios 1 and 3 are predicted to have higher ozone impacts than either the 2010 Typical year and the 2021 OTB Scenario. Both scenarios predict a relatively large increase in ozone concentrations within the vicinity of Ouray indicating potential ozone disbenefits associated with NO_x control mitigation measures.
- NO₂, CO, SO₂, PM_{2.5}, and PM₁₀
 - There are seven monitoring stations within the 4- km domain with daily PM_{2.5} concentrations that exceed the NAAQS and state AAQS in the baseline emissions inventory.
 - All modeled NO₂, CO, SO₂, PM_{2.5}, and PM₁₀ values are well below the NAAQS and state AAQS in the Uinta Basin.
 - The model-predicted PM_{2.5} and PM₁₀ concentrations may underestimate future impacts due to a negative model bias throughout the year in the 4-km domain with the largest bias occurring in summer [AECOM and STL (p. 47)].
 - Results from the MATS tool (which accounts for model performance biases) indicate that PM_{2.5} concentrations may exceed the NAAQS and state AAQS for select monitors and assessment areas in the 2010 Typical year. All 2021 scenarios predict that only one of these monitoring station would continue to exceed the NAAQS and state AAQS.
 - No monitoring stations within the 4-km domain exceed the annual PM_{2.5} NAAQS and state AAQS during the 2010 typical or 2021 Scenarios.
 - Two unmonitored areas within the Uinta Basin exceed the annual PM_{2.5} NAAQS and state AAQS during the 2010 typical year, and impacts in these areas tend to increase under 2021 Scenarios 1 and 2. Under 2021 Scenario 3, the annual PM_{2.5} impacts decrease in the Uinta Basin due to combustion control measures.
 - The 2021 scenarios generally have lower NO₂, CO, SO₂, PM_{2.5}, and PM₁₀ concentrations than the 2010 Typical Year scenario, except for within the Uinta Basin.
 - Under the 2021 scenarios, all assessment areas are within the PSD (Prevention of Significant Deterioration) increments for annual NO₂, 3-hour SO₂, annual SO₂, and annual PM₁₀.
 - Under the 2021 scenarios, most assessment areas exceed the 24-hour PM_{2.5} PSD increment.
- Visibility
 - Visibility conditions in Class I and sensitive Class II areas generally show improvement in the 2021 Scenarios relative to the 2010 Typical Year.
 - There also are no substantial differences in the 20th percentile best and worst visibility days between the 2021 Scenarios.
- Deposition and Acid Neutralizing Capacity
 - Results generally show a decrease in deposition for the 2021 Scenarios relative to the 2010 Typical Year.

- The differences in estimated deposition between the 2021 Scenarios are generally very small.
- Acid Neutralizing Capacity change at all seven sensitive lakes exceeds the 10 percent limit of acceptable change for all model scenarios.

It is anticipated that the impact to ambient air quality and air quality related values associated with the Proposed Action would be indistinguishable from and dwarfed by the model and emission inventory scope and margin of error. The No Action alternative would not result in an accumulation of impacts.

Greenhouse Gases

It is not currently possible to determine a climate change impact from project specific GHG emissions, nor is it possible to assign a significance value to project specific GHG emissions. GHG emissions will be reported per guidance established by CEQ and the Interagency Air Quality MOU [USDA/USDOJ 2011 (p. 48)]. Drilling and development activities from the Proposed Action are anticipated to release a negligible amount of greenhouse gases, into the local airshed, resulting in a negligible cumulative impact. The No Action Alternative would not result in an accumulation of impacts

5.2. Threatened, Endangered, Candidate or Proposed (TECP) Plant Species

Pariette cactus (*Sclerocactus brevispinus*)

The CIAA for Pariette cactus is the area delineated by the USFWS as potential habitat for the species. This area covers approximately 115,900 acres on BLM, Ute tribal, state of Utah, and privately held lands. Due to inclusions of areas of unsuitable habitat within the potential habitat area, the total acreage of suitable habitat is less than 115,900 acres. However, a complete survey of suitable habitat has not been performed and thus the amount of suitable habitat has not been quantified. Impacts to the species from past, current, and reasonably foreseeable actions may be greater or smaller than those described for the total area depending upon the exact distribution of actions relative to suitable habitat.

Within the CIAA, there are approximately 426 miles of roads. Past, present and reasonably foreseeable disturbance from oil and gas will affect 10,956 acres (9.45% of the CIAA), as shown in the table below. Cumulative impacts include dust impacts to plants, and plant and pollinator habitat destruction.

Surface disturbance is a good indicator of the extent of these cumulative impacts. Approximately 5.91 acres of surface disturbance would occur under the Proposed Action; however, no new surface disturbance would occur within potential habitat for Pariette cactus. The No Action alternative would not result in an accumulation of impacts.

Table 5.1. Cumulative Impacts Analysis for Pariette Cactus.

	Project Area Acreage	Surface Disturbance Analyzed	Project Area Acreage within the CIAA	Surface Disturbance within the CIAA ¹
Ongoing Field Development				
Gasco EIS	236,165	3,604	6,692	102 acres

	Project Area Acreage	Surface Disturbance Analyzed	Project Area Acreage within the CIAA	Surface Disturbance within the CIAA¹
Greater Natural Buttes Project EIS	162,911	8,147	17	0 acres
Rocky Point Exploration and Development Agreement Leasing and Exploratory Drilling EA	92,098	340	11,344	42 acres
Past Developments and Current and Future Developments Not Covered by a Field Development NEPA Document				
85 abandoned wells ^{2,3}	NA ⁴	NA	NA	422 acres
1,082 existing wells ^{2,3}	NA	NA	NA	4,230 acres
85 proposed wells ^{2,3}	NA	NA	NA	422 acres
Field Development Proposals				
Monument Butte Area Oil and Gas Development Project EIS	119,850	15,612	36,308	4,730 acres
Randlett EDA Area Programmatic Leasing and Exploration Project	53,380	2,612	20,098	984 acres
Total CIAA disturbance from oil and gas				
	--	--	--	10,956 acres (9.46%)
Current Project				
Proposed Action	5.91 acres	5.91 acres	0.15 acres	0 acres
No Action	NA	NA	NA	0
Total CIAA disturbance from oil and gas	--	--	--	10,956 acres (9.46%)
<p>1—Assumes surface disturbance was authorized evenly across the analysis area of the document. 2—Uses the assumption contained within the Greater Uinta Basin Cumulative Impacts Technical Support Document. 3—As of 4/10/2013 4—NA = not applicable</p>				

Uinta Basin hookless cactus (*Sclerocactus wetlandicus*)

The CIAA for Uinta Basin hookless cactus is the area delineated by the USFWS as potential habitat for the species. This area covers approximately 537,564 acres on BLM, Ute tribal, state of Utah, and privately held lands. Due to inclusions of areas of unsuitable habitat within the potential habitat area, the total acreage of suitable habitat is less than 537,564 acres. However, a complete survey of suitable habitat has not been performed and thus the amount of suitable habitat has not been quantified. Impacts to the species from past, current, and reasonably foreseeable actions may be greater or smaller than those described for the total area depending upon the exact distribution of actions relative to suitable habitat.

Within the CIAA, there are approximately 1,875 miles of roads. Past, present and reasonably foreseeable disturbance from oil and gas will affect 44,698 acres (8.3% of the CIAA), as shown in the table below. Cumulative impacts include dust impacts to plants, and plant and pollinator

habitat destruction. Surface disturbance is a good indicator of the extent of these cumulative impacts.

Approximately 5.91 acres of surface disturbance would occur under the Proposed Action; however, no new surface disturbance would occur within potential habitat for Uinta Basin hookless cactus. The No Action alternative would not result in an accumulation of impacts.

Table 5.2. Cumulative Impacts Analysis for Uinta Basin Hookless Cactus

	Project Area Acreage	Surface Disturbance Analyzed	Project Area Acreage within the CIAA	Surface Disturbance within the CIAA ¹
Ongoing Field Development				
Chapita Wells-Stagecoach Area	32,872	1,735	22,678	1,235
Gasco Natural Gas Field Development EIS	236,165	3,604	73,339	1,180
Greater Deadman Bench Oil and Gas Producing Region EIS	98,785	1,239	22,444	282
Greater Natural Buttes Project EIS	162,911	8,147	97,529	4,877
North Alger Natural Gas Expansion Project EA	2,320	192	943	78
North Chapita Natural Gas Well Development Project EA	31,872	1,735	9,191	500
River Bend Unit Infill Development EA	17,719	924	14,892	823
Rock Point EDA Leasing and Exploratory Drilling EA	92,098	340	11,344	42
Saddletree Draw Leasing and Rock House Development EA	4,826	106	4,774	105
West Bonanza Area Natural Gas Well Development Project EA	24,813	608	1,070	26
West Tavaputs EIS	137,930	1,603	30,704	357
Past Developments and Current and Future Developments Not Covered by a Field Development NEPA Document				
729 abandoned wells ³	NA ⁴	NA	NA	3,565 acres
5,239 existing wells ³	NA	NA	NA	19,158 acres
752 proposed well ³	NA	NA	NA	2,377 acres
Field Development Proposals				

	Project Area Acreage	Surface Disturbance Analyzed	Project Area Acreage within the CIAA	Surface Disturbance within the CIAA ¹
Greater Chapita Wells Natural Gas Infill Project EIS	40,027	3,696	31,741	2,931
Monument Butte Area Oil and Gas Development Project EIS	119,850	15,612	43,964	5,727
Randlett EDA Area Programmatic Leasing and Exploration Project	53,380	2,613	28,817	1,411
Total CIAA disturbance from oil and gas				
	--	--	--	44,698 acres (8.3%)
Current Project				
Proposed Action	NA	NA	NA	
No Action	NA	NA	NA	
Total CIAA disturbance from oil and gas				
	--	--	--	44,698 acres (8.3%)
<p>¹ Assumes surface disturbance was authorized evenly across the analysis area of the document.</p> <p>² Uses the assumption contained within the Greater Uinta Basin Cumulative Impacts Technical Support Document.</p> <p>³ As of 10/2013</p> <p>⁴ NA = not applicable</p>				

5.3. Water:

The cumulative impacts analysis area for this resource is defined as the boundary of the Greater Monument Butte EIS which is located in the Monument Butte/Myton Bench Oil and Gas Field in Duchesne and Uintah Counties, Utah, which contains approximately 119,850 acres. As disclosed in the Castle Peak Eight Mile Flat FEIS, past activity in the cumulative impact area includes 671 oil, gas, and waterflood wells. Present activity includes 778 oil gas, and waterflood wells. Assuming 1.3 acres of disturbance for well pads (after interim reclamation) and 2.5 acres of disturbance for ancillary facilities (per well), the past and present disturbance is approximately 5,506 acres. Reasonably foreseeable development includes the Newfield Greater Monument Butte Development Plan consisting of 5,750 wells including supporting facilities. Assuming 1.3 acres of disturbance per well including ancillary facilities, because there are multiple wells on most pads, the reasonably foreseeable development would result in approximately 7,404 acres of disturbance after interim reclamation. Total cumulative disturbance would be 12,910 acres.

Cumulative impacts include increased sedimentation and salts, including toxic metals, being washed down the watershed, ultimately reaching the Green River. The proposed action would contribute to this cumulative impact if the pads flooded and the berms failed. The No Action Alternative would not result in an accumulation of effects.

5.4. Fish and Wildlife: Threatened, Endangered, or Candidate Species

The cumulative impacts analysis area for this resource is defined as the boundary of the Greater Monument butte Unit in Duchesne and Uintah Counties, Utah, which contains approximately

65,381 acres. As disclosed in the Castle Peak Eight Mile Flat FEIS, past activity in the cumulative impact area includes 671 oil, gas, and waterflood wells and present activity includes 778 oil gas, and waterflood wells. Assuming 1.3 acres of disturbance for well pads (after interim reclamation) and 2.5 acres of disturbance for ancillary facilities (per well), the past and present disturbance is approximately 5,506 acres. Reasonably foreseeable development includes the Newfield Greater Monument Butte Development Plan consisting of 5,750 wells including supporting facilities. Assuming 1.3 acres of disturbance per well including ancillary facilities, because there are multiple wells on most pads, the reasonably foreseeable development would result in approximately 7,404 acres of disturbance after interim reclamation. Total cumulative disturbance would be 12,910 acres.

The No Action Alternative would not result in an accumulation of impacts.

Colorado River Fish Species

The cumulative impacts analysis area for this resource is the Colorado River system. Cumulative impacts in this area include oil and gas exploration and development, irrigation, urban development, recreational activities, and activities associated with the Upper Colorado River Endangered Fish Recovery Program. Cumulative impacts such as decreased water quality and quantity, decreased habitat quality, habitat fragmentation, and mortality result from decreased stream flow, erosion, improperly placed culverts, elevated salinity, and contamination. Decreased stream-flows reduce or eliminate both the extent and quality of suitable habitat by increasing stream temperatures, and subsequently by reducing dissolved oxygen levels. Such impacts may be more pronounced during periods of natural cyclic flow reductions (fall and winter or periods of drought). A loss of streamflow can also reduce a stream's ability to transport sediment downstream. Sediment amount is influenced by the number of road/stream crossings, bank slope, amount of exposed soil, type of vegetation in the area, frequency and intensity of rainfall, soil type (amount of salinity), soil contamination, and the implementation and effectiveness of erosion control measures. Sediment loads above background levels can reduce pool depths, bury stream substrates and spawning gravels, adhere to aquatic insects and the gills of fish, alter channel form and function, and result in other forms of habitat degradation. Elevated salinity levels, over extended periods of time, may become toxic for aquatic ecosystems and fish species. In addition, improperly placed, shaped, and sized culverts in roads can act as fish barriers on key streams or exacerbate erosion and cause headcutting.

The No Action Alternative would not result in an accumulation of impacts.

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Chapter 6. Consultation and Coordination:

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6.0 Consultation and Coordination

6.1. Section 7 Consultation Under the ESA

6.1.1. Consultation for Water Depletion

Newfield has undertaken consultation for water depletion four separate times, resulting in the issuance of the following Biological Opinions:

- The CP/EMF Original [USFWS 2005 (p. 48)] and the Rocky Point BOs which allowed for a total of 2823 acre feet per year (2081 and 742 acre feet respectively)
- The 2006 Castle Peak/Eight Mile Flat (CP/EMF) BO amendment [USFWS 2006 (p. 48)] which allowed for 819 acre feet per year
- The 2011 20 Acre Infill BO [USFWS 2011 (p. 48)] which allowed for a total of 428 acre feet per year

Consultation has taken place and depletion fees paid for the yearly depletion of 4,070 acre feet water. In addition, Newfield has secured 324 acre feet of historic rights for which consultation took place in 1993. In Fiscal Year (FY) 2014 (October 1, 2013–September 30, 2014) Newfield used an estimated 2,755 acre feet of fresh water for drilling, dust control and water injection. FY 2015 water use on the GMBU is expected to remain well under the 4,394 acre feet for which consultation has taken place and depletion fees paid, therefore consultation for depletion and depletion fees are not required for this project.

6.1.2. Consultation for Pumping Water from the Green River

The 2011 20 Acre Infill BO [USFWS 2011 (p. 48)] considered potential impacts to larval threatened and endangered fish from pumping water from the Newfield collector well and provided mitigation measures to minimize impacts. Those measures have been included in ???.

6.1.3. Consultation for Threatened and Endangered Plants

On October, 2011, BLM prepared a programmatic Biological Assessment (BA) for Newfield Production Company's 20-acre Infield Program [BLM 2011(b) (p. 47)]. The United States Fish and Wildlife Service issued a Biological Opinion (BO) [USFWS 2011 (p. 48)] for threatened and endangered *Sclerocactus ssp*, whereby they concurred with BLM effects determinations on November 21, 2011. This project falls within the scope of this BO for *Sclerocactus ssp*.

6.2. Section 106 Consultation Under the NHPA

A recommendation of “no historic properties affected” pursuant to Section 106 of 36 CFR 800 is proposed for this project based on the proposed mitigation measure and the results of a Class III survey. Copies of the cultural resource reports were provided by the BLM to the State Historical Preservation Office (SHPO), along with a request to consult under Section 106 of the National Historic Preservation Act. The BLM received a concurrence determination of “no historic properties affected” from the SHPO for all the reports associated with this project.

6.3. Summary of Tribal Consultation

A request for Tribal concurrence regarding Native American Religious Concerns was conducted for the entire Monument Butte EIS, which encompasses the Project Area, on December 22, 2010. No comments were received from the requisite tribes within the 30 days allotted.

6.4. Summary of Public Participation

This EA was posted on the BLM Land Use Planning and NEPA Register on July 15, 2015. No public interest has been expressed to date.

6.5. List of Preparers

Table 6.1. Document Preparers

NAME	TITLE	RESPONSIBLE FOR PREPARING THE FOLLOWING SECTION(S) OF THIS DOCUMENT
Sheri Wysong	Physical/Environmental Scientist	Team Lead
Stephanie Howard	Environmental Coordinator	Chapters 3, 4 & 5: Air Quality
Christine Cimiluca	Natural Resource Specialist	Chapters 3, 4 & 5 Threatened and Endangered Plants

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