

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

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**DOI-BLM-UT-G010-2014-0011-EA**

**Final Environmental Assessment Kerr-McGee Oil & Gas  
Onshore, LPP Proposal to Directionally Drill Eighty-Five Wells  
from Two New and Eight Existing Well Pads Greater Natural  
Buttes Unit, Uintah County, Utah April 2014**

**PREPARING OFFICE**

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



**DOI-BLM-UT-G010-2014-0011-EA**  
**Final Environmental Assessment**  
**Kerr-McGee Oil & Gas Onshore, LP**  
**Proposal to Directionally Drill Eighty-Five Wells**  
**from Two New and Eight Existing Well Pads**  
**Greater Natural Buttes Unit, Uintah County, Utah**  
**April 2014**

**Prepared by**

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

**Location: Section 35 and 34 (East of the White River) Township 9 South,  
Range 22 East; Uintah County, Utah  
Kerr-McGee Oil and Gas Onshore, LP  
Denver, CO**

**U.S. Department of the Interior**

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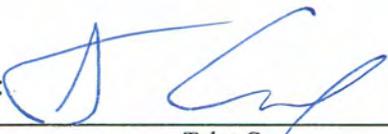
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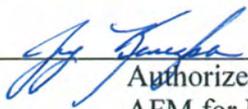
# Finding of No Significant Impact

## Finding of No Significant Impact:

Based on the analysis of potential environmental impacts DOI-BLM-UT-G010-2014-0011-EA, I have determined that the proposed action will not have any significant impacts on the environment, and an environmental impact statement is not required.

## Signatures:

Recommended by:  4/24/2014  
Tyler Cox [Date]  
Natural Resource Specialist

Approved by:  APR 24 2014  
Authorized Officer [Date]  
AFM for Minerals

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# Decision Record - Memorandum

## Selected Action:

It is my decision to approve the Kerr McGee Oil & Gas LLP proposal to develop gas resources in Township 9S, Range 22E, Section 34 (east of the White River) and Section 35 of the Greater Natural Buttes Unit within the GNBPA, Uintah County, Utah (Map 1). The majority of development would occur on BLM-administered land; however, a portion of the proposed new 922-35A well pad, the well pad access road, and associated liquid and natural gas pipelines, would be located on State Land in Township 9S, Range 22 East, Section 36 (Map 1) and are included as connected actions in this EA.

KMG's Proposed Action includes the following components as depicted in Map 1 and Table 1:

- Directional drilling of up to 85 new wells (Table 1, Appendix B), including:
  - 23 new wells from two new well pads (922-35A and 922-35F) (16.74 acres).
  - 62 new wells drilled from eight existing well pads (922-34H, 922-34H4, 922-35G, 922-35H, 922-35I, 922-35K, 922-35N, and 922-35O) that would be expanded to accommodate topsoil stockpiles, reserve pits, excess cut stockpiles, and other uses necessary to develop the new wells (25.43 acres).
- Installation of approximately 29,374 feet (14.53 acres) of new gas and liquid gathering lines to collect and transport gas and fluids from the wells, including
  - 20,892 feet (14.53 acres) of new buried 6-inch, 8-inch, 10-inch and 12-inch gas and liquid gathering lines to collect and transport gas and fluids.
  - 8,482 feet (5.85 acres) of a new 16-inch buried gas pipeline from the 922-35O Well Pad to the approved 16-inch pipeline (UTU-89495) near the 922-35F Well Pad. The 16-inch buried pipeline would be owned and operated by Anadarko Uintah Midstream, LLC (AUM). The 16-inch buried gas pipeline would be co-located with the new liquid and gas pipelines and would not result in additional surface disturbances; therefore, total surface disturbance for all new proposed pipelines would be 14.53 acres.
- Construction of approximately 1,450 feet (1.76 acres) of new access roads and re-routes of existing roads.

The pipeline will be constructed as described in the proposed action alternative of DOI-BLM-UT-G010-2014-0029-EA. This decision is subject to the below conditions of approval.

## Conditions of Approval:

**This decision is contingent on meeting all stipulations and monitoring requirements listed below, which were designed to minimize and/or avoid impacts.**

**Table 1. Conditions of Approval**

Well Pad/Area	Resource	Conditions of Approval
Well Pads 922-34H, 922-35I, 922-35N, 922-35O, and associated well pipelines and access roads.	Threatened, Endangered, Candidate, and Special Status Plant Species - <i>Sclerocactus wetlandicus</i>	<p>The following COAs and mitigation measures for <i>Sclerocactus wetlandicus</i> from Appendix B, Table B-2 of the GNB ROD (BLM 2012b) apply to the Proposed Action:</p> <ul style="list-style-type: none"> <li>• Silt fencing will be used to protect cacti that are within 300 feet and downslope or downwind of surface disturbance. Fencing is intended to prevent sedimentation or dust deposition and will be evaluated for effectiveness by a qualified botanist.</li> <li>• A qualified botanist will be on site to monitor surface-disturbing activities when cacti are within 300 feet of any surface disturbance.</li> <li>• Dust abatement (consisting of water only) will occur during construction where plants are closer than 300 feet from surface-disturbing activities.</li> <li>• Cacti within 300 feet of proposed surface disturbance will be flagged immediately prior to surface-disturbing activities and flags will be removed immediately after surface-disturbing activities are completed. Leaving cacti flagged for as short a time as possible will minimize drawing attention to the cacti location and reduce potential for theft.</li> <li>• Pipelines will be sited to maximize distance from adjacent cacti locations.</li> <li>• Project personnel associated with construction activities will be instructed to drive at a speed limit of 15 miles per hour on unpaved roads and remain in existing roadway ROWs at all times.</li> <li>• For permanent surface pipelines, KMG will adhere to existing cacti survey/buffer guidelines of 300 feet, or amended guidelines if developed by the BLM and USFWS. In areas where avoidance by 300 feet is not feasible and populations or individuals of <i>Sclerocactus wetlandicus</i> are within 50 feet of proposed project components, the following actions will be taken to minimize impacts:             <ul style="list-style-type: none"> <li>• Prior to construction, flag individual cactus. Once pipe installation is complete, remove the flagging.</li> <li>• Prior to construction, install protective fencing around the cacti if they are down gradient of the surface pipe. Once pipe installation is complete, remove the protective fencing.</li> </ul> </li> <li>• A qualified botanist will be present during construction to monitor surface line installation.</li> </ul>

41X

Well Pad/Area	Resource	Conditions of Approval
		<ul style="list-style-type: none"> <li>● As per discussions and email with the BLM on October 18, 2012, KMG will contribute to the Utah <i>Sclerocactus</i> mitigation fund to further study the effects of development on <i>Sclerocactus wetlandicus</i> in the Uinta Basin and the effectiveness of current mitigation measures. This contribution will be provided over the first 5 years of project development and in lieu of the required 3-year monitoring described in the Vernal BLM RMP for cacti found within 300 feet of planned surface disturbance that cannot be rerouted. This is consistent with the intent of the RMP for the effects of development to be effectively monitored within the Project Area and to better assess conservation measures to avoid or minimize these impacts in the future.</li> <li>● The following considerations are required for those wells where KMG deems completion fluid recycling is appropriate based on new well density and topography:</li> <li>● Temporary lines associated with recycling of completion water will be sited in existing ROWs. The pressure in the lines is less than 50 pounds per square inch and the lines are constructed of rigid aluminum; therefore, virtually no movement will occur during operation.</li> <li>● If surface water completion lines are placed within the footprint of a road disturbance where vegetation does not grow, <i>Sclerocactus wetlandicus</i> surveys will not be necessary.</li> <li>● A qualified botanist will survey a 50-foot-wide corridor along roads where temporary lines are planned to ensure <i>Sclerocactus wetlandicus</i> is not present.</li> <li>● If cacti are present within the 50-foot-wide survey corridor and avoidance is necessary (to ensure the line is more than 50 feet away from identified cactus), the new alignment will, if possible, be such that the cacti are topographically higher than the re-aligned line so a potential spill from the line will not impact the identified cacti.</li> <li>● If it is not possible to re-align the surface lines to avoid individuals or populations of the <i>Sclerocactus wetlandicus</i> that are within 50 feet of surface disturbance, the following actions will be taken to minimize impacts:</li> <li>● Prior to construction, KMG will flag individual cacti. Once pipe installation is complete, remove the flagging.</li> </ul>

Well Pad/Area	Resource	Conditions of Approval
		<ul style="list-style-type: none"> <li>● Prior to construction, KMG will install protective fencing around the cacti if they are down gradient of the surface pipe. Once pipe installation is complete, remove the protective fencing.</li> <li>● A qualified botanist will be present during construction to monitor surface line installation.</li> </ul> <p>In addition, through several discussions and meetings in December 2011 and January 2012, KMG/Anadarko committed to the following conservation measures in core conservation areas for <i>Sclerocactus wellandicus</i>:</p> <ul style="list-style-type: none"> <li>● KMG will continue to abide by mitigation measures outlined in the 2010 Programmatic Biological Opinion (BO)</li> <li>● To help mitigate impacts to cactus that may occur, KMG will fund cactus studies following approval of a final Greater Natural Buttes Record of Decision at a level of \$60,000 per year for 5 years in lieu of the cactus study funding commitment outlined in the 2010 Programmatic BO. KMG will be allowed to review and provide input to cactus study work plans prior to study implementation and will be given an opportunity to review study results prior to submittal of results for publication. KMG will exercise no control over final study designs or study results submitted for publication</li> <li>● Avoidance of cactus by 300 feet will take priority in the expansion of pads within the cactus core conservation areas. When the 300-foot buffer cannot be avoided in pad expansion, KMG will notify the USFWS and work with the BLM to determine pad expansion that places a priority on avoiding cactus impacts.</li> <li>● KMG will follow existing ROWs and/or roads in constructing new buried pipelines within the cactus core conservation areas. For instance, where a new buried pipeline is unable to follow an existing ROW and/or road and exceeds 600 feet in length, KMG will work with the USFWS and the BLM to determine a route that places a priority on avoiding cactus impacts.</li> <li>● KMG retains the right to perform necessary maintenance activities on all existing pipelines within the cactus core conservation areas. Maintenance activities on pipelines within cactus core conservation areas will avoid impacts to cactus, to the extent possible.</li> <li>● KMG will not create new pads in the cactus core conservation areas without formal Service consultation, with the exception of 15 quarter-quarter sections</li> </ul>

Well Pad/Area	Resource	Conditions of Approval
		<p>within the cactus core conservation areas where new pad construction will be allowed as a condition of this consultation, with the following conditions:</p> <ol style="list-style-type: none"> <li>a. When topographically feasible, expansion of existing well pads will take priority in Level 1 cactus core conservation areas.</li> <li>b. Where feasible, new pads will be placed on or adjacent to existing disturbance (e.g. roads) in the cactus core conservation areas.</li> <li>c. Where topographically feasible, drill mats or similar devices will be used for new well pad development in the cactus core conservation areas.</li> <li>d. Due to the high value of Level 1 cactus core conservation areas, KMG will notify the Service and work with the BLM (and the BIA if on tribal surface) to determine new pad placement that places a priority on avoiding cactus impacts when in these areas.</li> <li>e. If feasible, new well pad development will not occur in cactus core conservation areas located in the northeast corner of the Project Area (e.g. the population located in T8S R23E and the northern portion of T9S R23E)</li> </ol> <ul style="list-style-type: none"> <li>• KMG will fund a study in the amount of \$100,000 in addition to typical expenditures for pad reclamation, to evaluate the technical feasibility of re-planting the Uinta Basin hookless cactus during pad reclamation activities. KMG will be allowed to review and provide input to the study work plan prior to study implementation and will be given an opportunity to review study results prior to submittal of results for publication. KMG will exercise no control over final study design or study results submitted for publication.</li> </ul>
<p>High fossil potential areas intersect with proposed project components including Well pads 922-34H, 922-35A, 922-35F, 922-35G, 922-35H, 922-35I, and 922-35K, and their associated infrastructure.</p>	<p>Paleontology</p>	<p>Paleontological monitoring by a BLM permitted paleontologist is required during all ground-disturbing activities (BLM 2012b).</p>
<p>Well Pad 922-35A and 922-35I</p>	<p>Fish and Wildlife – Golden Eagle Nest</p>	<p>Construction and development activities will be prohibited from 1/1 through 8/31, pending the results of a preconstruction nest occupancy survey (BLM 2012b; BLM 2008a).</p>

Well Pad/Area	Resource	Conditions of Approval
All proposed well pads and developments in the Project Area	Fish and Wildlife – Migratory Birds	<ul style="list-style-type: none"> <li>• Bird exclusion netting will be installed over reserve pits containing water that are left open for more than 30 days to reduce possibility of exposure to hazardous chemicals (BLM 2012b).</li> <li>• KMG will install bird-excluding devices that prevent the perching and entry of migratory birds on or into its new fired vessel exhaust stacks (BLM 2012b).</li> </ul> <p>Tree removal within pinyon-juniper habitat will occur outside of the nesting season for migratory birds (approximately 4/1 to 7/31 (BLM 2012b).</p>
Source: GNB ROD (BLM 2012b), Vernal RMP (BLM 2008a)		

## **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 mitigation measures to protect other resource values.

## **Land Use Plan Conformance:**

The selected alternative is in conformance with the Vernal Field Office Resource Management Plan and Record of Decision (BLM 2008).

The selected alternative is consistent with *Uintah County General Plan* (published in 2007) that encompasses the location of the proposed wells. In general, the plan indicates support for development proposals such as the selected alternative through the plan's emphasis of multiple-use public land management practices, responsible use and optimum utilization.

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 the Eplanning NEPA Register on 3 December 2013. No expression of public interest was received.

## **Alternatives Considered:**

The EA analyzed the proposed action and no action alternatives. The no action alternative was not selected because it would not best meet the BLM's need to acknowledge and allow development of valid existing leases.

## **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.

**Signature:**

Authorizing Official:

  
Authorized Officer

APR 24 2014

Date

# Acronyms and Abbreviations

**Table 2. Acronyms and Abbreviations**

$\mu\text{g}/\text{m}^3$	micrograms per cubic meter	NI	Not Impacted
ACEPM	Applicant Committed Environmental Protection Measure	$\text{NO}_2$	Nitrogen Dioxide
ACTS	Anadarko Completions Transportation System	$\text{NO}_x$	Nitrous Oxide
APD	Application for Permit to Drill	NOAA	National Oceanic and Atmospheric Administration
BLM	Bureau of Land Management	NP	Not Present
BMP	Best Management Practice	$\text{O}_3$	Ozone
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act	PAR	Pesticide Application Record
CFR	Code of Federal Regulations	PFYC	Potential Fossil Yield Classification
CIAA	Cumulative Impacts Analysis Area	PI	Potentially Impacted
CO	Carbon Monoxide	PM	Particulate Matter
COA	Condition of Approval	$\text{PM}_{2.5}$	particulate matter less than 2.5 microns in diameter
DR	Decision Record	$\text{PM}_{10}$	particulate matter less than 10 microns in diameter
EA	Environmental Assessment	ppb	parts per billion
EIS	Environmental Impact Statement	PUP	Pesticide Use Permit
EPA	Environmental Protection Agency	PUR	Pesticide Use Report
ESA	Endangered Species Act	RCRA	Resource Conservation and Recovery Act
FLPMA	Federal Land Policy and Management Act	RMP	Resource Management Plan
FONSI	Finding of No Significant Impact	ROD	Record of Decision
GHG	Greenhouse Gas	ROW	Right-of-way
GIS	Geographic Information System	SARA	Superfund Amendments and Reauthorization Act
GNB	Greater Natural Buttes	SHPO	State Historic Preservation Office
GNBPA	Greater Natural Buttes Project Area	SITLA	School and Institutional Trust Lands Administration
GPS	Global Positioning System	$\text{SO}_2$	Sulfur Dioxide
HAP	Hazardous Air Pollutant	$\text{SO}_x$	Sulfur Oxides
ID	Interdisciplinary	SPCC	Spill Control and Countermeasure
KMG	Kerr-McGee Oil & Gas Onshore, LP	SWD	Salt Water Disposal
MBTA	Migratory Bird Treaty Act	TPY	Tons per Year
MLA	Mineral Leasing Act	U.S.C.	United States Code
MOU	Memorandum of Understanding	UDAQ	Utah Department of Air Quality
MSDS	Material Safety Data Sheets	USFWS	U.S. Fish and Wildlife Service
NAAQS	National Ambient Air Quality Standards	USGCRP	U.S. Global Change Research Program
NASA	National Aeronautical Space Administration	VOC	Volatile Organic Compound
NEPA	National Environmental Policy Act		

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# **Chapter 1. Introduction and Need for Proposed Action**

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## **1.1. Introduction**

This Environmental Assessment (EA) has been prepared to analyze the potential impacts of the Kerr-McGee Oil & Gas Onshore LP (KMG) gas well drilling project in the Natural Buttes Unit of the Greater Natural Buttes Project Area (GNBPA). KMG proposes to develop gas resources in Township 9S, Range 22E, Section 35 and Section 34 (east of the White River) of the Natural Buttes Unit in the GNBPA in Uintah County, Utah. The EA is a site-specific analysis of potential impacts that would result from the implementation of the Proposed Action or alternatives to the Proposed Action. This EA is tiered to and incorporates analysis from the Greater Natural Buttes (GNB) Final Environmental Impact Statement (EIS) (BLM 2012a) as indicated. The EA assists the Bureau of Land Management (BLM) in project planning, ensuring compliance with the National Environmental Policy Act (NEPA), and in making a determination as to whether any “significant” impacts would result from the Proposed Action. “Significance” is defined by NEPA and is found in regulation 40 Code of Federal Regulations (CFR) 1508.27). An EA provides evidence for determining whether to prepare an EIS or a Finding of No Significant Impact (FONSI) statement. A FONSI statement briefly presents the reasons why implementation of the selected alternative would not result in “significant” environmental impacts (effects) or “significant” impacts to resources. If the Authorized Officer determines that this project has “significant” impacts, then the BLM would prepare an EIS for the project. If not, the Authorized Officer would sign a Decision Record (DR) for the EA approving the selected alternative.

## **1.2. Purpose and Need for the Proposed Action**

The BLM’s purpose is to allow KMG to develop its existing federal leases in order to meet domestic demands for oil and natural gas while also preventing unnecessary or undue degradation to public land. The proposed development would exercise existing lease rights to drill for, extract, remove, and market commercial quantities of oil and natural gas. The Mineral Leasing Act of 1920 (MLA), as amended, and the regulations and policies by which it is implemented recognize the right of lease holders to develop federal mineral resources to meet continuing needs and economic demands, so long as unnecessary or undue degradation is not incurred. This includes the right to build and maintain necessary improvements, subject to lease terms and conditions. The lessee has the right to use as much of the leased lands as is necessary to explore, develop, and dispose of the leased resource (43 CFR 3101.1-2) subject to lease terms, conditions, and stipulations.

The BLM’s need is to respond to the applicant’s proposal while minimizing environmental impacts and preventing unnecessary or undue degradation of the land. The Federal Land Policy and Management Act of 1976 (FLPMA) mandates that the BLM manage public lands on the basis of multiple use [43 United States Code (U.S.C.) § 1701(a)(7)]. Minerals are identified as one of the principal uses of public lands in Section 103 of FLPMA [43 U.S.C. § 1702(c)]. The FLPMA mandates that these uses be permitted in a manner that assures adequate protection of other resource values.

## **1.3. Conformance with BLM Land Use Plans**

The Proposed Action would be in conformance with the BLM Utah Vernal Field Office Approved Resource Management Plan (RMP)/Record of Decision (ROD) (BLM 2008a) and the terms of the applicable leases. The RMP/ROD recognizes valid existing rights (RMP/ROD, page 21).

The Minerals and Energy Resources Management Objectives encourage the drilling of oil and gas wells by private industry (RMP/ROD, page 97). The Approved RMP/ROD also allows for processing applications, permits, operating plans, mineral exchanges, and leases on public lands in accordance with policy and guidance. It also allows for management of public lands to support goals and objectives of other resources programs, respond to public requests for land use authorizations, and acquire administrative and public access where necessary (RMP/ROD, page 86). The BLM has determined that the Proposed Action would not conflict with other decisions in the Vernal Field Office Approved RMP/ROD (BLM 2008a).

## **1.4. Relationship to Statutes, Regulations, or Other Plans**

The Proposed Action and No Action Alternative are consistent with federal, state, and local laws, regulations, and plans (see sections below). Refer to Section 1.5 (pages 1-6 through 1-10) of the GNB Final EIS (BLM 2012a) for additional information on applicable statutes, regulations, required permits, and other policy considerations.

### **Federal Laws and Statutes**

The subject lands were leased for oil or gas development under authority of the MLA of 1920, as amended, in part, by the FLPMA of 1976, and the Federal Onshore Oil and Gas Leasing Reform Act of 1987.

### **State and Local Laws and Statutes**

There are no comprehensive State of Utah plans for the vicinity of the Proposed Action. The Proposed Action is consistent with the 2011 Uintah County General Plan, as amended (County Plan), that encompasses the location of the Proposed Action. In general, the County Plan indicates support for development proposals such as the Proposed Action through the plan's emphasis on multiple-use public land management practices, responsible use, and optimum utilization (Uintah County 2011).

The State of Utah School and Institutional Trust Lands Administration (SITLA) has 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 lead to further interest in drilling on state leases in the area, it is assumed that the Proposed Action is consistent with the objectives of the state.

Utah's Standards for Rangeland Health (BLM 1997) address upland soils, riparian/wetlands, desired and native species, and water quality. These resources are analyzed later in this document or, if not affected, are listed in Appendix A.

## **1.5. Identification of Issues**

BLM reviewed KMG's proposed activities to assess the type and magnitude of potential impacts to resources and resource uses. A list of all resources considered is contained in Appendix A, Interdisciplinary (ID) Team Checklist. The "Potentially Impacted" (PI) resources, as identified by the BLM, are listed below with issue statements describing the potential impact. These resources are carried forward for description in the Affected Environment section (Chapter 3) and analysis in the Environmental Impacts section (Chapter 4) of this EA. Resources that the BLM identified

as “Not Impacted” (NI) by the Proposed Action or “Not Present” (NP) in the Project Area, as documented in the ID Team Checklist, were not carried forward for detailed analysis.

### **1.5.1. Air Quality and Greenhouse Gas Emissions**

**Issue 1:** Emissions from earth-moving equipment, vehicle traffic, drilling and completion activities, daily tailpipe and fugitive dust emissions, and other sources would adversely affect air quality and contribute to Greenhouse Gas (GHG) emissions.

### **1.5.2. Invasive Plants/Noxious Weeds, Soil, and Vegetation**

**Issue 1:** Construction and expansion of ten well pads, associated gathering pipelines, including the 16-inch buried pipeline, and access roads would result in a total of approximately 58.46 acres of surface disturbance, which has the potential for invasive and noxious weed establishment or expansion.

### **1.5.3. Paleontology**

**Issue 1:** Several scientifically important fossils and locations of high fossil potential were found in the Project Area, specifically within Section 922-34 in association with well pads 922-34H and 922-34H4, and the 922-34 pipelines. Several scientifically important fossils and locations of high fossil potential were also found within Section 922-35, primarily in association with well pads 922-35A, 922-35F, 922-35G, 922-35H, 922-35I, and 922-35K, and their associated infrastructure, including the 16-inch buried pipeline. Locations where project components intersect high fossil potential areas require paleontological monitoring during proposed project activities to ensure no adverse effects occur to existing resources.

### **1.5.4. Plants - Threatened, Endangered, Proposed, or Candidate**

**Issue 1:** Construction, drilling, and completion activities would result in temporary or long-term disturbance of threatened or endangered plant species habitat. The proposed project is located within the U.S. Fish and Wildlife Service (USFWS) 2013 potential habitat polygon for Uinta Basin hookless cactus (*Sclerocactus wetlandicus*). No proposed well pads or project infrastructure is located within Proposed Level 1 cactus core conservation areas; however, all of Sections 922-34 and the western portion of Section 922-35 are located within Proposed Level 2 cactus core conservation areas. Multiple occurrences of this species were observed and documented in the Project Area during the September 2012 and May 2013 plant surveys, both inside and outside of Proposed Level 2 cactus core conservation areas. Proposed project activities would result in temporary or long-term disturbances to cactus habitat and temporary physical effects to individual cacti.

### **1.5.5. Wildlife**

#### **1.5.5.1. Wildlife - Non-USFWS Designated Wildlife**

**Issue 1:** Proposed well pads 922-34H, 922-34H4, 922-35N, and 922-35O and associated roads and pipelines in the western portion of the Project Area overlap year-long crucial habitat for mule

deer. Degradation or unavailability of crucial habitat or other impacts could lead to declines in carrying capacity and/or numbers of mule deer in the area.

#### **1.5.5.2. Wildlife - Migratory Birds (including raptors)**

**Issue 2:** Migratory birds and raptors occur in the Project Area. Proposed project activities would result in temporary and/or long-term displacement and/or disruption of nesting birds.

#### **1.5.5.3. Wildlife – Threatened, Endangered, Proposed or Candidate**

**Issue 3:** Fresh water used for drilling, completion, and dust suppression activities would come from new water depletions of the Colorado River Basin that could affect special status fish species.

## **Chapter 2. Description of Alternatives**

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## 2.1. Introduction:

This chapter provides a description of the Proposed Action and No Action Alternative. No additional action alternatives have been identified. The No Action Alternative is considered and analyzed to provide a baseline for comparison of the impacts of the Proposed Action. The Proposed Action integrates the terms and conditions in the GNB ROD (BLM 2012b).

## 2.2. Proposed Action:

KMG proposes to develop gas resources in Township 9S, Range 22E, Section 34 (east of the White River) and Section 35 of the Greater Natural Buttes Unit within the GNBPA, Uintah County, Utah (Figure 2.1, “Proposed Action” (p. 8)). The majority of development would occur on BLM-administered land; however, a portion of the proposed new 922-35A well pad, the well pad access road, and associated liquid and natural gas pipelines, would be located on State Land in Township 9S, Range 22 East, Section 36 (Figure 2.1, “Proposed Action” (p. 8)) and are included as connected actions in this EA.

KMG’s Proposed Action includes the following components as depicted in Figure 2.1, “Proposed Action” (p. 8) and Table 2.1, “Proposed Action Development and Surface Disturbance” (p. 9):

- Directional drilling of up to 85 new wells (Table 2.1, “Proposed Action Development and Surface Disturbance” (p. 9), Appendix B), including:
  - 23 new wells from two new well pads (922-35A and 922-35F) (16.74 acres).
  - 62 new wells drilled from eight existing well pads (922-34H, 922-34H4, 922-35G, 922-35H, 922-35I, 922-35K, 922-35N, and 922-35O) that would be expanded to accommodate topsoil stockpiles, reserve pits, excess cut stockpiles, and other uses necessary to develop the new wells (25.43 acres).
- Installation of approximately 29,374 feet (14.53 acres) of new gas and liquid gathering lines to collect and transport gas and fluids from the wells, including
  - 20,892 feet (14.53 acres) of new buried 6-inch, 8-inch, 10-inch and 12-inch gas and liquid gathering lines to collect and transport gas and fluids.
  - 8,482 feet (5.85 acres) of a new 16-inch buried gas pipeline from the 922-35O Well Pad to the approved 16-inch pipeline (UTU-89495) near the 922-35F Well Pad. The 16-inch buried pipeline would be owned and operated by Anadarko Uintah Midstream, LLC (AUM). The 16-inch buried gas pipeline would be co-located with the new liquid and gas pipelines and would not result in additional surface disturbances; therefore, total surface disturbance for all new proposed pipelines would be 14.53 acres.
- Construction of approximately 1,450 feet (1.76 acres) of new access roads and re-routes of existing roads.

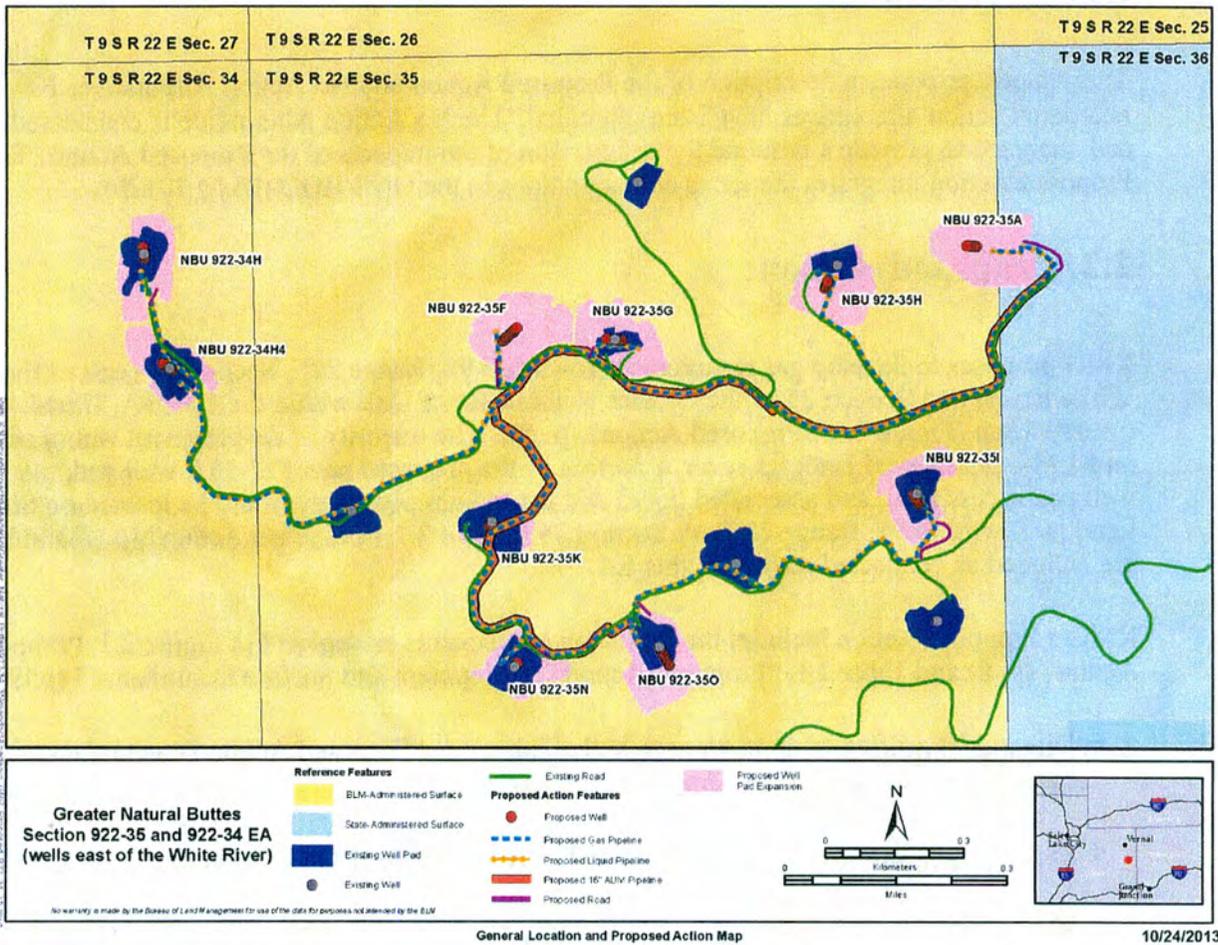


Figure 2.1. Proposed Action

Table 2.1. Proposed Action Development and Surface Disturbance

Feature	NBU 922-34H Well Pad Expansion	NBU 922-34H4 Well Pad Expansion	NBU 922-35A New Well Pad	NBU 922-35F New Well Pad	NBU 922-35G Well Pad Expansion	NBU 922-35H Well Pad Expansion	NBU 922-35I Well Pad Expansion	NBU 922-35K Well Pad Expansion	NBU 922-35N Well Pad Expansion	NBU 922-35O Well Pad Expansion	Total
<b>Wells and Well Pads</b>											
Number of Proposed New Wells on Well Pad	8	8	8	15	12	6	6	3	4	15	85
Proposed New Well Pad Disturbance (acres) on BLM-administered land	3.12	2.31	7.09	6.80	4.56	4.68	3.24	0.93	2.27	4.32	39.32
Proposed New Well Pad Disturbance (acres) on State Land	-	-	2.85	-	-	-	-	-	-	-	2.85
Number of Existing Wells on Well Pads	1	1	-	-	1	1	1	1	1	1	12
Existing Well Pad Disturbance (acres)	2.18	2.59	-	-	1.02	1.20	1.83	2.78	1.94	2.05	24.42
<b>Roads</b>											
Proposed New Roads (feet)	125	-	-	198	88	-	448	-	65	126	1,050
Proposed New Road Disturbance (acres) on BLM-administered Land	0.17	-	-	0.24	0.13	-	0.50	-	0.10	0.17	1.31
Proposed New Road Disturbance (feet) on State Land	-	-	400	-	-	-	-	-	-	-	400
Proposed New Road Disturbance (acres) on State Land	-	-	0.45	-	-	-	-	-	-	-	0.45
Existing Roads (feet)	-	-	-	-	-	-	-	-	-	-	28,408
Existing Roads (acres)	-	-	-	-	-	-	-	-	-	-	29.38
<b>Buried Gas and Liquids Pipelines</b>											

Feature	NBU 922-34H Well Pad Expansion	NBU 922-34H4 Well Pad Expansion	NBU 922-35A New Well Pad	NBU 922-35F New Well Pad	NBU 922-35G Well Pad Expansion	NBU 922-35H Well Pad Expansion	NBU 922-35I Well Pad Expansion	NBU 922-35K Well Pad Expansion	NBU 922-35N Well Pad Expansion	NBU 922-35O Well Pad Expansion	Total
Proposed New 6, 8, 10, and 12 inch Gas and Liquid Gathering Pipelines (feet) <sup>3</sup> on BLM-administered Land	1,271	8,389	630	508	409	1,400	3,162	3,394	321	250	19,734
Proposed New 6, 8, 10, and 12 inch Gas and Liquids Gathering Pipeline Disturbance (acres) <sup>4</sup> on BLM-administered Land	0.76	5.91	0.44	0.36	0.30	0.98	2.19	2.35	0.24	0.18	13.71
Proposed 6, 8, 10, and 12 inch New Gas and Liquid Gathering Pipelines (feet) <sup>3</sup> on State Land	-	-	1,158	-	-	-	-	-	-	-	1,158
Proposed New 6, 8, 10, and 12 inch Gas and Liquids Gathering Pipeline Disturbance (acres) <sup>4</sup> on State Land	-	-	0.82	-	-	-	-	-	-	-	0.82
Proposed New AUM 16-inch Buried Gas Pipeline (feet) <sup>3</sup> on BLM-administered Land	-	-	-	-	-	-	-	-	-	-	7,917
Proposed New AUM 16-inch Buried Gas Pipeline (acres) <sup>4</sup> on BLM-administered Land	-	-	-	-	-	-	-	-	-	-	5.44

Feature	NBU 922-34H Well Pad Expansion	NBU 922-34H4 Well Pad Expansion	NBU 922-35A New Well Pad	NBU 922-35F New Well Pad	NBU 922-35G Well Pad Expansion	NBU 922-35H Well Pad Expansion	NBU 922-35I Well Pad Expansion	NBU 922-35K Well Pad Expansion	NBU 922-35N Well Pad Expansion	NBU 922-35O Well Pad Expansion	Total
Proposed New AUM 16-inch Buried Gas Pipeline (feet) <sup>3</sup> on State Land	-	-	-	-	-	-	-	-	-	-	565
Proposed New AUM 16-inch Buried Gas Pipeline (acres) <sup>4</sup> on State Land	-	-	-	-	-	-	-	-	-	-	0.41
Existing Gas and Liquid Gathering Pipelines (feet)	-	-	-	-	-	-	-	-	-	-	0
Existing Gas and Liquid Gathering Pipelines (acres)	-	-	-	-	-	-	-	-	-	-	0
<b>Surface Disturbance Totals</b>											
<b>Total Acres of New Surface Disturbance under the Proposed Action (acres)</b>	4.05	8.22	11.65	7.40	4.99	5.66	5.93	3.28	2.61	4.67	<b>58.46</b>
<b>Total Existing Disturbance (acres)</b>	2.18	2.59	-	-	1.02	1.20	1.83	2.78	1.94	2.05	<b>53.80</b>
<b>Total Disturbance including Existing and Proposed Development (acres)</b>	6.23	10.81	11.65	7.40	6.01	6.86	7.76	6.06	4.55	6.72	<b>112.26</b>
<b>Reclaimable New Surface Disturbance/Interim Reclamation Estimates (acres)</b>											<b>23.97</b>
<sup>1</sup> Assumes a 45-foot construction width, and a 12-18-foot running surface. <sup>2</sup> Assumes a maximum 45-foot permanent right-of-way for all segments of proposed liquid and gas pipelines. <sup>3</sup> New gas and liquid gathering pipelines would be installed in shared trenches as shown on Figure 2.1, "Proposed Action" (p. 8). Total surface disturbance for pipelines is represented by longest pipeline segment (i.e. liquid pipelines at 12,290 linear feet). <sup>4</sup> The reclamation estimate is based on the estimated reclaimable surface disturbance percentage (41 percent of new disturbance) for the selected alternative in the GNB ROD (BLM 2012b). <sup>5</sup> Existing well and well pad disturbance totals includes well pads where no additional development is proposed under the Proposed Action. <sup>6</sup> Existing road disturbance totals includes county and non-county roads. <sup>7</sup> Includes the total existing disturbance for well pads, roads, and pipelines.											

### **2.2.1. Construction and Disturbance**

The location, orientation, and layout of each well pad are depicted on the exhibits submitted with the application for permit to drill (APD). Site-specific conditions may require slight deviations from exhibits filed with the APD; however, KMG would not exceed the proposed area of disturbance. The construction of project components under the Proposed Action would result in approximately 58.46 acres of surface disturbance as described in Table 2.1, "Proposed Action Development and Surface Disturbance" (p. 9).

### **2.2.2. Access Roads**

The majority of access roads would consist of existing county and local improved/unimproved access roads (two-tracks). Where applicable, KMG would obtain county road crossing or encroachment permits prior to construction. Well development and pad expansion at seven well pad locations including 922-34H, 922-35A, 922-35I, 922-35F, 922-35G, 922-35N, and 922-35O would require access road re-routes (Table 2.1, "Proposed Action Development and Surface Disturbance" (p. 9)). In accordance with Onshore Order #1, KMG would, using Best Management Practices (BMPs), improve or maintain existing roads in a condition that is the same as or better than before operations began.

Roads would be crowned and ditched with the running surfaces of the roads approximately 12-18 feet wide and a total road corridor width not to exceed 45 feet, except where noted in the road design for a specific project. Maximum grade would generally not exceed eight (8) percent. Borrow ditches would be back sloped 3:1 or less. KMG would employ construction BMPs and the Conditions of Approval (COAs) listed in the GNB FEIS (BLM 2012a) and ROD (BLM 2012b) to control onsite and offsite erosion.

KMG would construct drainage ditches or other common drainage control facilities, such as V- or wing-ditches to divert surface water runoff. Drainage features, including culverts, would be constructed or installed prior to commencing other operations, including drilling or facilities placement. KMG would place riprap at the inlet and outlet of the culvert(s), as necessary. Construction activity would not be conducted using frozen or saturated materials, or during periods when watershed damage (e.g., rutting, extensive sheet soil erosion, formation of rills/gullies, etc.) is likely to occur. KMG would not place vegetative debris in or under fill embankments. All drainage features would meet the BLM Surface Operating Standards for Oil and Gas Development, as stated in the BLM 4th Edition Gold Book (USDI and USDA 2007).

KMG would continue maintenance of roads until final abandonment and reclamation of well pads and/or other facilities. Road maintenance would include, but not be limited to, blading, ditching, culvert installation and cleanout, gravel surfacing where excessive rutting or erosion may occur and dust control, as necessary to ensure safe operating conditions. KMG would conduct snow removal on roads on an as-needed basis to accommodate safe travel. Removed snow may be stored on permitted well pads to reduce hauling distances.

## **2.2.3. Producing Locations**

### **2.2.3.1. Production Facilities**

Should the wells prove productive, KMG would install production facilities on the disturbed portion of each well pad. KMG would construct a berm completely around production components (typically excluding dehydrators and/or separators) that contain fluids (i.e., production tanks, produced liquids tanks). KMG would generally construct the berms with compacted subsoil or corrugated metal sufficient to hold 110 percent of the capacity of the largest tank and have sufficient freeboard to accommodate a 25-year rainfall event. Aboveground structures constructed or installed onsite for six (6) months or longer would be painted a flat, non-reflective, earth-tone color chosen at the onsite in coordination with the BLM (typically Shadow Gray).

KMG would use the Anadarko Completions Transportation System (ACTS) to optimize the completion processes for multiple pads. ACTS would facilitate management of hydraulic fracturing (fracking) fluids by refurbishing and utilizing existing completions pits and temporary, surface-laid aluminum liquids transfer lines between fracking locations. The temporary aluminum transfer lines would be utilized to transport fracking fluid being injected and/or recovered during the completion process and would be laid adjacent to existing access roads or pipeline corridors. Upon completion of fracking operations, the liquids transfer lines would be flushed with fresh water and purged with compressed air. The contents of the transfer lines would be flushed into a water truck for delivery to another ACTS location or a completions pit.

KMG would fence all four sides of the completions pits according to standard pit fencing procedures and would install netting over all pits. The completions pits would be lined with a synthetic material 30 mil, or thicker, liner, and would be used for wells drilled on the pad or as part of the ACTS. Temporary flare or cuttings pits would be contained within the approved well pad and disturbance boundaries.

### **2.2.3.2. Pipelines**

As part of the Proposed Action, existing surface pipelines servicing well pads with proposed development would be removed and replaced with buried gas and liquids gathering lines. The gas gathering pipelines, including the AUM 16-inch buried gas pipeline, would be made of steel with fusion bond epoxy coating (or equivalent). The liquid gathering pipelines would be made of polyethylene or a composite polyethylene/steel or polyethylene/fiberglass that is not subject to internal or external pipe corrosion. The content of the produced fluids transferred by the liquid gathering system would be approximately 92 percent produced water and 8 percent condensate. Trunk line valve connections for the water gathering system would be below ground to prevent freezing during wintertime, but they would be accessible from the surface.

During buried pipeline construction, the topsoil would be removed and windrowed on the non-working side of the route for reclamation. The trench would be mechanically cut and excavated with trenching equipment, such as a backhoe or trencher. The width of the trench would range from 18 to 48 inches. KMG would excavate the trench to a 6 foot depth that would maintain a minimum of 48 to 60 inches of soil cover upon backfilling. The spoils would typically be windrowed between the topsoil and the trench. Where working room is limited, the spoils may be spread out across the working side and construction would take place on the spoil.

The road or well pad would be utilized for pipeline construction and staging, where possible. The area of disturbance from the edge of the road or well pad would typically be 30 feet in width, with segments up to 45 feet in width from edge of roadway in instances where the typical 30-foot disturbance area does not offer enough room to save topsoil. Where the pipelines run cross-country, the width of disturbance would typically be 45 feet for buried lines. A permanent right-of-way (ROW) of 30 feet would be needed for maintenance and repairs. KMG would use the working side of the corridor for pipe stringing, bedding, welding, and equipment travel. Small areas on the working side displaying ruts or uneven ground would be groomed to facilitate the safe passage of equipment.

If a pipeline route encounters a drainage that could be subject to flooding or surface water during extreme precipitation events, KMG would apply all applicable U.S. Army Corps of Engineers mandates as well as the BLM's Hydraulic Considerations for Pipeline Crossings of Stream Channels (BLM Technical Note 423, April 2007). KMG will evaluate stream and drainage crossings and will submit stream alteration permits to the State of Utah Division of Water Rights for the pipelines that cross drainages as needed. KMG will secure the stream alteration permits prior to crossing drainages.

Buried gas pipelines may vary from 8-inches to 16-inches in diameter; buried liquid lines will be 6-inches in diameter. The proposed pipelines would be visually and radiographically inspected and pneumatically or hydrostatically tested before being placed into service. Water used for hydrostatic testing would come from permitted water sources detailed in Table 2.2, "Water Supply" (p. 14) – Water Supply. In no case would pressure testing of the pipelines result in discharge of liquids on the ground surface. KMG would install above ground valves, lateral T's, and/or cathodic protection wells at various locations for production integrity and safety purposes. KMG would install pipeline signs along the route to indicate the pipeline(s) proximity, ownership, and to provide emergency contact phone numbers. The pipelines would likely remain in place for a term of 30 years, or so long as needed to collect and transport natural gas and liquids from the Natural Buttes Field.

#### 2.2.4. Water Supply

KMG would obtain fresh water for drilling and completion operations from the sources identified in Table 2.2, "Water Supply" (p. 14). KMG would haul water to the location over the existing roads. KMG would not drill any additional water wells on existing leases. The Proposed Action would require 11.05 acre-feet of water for drilling and 109.56 acre-feet for completions, for a total of 120.61 acre-feet of water depletion under the Proposed Action.

**Table 2.2. Water Supply**

Entity	Location
JD Field Services	Green River - Section 15, T2N, R22E
R.N. Industries	White River - Various sources
R.N. Industries	High Pressure – Section 1, T6S, R22E
R.N. Industries	High Pressure – Section 6, T6S, R23E
R.N. Industries	Water Plant – Section 9, T8S, R20E
R.N. Industries	Frog Pond – Section 33, T8S, R20E
R.N. Industries	Blue Tanks – Section 32, T4S, R3E

## 2.2.5. Produced Water Disposal

Where necessary, and if conditions (freeboard, etc.) allow, produced liquids (e.g., produced water) from newly completed wells may be temporarily disposed of into pits for a period not to exceed 90 days as per Onshore Order #7. After the 90 days, any produced water from the proposed wells would be contained in a water tank and would then be hauled by truck or transported by pumping into the liquid gathering line, which would carry the liquid to one of the following pre-approved disposal sites or the KMG active Salt Water Disposal (SWD) wells shown in Table 2.3, “Water Disposal Sites” (p. 15) below.

**Table 2.3. Water Disposal Sites**

Pre-Approved Disposal Sites	KMG Active SWD Wells
RNI in Section 5, T9S, R22E	NBU 159 SWD in Section 35, T9S, R21E
NBU #159 in Section 35, T9S, R21E	CIGE 112D SWD in Section 19, T9S, R21E
Ace Oilfield in Section 2, T6S, R20E	CIGE 114 SWD in Section 34, T9S, R21E
MC&MC in Section 12, T6S, R19E	NBU 921-34K SWD in Section 34, T9S, R21E
Pipeline Facility in Section 36, T9S, R20E	NBU 921-33F SWD in Section 33, T9S, R21E
Goat Pasture Evaporation Pond in SW/4 Section 16, T10S, R22E	
Bonanza Evaporation Pond in Section 2, T10S, R23E	

## 2.2.6. Waste Disposal

KMG would handle all wastes subject to regulation and in compliance with applicable laws to minimize the potential for leaks or spills to the environment. KMG also maintains a Spill Control and Countermeasure Plan (SPCC), which includes notification requirements for all applicable state and federal government agencies, for all reportable spills of oil, produced liquids, and hazardous materials.

Any accidental release, such as a leak or spill in excess of the reportable quantity, as established by 40 CFR Part 117.3, would be reported per the requirements of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended 42 U.S.C. 9601 et seq., CERCLA, Section 102 B. If a release involves petroleum hydrocarbons or produced liquids, KMG would comply with the notification requirements of NTL-3A.

Drill cuttings and/or drilling fluids would be contained in the cuttings or completions pits regardless if a closed loop system is used. KMG would only use fresh water, biodegradable polymer soap, bentonite clay, and/or non-toxic additives in the mud system. Unless specifically approved by the BLM, no oil or oil-based drilling additives, chromium or other metal-based or saline muds would be used during drilling. KMG would bury drill cuttings in the pit(s) upon closure, or incorporate drill cuttings with spoils to be recontoured and covered with stockpile topsoil where possible. No garbage or non-exempt substances as defined by the Resource Conservation and Recovery Act (RCRA) Subtitle C would be placed in the pits.

All refuse (trash and other solid waste including cans, paper, cable, etc.) generated during construction, drilling, completion, and well testing activities would be contained in an enclosed receptacle, removed from the drill operations promptly, and transported to an approved disposal facility. Immediately after removal of the drilling rig, all debris and other waste materials not contained within trash receptacles would be collected and removed from the well location.

KMG would provide portable, self-contained chemical toilets and/or sewage processing facilities for human waste disposal. Upon completion of operations, or as required, KMG would pump the toilet holding tanks and dispose of the contents in an approved sewage disposal facility. KMG would observe all applicable regulations pertaining to disposal of human and solid wastes.

### **2.2.7. Hazardous Materials**

Hazardous materials, as listed under the CERCLA of 1980 as amended, as defined in the RCRA of 1976 as amended, or as defined in 40 CFR 355, above reportable quantities would not be produced by drilling or completing the proposed well(s) or constructing the pipelines/facilities.

Hazardous materials may be contained in some grease or lubricants, solvents, acids, paint, and herbicides, among others as defined above. KMG maintains a file, per 29 CFR 1910.1200(g) containing current Material Safety Data Sheets (MSDS) for all chemicals, compounds, or substances used during the course of construction, drilling, completion, and production operations for this project. The transport, use, storage, and handling of hazardous materials would follow procedures specified by federal and state regulations.

KMG would not use chemicals meeting the criteria for being acutely hazardous materials/substances, or meeting the quantities criteria per BLM Instruction Memorandum No. 93-334. Chemicals subject to reporting under Title III of the Superfund Amendments and Reauthorization Act (SARA) in quantities of 10,000 pounds or more may be produced or stored at production facilities and may be kept on drilling sites and well locations for short periods of time during drilling or completion activities.

### **2.2.8. Invasive Plants/Noxious Weeds**

KMG would control noxious weeds as needed during the life of the wells and the liquid and gas pipelines. According to the Anadarko Integrated Weed Management Plan, KMG would complete monitoring and management of noxious and invasive weeds of concern annually until reclamation is successful. KMG would map noxious weed infestations using a Global Positioning System (GPS) unit and submit the data to the BLM with information required in the Vernal BLM Surface Disturbance Weed Policy (BLM 2009).

If KMG applies herbicide, it would be done in accordance with an approved Pesticide Use Permit (PUP). KMG would record all pesticide applications using a Pesticide Application Record (PAR) and would submit the data to BLM along with a Pesticide Use Report (PUR) annually prior to December 31.

### **2.2.9. Reclamation**

#### **2.2.9.1. Measures Common to Interim and Final Reclamation**

KMG would undertake surface reclamation in two phases: interim and final reclamation. Interim reclamation would be conducted following well completion and would extend through the period of production. KMG would conduct interim reclamation in areas of the well pads that are not required for production activities. KMG would conduct final reclamation following well plugging/conversion or facility abandonment processes. KMG would conduct all reclamation activities consistent with the BMPs and COAs in the GNB FEIS (BLM 2012a) and ROD (2012b).

Areas to be reclaimed would be re-contoured to a natural appearance. Fill and stockpiled spoils no longer necessary to the operation would be spread on the cut slopes and covered with stockpiled topsoil. Where possible, KMG would leave the land surface “rough” after re-contouring to ensure that the maximum surface area would be available to support the reestablishment of vegetative cover.

KMG would conduct soil preparation for seeding using a disk for areas where needed following site preparation. This would provide primary soil tillage to a depth no greater than six inches. Seeding would occur according to the Green River District Guidelines (BLM 2011) as conditions allow and would typically be accomplished through the use of a no-till rangeland style seed drill with a “picker box” in order to seed “fluffy” seed. Where drill seeding is not used, for example, where severe erosion can become a problem or the use of machinery is not practical, seed would be broadcast and then raked into the ground at double the rate of drill seeding. Seed mixes will be selected from a list provided or approved by the BLM, or a specific seed mix will be proposed by KMG to the BLM and used after its approval. All seed will be certified and KMG will maintain tags. KMG will make every effort to obtain cheatgrass-free seed. Table 2.4, “Natural Buttes Area Seed Mix Species: Option 1” (p. 17) and Table 2.5, “Natural Buttes Area Seed Mix Species: Option 2” (p. 17) identify two proposed seed mix options for revegetating well sites, access roads, and the 6-inch, 8-inch, 10-inch, and 12-inch gas and liquid gathering pipeline trenches.

**Table 2.4. Natural Buttes Area Seed Mix Species: Option 1**

Seed Mix Species	Pure Live Seed (pound/Acre)
Indian Ricegrass (Nezpar)	3.00
Sandberg Bluegrass	0.75
Bottlebrush Squirreltail	1.00
Great Basin Wildrye	0.50
Crested Wheatgrass (Ephraim)	1.50
Winterfat	0.25
Shadscale	1.50
Four-wing Saltbrush	0.75
Forage Kochia	0.25
<b>Total</b>	<b>9.50</b>

**Table 2.5. Natural Buttes Area Seed Mix Species: Option 2**

Seed Mix Species	Pure Live Seed (Pounds/Acre)
Great Basin Wildrye	2.50
Indian Ricegrass (Nezpar)	0.50
Crested Wheatgrass	2.00
Siberian Wheatgrass	2.00
Bottlebrush Squirreltail	1.00
Munro Globemallow	0.50
Palmer Penstemon	0.10
Rock Mountain Beeplant	0.50
Western Yarrow	0.10
Shadscale	0.50
Forage Kochia	0.50
<b>Total</b>	<b>10.20</b>

Additional soil amendments or stabilization may be required on sites with poor soils or excessive erosion potential. KMG would stabilize slopes using materials specifically designed to prevent erosion on steep slopes and hold seed in place so vegetation can become permanently established.

Materials may include, but would not be limited to erosion control blankets, hydro-mulch, or bonded fiber matrix at a rate to achieve a minimum of 80 percent soil coverage. Soil amendments such as “Sustain” (an organic fertilizer that will be applied at the rate 1,800 to 2,100 pounds/acre with seed) may also be dry broadcast or applied with hydro-seeding equipment.

KMG would monitor and measure reclamation success according to the methods and standards described in the Green River District Reclamation Guidelines (BLM 2011). KMG would submit all monitoring reports to the Vernal BLM Field Office no later than March 31 of the year following the data collection.

### **2.2.9.2. Interim Reclamation**

Interim reclamation would include pit evaporation or fluid removal, pit backfilling, re-contouring, ripping, spreading top soil, seeding, and weed control. Completions, flare, and cuttings pits would be backfilled and reclaimed within 180 days of completion of work at a well location. Drilling cuttings, mud, and/or completions fluids in the pits would be allowed to dry; however, any free fluids remaining after six months (as weather conditions allow) from reaching total depth, date of completion, or determination of inactivity would be removed to an approved site and the pit reclaimed. Additional drying methods may include sprinkler evaporation. Sprinklers, pumps, and equipment would be installed and operated in a manner to ensure that water spray or mist does not drift. Pits would then be backfilled with spoils and compacted. KMG would not use soils that are moisture laden, saturated, or partially/completely frozen for backfill or cover. KMG would mound the pit area to allow for settling and to promote positive surface drainage away from the pit. In addition, any areas not needed for production operations would be reclaimed and revegetated in accordance with the common reclamation measures listed above.

### **2.2.9.3. Final Reclamation**

As soon as practical after the conclusion of drilling and testing operations, unproductive drill holes would be plugged and abandoned. KMG would plug and abandon all wells per BLM and State of Utah requirements. After plugging, KMG would remove all wellhead equipment and facilities. All unnecessary equipment, and structures (e.g., cattle guards) and water control structures (e.g., culverts, drainage pipes) not needed to facilitate successful reclamation would also be removed during final reclamation.

KMG would initiate final reclamation at non-producing locations within six months from the date the last well on the pad is plugged. KMG may request a joint inspection by BLM and KMG personnel of the disturbed area to be reclaimed to review the existing conditions, or agree upon a final reclamation plan. KMG would notify the BLM prior to commencement of reclamation operations. KMG would submit Final Reclamation Plans concurrently with the Notice of Intent for Plug and Abandonment procedures for BLM review.

Well pad reclamation utilizing the common reclamation measures above would commence following plugging. Final contouring would blend with and follow as closely as practical the natural terrain and contours of the original site and surrounding areas. After re-contouring the site to the approximate contour that existed prior to pad construction, KMG would conduct final grading over the entire surface of the well site and access road. KMG would rip the area to a depth of 18 to 24 inches on 18 to 24 inch centers, where practical, and would pit the surface soil material with small depressions to form longitudinal depressions 12 to 18 inches deep, where

practical. KMG would uniformly cover the entire area with depressions constructed perpendicular to the natural flow of water.

KMG would perform reclamation of roads at the discretion of the BLM. Roads that would be reclaimed would be ripped to a depth of 18 inches where practical, re-contoured to approximate the original contour of the ground, and seeded in accordance with BLM seeding specifications.

Upon successfully completing reclamation of a Plugged and Abandoned location, KMG would submit a Final Abandonment Notice to the BLM.

#### **2.2.9.4. AUM 16–inch Buried Gas Pipeline Specific Reclamation**

Upon completion of construction, the ROW would be re-seeded after August 15th, and prior to ground frost in accordance with BLM stipulations in the Green River District Reclamation Guidelines (BLM 2011a). Table 2.6, “Seed Mix Species for AUM 16–inch Pipeline Reclamation” (p. 19) identifies the potential seed mix for reclamation of the AUM 16-inch buried pipeline.

**Table 2.6. Seed Mix Species for AUM 16–inch Pipeline Reclamation**

<b>Seed Mix Species</b>	<b>Pure Live Seed (Pounds/Acre)</b>
Indian ricegrass (Nezpar)	3
Sandberg bluegrass	0.75
Bottlebrush squirreltail	0.5
Saline wildrye	0.5
Crested wheatgrass	1.5
Winterfat	0.25
Shadscale	1.5
Four-wing saltbush	0.75
Wyoming big sagebrush	0.5
Forage kochia	0.25
<b>Total</b>	<b>9.5</b>

#### **2.2.9.5. Termination and Restoration**

At the end of the pipeline’s useful life, AUM or its successor would obtain any necessary authorization to abandon the pipeline from the appropriate regulatory agency. If necessary, AUM or its successor would contact the Authorized Offer to arrange a joint inspection of the ROW. The inspection would be held to jointly agree on an acceptable rehabilitation and termination plan.

#### **2.2.10. Applicant-Committed Environmental Protection Measures**

KMG adopted applicable COAs from Appendix B, Table B-2, of the GNB ROD (BLM 2012b), as Applicant Committed Environmental Protection Measures (ACEPMs) for this Proposed Action. Table 1, “Conditions of Approval” (p. 20) identifies COAs from the GNB ROD (BLM 2012b) and other sources that are specific to the proposed development.

**Table 2.7. Conditions of Approval**

Well Pad/Area	Resource	Conditions of Approval
Well Pads 922-34H, 922-35I, 922-35N, 922-35O, and associated well pipelines and access roads.	Threatened, Endangered, Candidate, and Special Status Plant Species - <i>Sclerocactus wetlandicus</i>	<p>The following COAs and mitigation measures for <i>Sclerocactus wetlandicus</i> from Appendix B, Table B-2 of the GNB ROD (BLM 2012b) apply to the Proposed Action:</p> <ul style="list-style-type: none"> <li>• Where populations or individuals of <i>Sclerocactus wetlandicus</i> are located within 300 feet of the proposed edge of project ROWs, the following actions will be taken to minimize impacts:</li> <li>• Silt fencing will be used to protect cacti that are within 300 feet and downslope or downwind of surface disturbance. Fencing is intended to prevent sedimentation or dust deposition and will be evaluated for effectiveness by a qualified botanist.</li> <li>• A qualified botanist will be on site to monitor surface-disturbing activities when cacti are within 300 feet of any surface disturbance.</li> <li>• Dust abatement (consisting of water only) will occur during construction where plants are closer than 300 feet from surface-disturbing activities.</li> <li>• Cacti within 300 feet of proposed surface disturbance will be flagged immediately prior to surface-disturbing activities and flags will be removed immediately after surface-disturbing activities are completed. Leaving cacti flagged for as short a time as possible will minimize drawing attention to the cacti location and reduce potential for theft.</li> <li>• Pipelines will be sited to maximize distance from adjacent cacti locations.</li> </ul>

Well Pad/Area	Resource	Conditions of Approval
		<ul style="list-style-type: none"> <li>● Project personnel associated with construction activities will be instructed to drive at a speed limit of 15 miles per hour on unpaved roads and remain in existing roadway ROWs at all times.</li> <li>● As per discussions and email with the BLM on October 18, 2012, KMG will contribute to the Utah <i>Sclerocactus</i> mitigation fund to further study the effects of development on <i>Sclerocactus wetlandicus</i> in the Uinta Basin and the effectiveness of current mitigation measures. This contribution will be provided over the first 5 years of project development and in lieu of the required 3-year monitoring described in the Vernal BLM RMP for cacti found within 300 feet of planned surface disturbance that cannot be rerouted. This is consistent with the intent of the RMP for the effects of development to be effectively monitored within the Project Area and to better assess conservation measures to avoid or minimize these impacts in the future.</li> <li>● The following considerations are required for those wells where KMG deems completion fluid recycling is appropriate based on new well density and topography:             <ul style="list-style-type: none"> <li>● Temporary lines associated with recycling of completion water will be sited in existing ROWs. The pressure in the lines is less than 50 pounds per square inch and the lines are constructed of rigid aluminum; therefore, virtually no movement will occur during operation.</li> <li>● If surface water completion lines are placed within the footprint of a road disturbance where vegetation does not grow, <i>Sclerocactus wetlandicus</i> surveys will not be necessary.</li> </ul> </li> <li>● A qualified botanist will survey a 50-foot-wide corridor along roads where temporary</li> </ul>

Well Pad/Area	Resource	Conditions of Apporval
		<p>lines are planned to ensure <i>Sclerocactus wetlandicus</i> is not present.</p> <ul style="list-style-type: none"> <li>● If cacti are present within the 50-foot-wide survey corridor and avoidance is necessary (to ensure the line is more than 50 feet away from identified cactus), the new alignment will, if possible, be such that the cacti are topographically higher than the re-aligned line so a potential spill from the line will not impact the identified cacti.</li> <li>● If it is not possible to re-align the surface lines to avoid individuals or populations of the <i>Sclerocactus wetlandicus</i> that are within 50 feet of surface disturbance, the following actions will be taken to minimize impacts: <ul style="list-style-type: none"> <li>● Prior to construction, KMG will flag individual cacti. Once pipe installation is complete, remove the flagging.</li> <li>● Prior to construction, KMG will install protective fencing around the cacti if they are down gradient of the surface pipe. Once pipe installation is complete, remove the protective fencing.</li> </ul> </li> <li>● A qualified botanist will be present during construction to monitor surface line installation.</li> <li>● In addition, through several discussions and meetings in December 2011 and January 2012, KMG/Anadarko committed to the following conservation measures in core conservation areas for <i>Sclerocactus wetlandicus</i></li> </ul>

Well Pad/Area	Resource	Conditions of Apporval
		<ul style="list-style-type: none"> <li>● KMG will continue to abide by mitigation measures outlined in the 2010 Programmatic Biological Opinion (BO)</li> <li>● To help mitigate impacts to cactus that may occur, KMG will fund cactus studies following approval of a final Greater Natural Buttes Record of Decision at a level of \$60,000 per year for 5 years in lieu of the cactus study funding commitment outlined in the 2010 Programmatic BO. KMG will be allowed to review and provide input to cactus study work plans prior to study implementation and will be given an opportunity to review study results prior to submittal of results for publication. KMG will exercise no control over final study designs or study results submitted for publication</li> <li>● Avoidance of cactus by 300 feet will take priority in the expansion of pads within the cactus core conservation areas. When the 300-foot buffer cannot be avoided in pad expansion, KMG will notify the USFWS and work with the BLM to determine pad expansion that places a priority on avoiding cactus impacts.</li> <li>● KMG will follow existing ROWs and/or roads in constructing new buried pipelines within the cactus core conservation areas. For instance, where a new buried pipeline is unable to follow an existing ROW and/or road and exceeds 600 feet in length, KMG will work with the USFWS and the BLM to determine a route that places a priority on avoiding cactus impacts.</li> <li>● KMG retains the right to perform necessary maintenance activities on all existing pipelines within the cactus core conservation areas. Maintenance activities on pipelines within</li> </ul>

Well Pad/Area	Resource	Conditions of Apporval
		<p>cactus core conservation areas will avoid impacts to cactus, to the extent possible.</p> <ul style="list-style-type: none"> <li>● KMG will not create new pads in the cactus core conservation areas without formal Service consultation, with the exception of 15 quarter-quarter sections within the cactus core conservation areas where new pad construction will be allowed as a condition of this consultation, with the following conditions:               <ul style="list-style-type: none"> <li>a. When topographically feasible, expansion of existing well pads will take priority in Level 1 cactus core conservation areas.</li> <li>b. Where feasible, new pads will be placed on or adjacent to existing disturbance (e.g. roads) in the cactus core conservation areas.</li> <li>c. Where topographically feasible, drill mats or similar devices will be used for new well pad development in the cactus core conservation areas.</li> <li>d. Due to the high value of Level 1 cactus core conservation areas, KMG will notify the Service and work with the BLM (and the BIA if on tribal surface) to determine new pad placement that places a priority on avoiding cactus impacts when in these areas.</li> <li>e. If feasible, new well pad development will not occur in cactus core conservation areas located in the northeast corner of the Project Area (e.g. the population located in T8S R23E and the northern portion of T9S R23E)</li> </ul> </li> <li>● KMG will fund a study in the amount of \$100,000 in addition to typical expenditures for pad reclamation, to evaluate the technical feasibility of re-planting the Uinta Basin hookless cactus during pad reclamation</li> </ul>

Well Pad/Area	Resource	Conditions of Approval
High fossil potential areas intersect with proposed project components including Well pads 922-34H, 922-35A, 922-35F, 922-35G, 922-35H, 922-35I, and 922-35K, and their associated infrastructure.	Paleontology	<p>activities. KMG will be allowed to review and provide input to the study work plan prior to study implementation and will be given an opportunity to review study results prior to submittal of results for publication. KMG will exercise no control over final study design or study results submitted for publication.</p> <ul style="list-style-type: none"> <li>● This EA is tiered to and incorporates the COAs and mitigation measures included in Appendix B of the GNB ROD (BLM 2012b).</li> <li>● A paleontological monitor is required during any ground disturbing activities.</li> <li>● If, during operations, any paleontological resources as described in BLM H-8270-1 are discovered, all operations which would affect such sites will be suspended and the discovery reported promptly to the surface management agency.</li> </ul>
Well Pad 922-35A and 922-35I	Fish and Wildlife – Golden Eagle Nest	Construction and development activities will be prohibited from 1/1 through 8/31, pending the results of a preconstruction nest occupancy survey (BLM 2012b; BLM 2008a).
All proposed well pads and developments in the Project Area	Fish and Wildlife – Migratory Birds	<ul style="list-style-type: none"> <li>● Bird exclusion netting will be installed over reserve pits containing water that are left open for more than 30 days to reduce possibility of exposure to hazardous chemicals (BLM 2012b).</li> <li>● KMG will install bird-excluding devices that prevent the perching and entry of migratory birds on or into its new fired vessel exhaust stacks (BLM 2012b).</li> </ul> <p>Tree removal within pinyon-juniper habitat will occur outside of the nesting season for migratory birds (approximately 4/1 to 7/31 (BLM 2012b).</p>
Source: GNB ROD (BLM 2012b), Vernal RMP (BLM 2008a)		

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## **Chapter 3. Affected Environment:**

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The affected environment of the Project Area was evaluated by a BLM ID team, as documented in the ID Team Checklist (Appendix A). The checklist indicates which resources of concern are present, which resources would be affected by the alternatives and require analysis in the EA, and which resources are either not present in the Project Area or would not be affected to a degree that requires detailed analysis. The description of the affected environment in this section focuses on those resources identified as “PI” (present with potential for relevant impact that need to be analyzed in detail in the EA) in the ID Team Checklist (Appendix A).

Mineral extraction activities, livestock grazing, and associated surface disturbance have historically affected the Project Area. The majority of development for 85 proposed new wells, well pad expansions, pipelines, and roads would occur in the Greater Natural Buttes Unit on BLM-administered lands in the BLM Utah Vernal Field Office. A portion of the proposed 922-35A well pad, the well pad access road, and associated liquid and natural gas pipelines, would be located on State Land in Township 9S, Range 22 East, Section 36 (Figure 2.1, “Proposed Action” (p. 8)) and are included as connected actions in this EA. This EA is tiered to the GNB ROD (BLM 2012b), and incorporates the GNB Final EIS (BLM 2012a) by reference; as a result, this chapter summarizes and cites the affected environment description from the GNB Final EIS (BLM 2012a) and provides additional site-specific information, where appropriate.

## **3.1. Air Quality and Greenhouse Gas Emissions**

### **3.1.1. Climate**

The Project Area is located in the Uinta Basin, a semiarid, mid-continental climate regime typified by dry, windy conditions and limited precipitation. The Uinta Basin is subject to abundant sunshine and rapid nighttime cooling. Wide seasonal temperature variations typical of a mid-continental climate regime are also common. Refer to Section 3.1.1 (pages 3-2 through 3-3) in the GNB Final EIS (BLM 2012a) for additional information on climate in the region.

### **3.1.2. Air Quality and Greenhouse Gas Emissions**

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

- Exhaust emissions (primarily carbon monoxide [CO], nitrogen oxides [NO<sub>x</sub>], particulate matter less than 2.5 microns in diameter [PM<sub>2.5</sub>], and hazardous air pollutants [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<sub>x</sub>, PM<sub>2.5</sub>, and HAPs;
- Gasoline and diesel-fueled vehicle tailpipe emissions of volatile organic compounds (VOCs), NO<sub>x</sub>, CO, sulfur dioxide [SO<sub>2</sub>], particulate matter less than 10 microns in diameter [PM<sub>10</sub>], and PM<sub>2.5</sub>;
- Oxides of sulfur (SO<sub>x</sub>), NO<sub>x</sub>, fugitive dust emissions from coal-fired power plants, and coal mining/ processing;
- Fugitive dust (in the form of PM<sub>10</sub> and PM<sub>2.5</sub>) 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.

The Uinta Basin is designated as unclassified/attainment by the Environmental Protection Agency (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 to protect human health and welfare with an adequate margin of safety. Pollutants for which standards have been set include ground level ozone (O<sub>3</sub>), SO<sub>2</sub>, nitrogen dioxide (NO<sub>2</sub>), CO, PM<sub>10</sub>, and PM<sub>2.5</sub>. Airborne particulate matter (PM) consists of tiny coarse-mode (PM<sub>10</sub>) or fine-mode (PM<sub>2.5</sub>) particles or aerosols combined with dust, dirt, smoke, and liquid droplets. PM<sub>2.5</sub> is derived primarily from the incomplete combustion of fuel sources and secondarily formed aerosols, whereas PM<sub>10</sub> is primarily from crushing, grinding, or abrasion of surfaces. Table 3.1, "Regional Ambient Air Quality Background Values" (p. 30) lists ambient air quality background values for the Uinta Basin and NAAQS standards.

**Table 3.1. Regional Ambient Air Quality Background Values**

Pollutant	Averaging Period	Year	Concentration (µg/m <sup>3</sup> )	Applicable NAAQS <sup>1</sup> (µg/m <sup>3</sup> )
NO <sub>2</sub>	1-hour	2009/2010	69.6 <sup>2</sup>	188.0
		2010/2011	52.7 <sup>2</sup>	
		2009/2010	58.3 <sup>3</sup>	
		2010/2011	60.2 <sup>3</sup>	
	Annual	2009/2010	9.0 <sup>2</sup>	100.0
		2010/2011	6.8 <sup>2</sup>	
		2009/2010	7.8 <sup>3</sup>	
		2010/2011	8.1 <sup>3</sup>	
CO	1-hour	2004	6,210	40,000
		2005	6,325	
		2006	6,325	
	8-hour	2004	3,680	10,000
		2005	3,910	
		2006	3,450	
SO <sub>2</sub>	1-hour	2007	21.7	197
		2008	19.7	
		2009	19.0	
	3-hour	2007	16.0	1,300
		2008	16.7	
		2009	10.1	
	24-hour	2007	5.9	6
		2008	-	
		2009	3.9	
	Annual	2007	1.5	6
		2008	1.5	
		2009	0.8	
PM <sub>10</sub>	24-hour	2004	14.0	150
		2005	18.0	
		2006	16.0	
	Annual	2004	5.0	7
		2005	7.0	
		2006	7.0	

Pollutant	Averaging Period	Year	Concentration ( $\mu\text{g}/\text{m}^3$ )	Applicable NAAQS <sup>1</sup> ( $\mu\text{g}/\text{m}^3$ )
PM <sub>2.5</sub>	24-hour	2009/2010	19.5 <sup>2</sup>	35.0
		2010/2011	23.6 <sup>2</sup>	
		2009/2010	16.3 <sup>3</sup>	
		2010/2011	17.8 <sup>3</sup>	
	Annual	2009/2010	7.3 <sup>2</sup>	15.0
		2010/2011	12.3 <sup>2</sup>	
		2009/2010	6.3 <sup>3</sup>	
		2010/2011	9.4 <sup>3</sup>	
Ozone	8-hour	2009/2010	117.0 <sup>2,5</sup>	75 <sup>5</sup>
		2010/2011	116.0 <sup>2,5</sup>	
		2009/2010	98.0 <sup>3,5</sup>	
		2010/2011	100.0 <sup>3,5</sup>	

<sup>1</sup>Source: Environmental Protection Agency (EPA) Air Quality System data archives website, 2010, Utah Department of Air Quality (UDAQ) 2010.

<sup>2</sup>Ouray Monitoring Station Data (EPA AQS Database). 2009/2010 data period = 7/30/09 to 6/30/2010. 2010/2011 period = 7/1/2010 to 6/30/2011.

<sup>3</sup>Redwash Monitoring Station Data (EPA AQS Database). 2009/2010 data period = 7/30/09 to 6/30/2010. 2010/2011 period = 7/1/2010 to 6/30/2011.

<sup>4</sup>Ozone is measured in parts per billion (ppb).

<sup>5</sup>The 24-hour and annual SO<sub>2</sub> NAAQS have been revoked and replaced with the 1-hour standard (75 FR 35520-35603, June 22, 2010).

<sup>6</sup>The annual PM<sub>10</sub> NAAQS of 50  $\mu\text{g}/\text{m}^3$  was revoked by EPA on September 21, 2006. See FR Volume 71, Number 200, October 17, 2006.

Two year-round air quality-monitoring sites were established in summer 2009 near Redwash (southeast of Vernal, Utah) and Ouray (southwest of Vernal). The monitors were certified as Federal Reference Monitors in the 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 exceedances 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 stagnant 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<sub>x</sub> and VOCs), can create intense episodes of ozone. The high ozone numbers did not occur during January through March of 2012 due to a 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 replicate winter ozone formation reliably. This is due to the very low mixing heights associated with the unique meteorology of the ambient conditions. Further research is needed to definitively identify ozone precursor sources that contribute to observed ozone concentrations.

The UDAQ conducted limited monitoring of PM<sub>2.5</sub> in Vernal, Utah, in December 2006. During the 2006-2007 winter season, PM<sub>2.5</sub> levels were higher than the PM<sub>2.5</sub> health standards that became effective in December 2006. The PM<sub>2.5</sub> levels recorded in Vernal were similar to other areas in northern Utah that experience wintertime inversions. The most likely causes of elevated PM<sub>2.5</sub> 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<sub>2.5</sub> monitoring that has been conducted in the vicinity of oil and gas operations in the Uinta Basin by

the Redwash and Ouray monitors beginning in summer 2009 have not recorded any exceedances 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 ambient air quality standards for assessing potential HAP impacts to human health. Refer to Section 3.1 (pages 3-2 through 3-13) in the GNB Final EIS (BLM 2012a) for additional information on air quality conditions relevant to the Project Area.

### **3.1.2.1. 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 National Oceanic and Atmospheric Administration (NOAA) and National Aeronautics and Space Administration (NASA) data, the Earth's average surface temperature has increased approximately 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), 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) (2009) 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 five (5) percent decrease in annual precipitation to decreases as high as 40 percent of annual precipitation. Refer to Section 3.1.3.7 (pages 3-12 through 3-13) in the GNB Final EIS (BLM 2012a) for more information on climate change.

## **3.2. Invasive Plants/Noxious Weeds, Soils, and Vegetation**

### **3.2.1. Vegetation and Invasive Plants/Noxious Weeds**

Vegetation in the Project Area vicinity consists predominantly of a mixed desert shrub community. Table 3.2, "Plant Species Observed in the Project Area" (p. 33) identifies common plant species which occur within or near the Project Area. Refer to Section 3.4 for additional information on federal, state, and local listed plant species that occur within the Project Area.

**Table 3.2. Plant Species Observed in the Project Area**

Scientific Name	Common Name
<b><i>Shrubs</i></b>	
<i>Atriplex canescens</i>	Four-winged saltbush
<i>Atriplex confertifolia</i>	Shadscale
<i>Atriplex corrugata</i>	Mat saltbush
<i>Atriplex gardneri</i>	Gardner's saltbush
<i>Artemisia</i> spp.	Sagebrush species
<i>Ceratoides lanata</i>	Winterfat
<i>Chrysothamnus</i> spp.	Rabbitbrush species
<i>Ephedra torreyana</i>	Mormon tea
<i>Sarcobatus vermiculatus</i>	Greasewood
<i>Tetradymia spinosa</i>	Horsebrush
<b><i>Cacti</i></b>	
<i>Opuntia</i> sp.	Prickly pear cactus
<i>Pediocactus simpsonii</i>	Mountain Ball Cactus
<b><i>Grasses and Forbs</i></b>	
<i>Agropyron dasystachyum</i> var. <i>dasystachyum</i>	Thickspike wheatgrass
<i>Allium textile</i>	Textile onion
<i>Arenaria</i> spp.	Sandwort
<i>Cleome lutea</i>	Yellow beeplant
<i>Cymopterus</i> spp.	Spring parsley
<i>Eriogonum inflatum</i>	Desert trumpet
<i>Descurainia pinnata</i>	Tansy mustard
<i>Hilaria jamesii</i>	Galleta
<i>Phacelia crenulata</i>	Scorpionweed
<i>Phlox</i> spp.	Phlox
<i>Sphaeralcea</i> spp.	Globemallow
<i>Sporobolus airoides</i>	Alkali sacaton
<i>Stipa hymenoides</i>	Indian ricegrass
<b><i>Invasive Species</i></b>	
<i>Halogeton glomeratus</i>	Halogeton
<i>Bromus tectorum</i>	Cheatgrass
<i>Salsola kali</i>	Russian Thistle
Source: Grasslands Consulting 2012 and 2013a	

Refer to Section 3.11 (pages 3-78 through 3-87) in the GNB Final EIS (BLM 2012a) for more information on vegetation and invasive/noxious weed species relevant to the Project Area.

### 3.2.2. Soils

The Project Area is underlain by sedimentary deposits of the Uinta Formation at elevations ranging from approximately 4,900 to 5,180 feet. Soils in the area consist predominantly of stony loam and clay loam. The terrain is rolling hills, and the proposed wells and associated infrastructure would be located primarily on rolling hills (BLM 2012d). The Project Area is located primarily in areas with high constraint soils, as identified in the GNB Final EIS (BLM 2012a), which pose the greatest construction and reclamation constraints compared to other soil types characterized in the GNB Final EIS (BLM 2012a).

### 3.3. Paleontology

Fossils on federal lands are protected under provisions of FLPMA, as amended, 43 United States Code (USC) 1737(b), PL 94-579; PL 111-011, Omnibus Public Land Management Act of 2009, Subsection D, Section 6302; and 43 CFR 3802 and 3809 (BLM 2012a). The BLM uses a Potential Fossil Yield Classification (PFYC) system of geologic units with respect to their potential for the production of scientifically important fossils, which ranges from PFYC 1 (lowest fossil potential) to PFYC 5 (highest fossil potential).

The Project Area is located in the Uinta Formation of the Middle Eocene Age, which has a PFYC of 5 (very high). The Uinta formation is composed of exposed bedrock and noted as a source of scientifically important vertebrate fossils (BLM 2012a).

Paleontological resource assessment surveys were conducted by SWCA for all new well pads and all well pad expansions in the Project Area in September 2012 and May 2013 (SWCA, 2012; SWCA 2013). High fossil potential areas were discovered in association with well pads NBU 922-34H and NBU 922-34H4, and their associated pipelines in Section 34. Several scientifically important fossils and locations of high fossil potential were also found within Section 35, primarily in association with well pads NBU 922-35A, NBU 922-35F, NBU 922-35G, NBU 922-35H, NBU 922-35I, and NBU 922-35K, and their associated infrastructure, including the including the 16-inch buried pipeline. Refer to Section 3.5 (pages 3-34 through 3-37) of the GNB Final EIS (BLM 2012a) for additional information on paleontological resources in the GNBPA.

### 3.4. Plants - Threatened, Endangered, Proposed, or Candidate

Based on Project Area surveys conducted in September 2012, May 2013 and September 2013, there is only one threatened plant species, the Uinta Basin hookless cactus (*Sclerocactus wetlandicus*), located in the Project Area (Grasslands Consulting 2012, 2013a and 2013b). No other federally listed plant species were identified during any of the Project Area surveys.

The BLM conducted consultation with the USFWS on threatened and endangered plant species, including threatened *Sclerocactus ssp.* potentially impacted by this proposed action during preparation of the GNB EIS Final Biological Opinion, (Appendix D of the GNB ROD (BLM 2012b), which describes USFWS and BLM consultation, status and description of species and critical habitat, potential effects, surveys and monitoring, ACEPMs, and other information associated with threatened, endangered, and candidate plant species. Additional information on Uinta Basin hookless cactus can also be found in the tiered document sections 3.11.3.3 (pages 3-85 through 3-88) of the GNB Final EIS (BLM 2012a).

#### 3.4.1. Uinta Basin Hookless Cactus (*Sclerocactus wetlandicus*)

Uinta Basin hookless cactus is a perennial herb and a member of the cactus family endemic to the Uinta Basin. Preferred habitat occurs on river benches, valley slopes, and rolling hills consisting of xeric, fine textured, clay soils, derived from the Duchesne River, Green River, Mancos, and Uinta formations, overlain with a pavement of large, smooth, rounded cobble (BLM 2012a).

The entire Project Area is located within the USFWS 2013 potential habitat polygon for Uinta Basin hookless cactus (Figure 3.1, "Uinta Basin Hookless Cactus Habitat in the Project Area" (p. 38)). The BLM and USFWS adhered to 2007 RMP 300-foot (surface-disturbance)

protective buffers for known locations of the Uinta Basin hookless cactus as a part of several mitigation measures in the GNB Final EIS (BLM 2012a). These protective buffers were designed to reduce potential impacts on cactus populations from oil and gas developments, but they do not prohibit surface disturbing activities. For instances where buffer avoidance cannot be achieved, KMG would notify the USFWS and coordinate with BLM as needed to mitigate and avoid potential impacts on the Uinta Basin hookless cactus. Additionally, the Project Area contains locations of Proposed Level 2 cactus core conservation areas. Level 2 cactus core conservation areas are locations identified in the GNB Final EIS that contain dense cactus concentrations, but allow surface disturbances on up to five percent of identified cactus habitat (BLM 2012a). Level 2 cactus core conservation areas are an approximately 3,280-foot (1,000-meter) buffer around existing plants, incorporate less-dense cactus areas, and allow for a direct disturbance of up to 5 percent of the area (BLM 2012b). All of the proposed project components in Section 922-34 and the proposed project pipelines in the western portion of Section 922-35 are located within Proposed Level 2 cactus core conservation areas. Multiple occurrences of Uinta Basin hookless cactus were observed and documented in the Project Area during the May 2013 and September 2013 plant surveys, both inside and outside of Proposed Level 2 cactus core conservation areas. Table 3.3, "Project Area Uinta Basin Hookless Cactus Survey Results" (p. 35) provides the results of the Uinta Basin hookless cactus surveys and identifies the closest identified individuals near the proposed well pads.

**Table 3.3. Project Area Uinta Basin Hookless Cactus Survey Results**

Location	Survey Dates	Survey Acreage	<i>S. wetlandicus</i> in Survey Area?	Closest Known <i>S. wetlandicus</i> individual	<i>Y. sterilis</i> in Survey Area?	Noxious Weeds in Survey Area?
NBU 922-34E	8/25, 8/28, 8/29, 9/11, 9/12	115	Yes	85 feet north of the proposed pipeline	No	Yes. Multiple patches of saltcedar, including one patch in proposed disturbance.
NBU 922-34F	8/28, 8/29, 9/10, 9/11	123	Yes	85 feet north of the proposed pipeline	No	Yes. Saltcedar within survey area, but not within proposed disturbance.
NBU 922-34H	9/19, 9/20, 9/21	144	Yes	65 feet west of the proposed well pad	No	Yes. Saltcedar within survey area, but not within proposed disturbance.
NBU 922-34H4	9/19, 9/20, 9/21	129	None observed. One historic point present.	0.1 miles north of the proposed well pad	No	Yes. Saltcedar within survey area, but not within proposed disturbance.

Location	Survey Dates	Survey Acreage	<i>S. wetlandicus</i> in Survey Area?	Closest Known <i>S. wetlandicus</i> individual	<i>Y. sterilis</i> in Survey Area?	Noxious Weeds in Survey Area?
NBU 922-34L	8/28, 8/29, 9/10, 9/11, 9/12, 9/13	112	Yes	85 feet north of the proposed pipeline	No	Yes. Multiple patches of saltcedar, including one patch in proposed disturbance.
NBU 922-34M	8/28, 8/29, 9/11, 9/12, 9/13	130	Yes	85 feet north of the proposed pipeline	No	Yes. Saltcedar within survey area, but not within proposed disturbance.
NBU 922-34M4	8/28, 8/29	51	No	0.15 miles south of the proposed road	No	No
NBU 922-34 Liquid and ACTS Pipelines	8/28, 8/29, 9/10, 9/11, 9/12, 9/13, 9/18, 9/19, 9/20, 9/21	303	Yes	85 feet north of the proposed pipeline	No	Yes. Saltcedar within survey area, but not within proposed disturbance.
NBU 922-35A	9/20, 9/21, 10/30	37	No	>0.15 miles	No	Yes. Multiple patches of saltcedar, including one near the edge of the proposed well pad.
NBU 922-35F	9/20, 10/31, 4/28	35	No	>0.15 miles	No	Yes. Saltcedar within survey area, but not within proposed disturbance.
NBU 922-35G	9/20, 10/31, 4/28	32	No	>0.15 miles	No	Yes. Saltcedar within survey area, but not within proposed disturbance.
NBU 922-35H	9/20, 10/30, 10/31	42	No	>0.15 miles	No	Yes. Saltcedar within survey area, but not within proposed disturbance.
NBU 922-35I	9/20, 10/31, 11/1, 11/2, 4/28	112	No	>0.15 miles	No	Yes. Multiple patches of saltcedar, including one near the edge of the proposed well pad.

Location	Survey Dates	Survey Acreage	<i>S. wetlandicus</i> in Survey Area?	Closest Known <i>S. wetlandicus</i> individual	<i>Y. sterilis</i> in Survey Area?	Noxious Weeds in Survey Area?
NBU 922-35K	9/20, 10/31, 11/1, 4/28	38	No	>0.15 miles	No	Yes. Saltcedar within survey area, but not within proposed disturbance.
NBU 922-35N	9/20, 10/31, 11/1, 11/2, 4/28	59	Yes. Closest is 235' from well pad	>0.15 miles	No	Yes. Saltcedar within survey area, but not within proposed disturbance.
NBU 922-35O	9/20, 10/31, 11/1, 11/2, 4/28	79	Yes. Closest is 30' from well pad	Yes. Closest on same side of road is 60' from pipeline	No	Yes. Saltcedar within survey area, but not within proposed disturbance.
NBU 922-35 Liquid and CTS Pipelines	9/20, 9/21, 10/30, 10/31, 11/1, 11/2, 4/28	181	No	Yes. Closest to ACTS: 15'. Closest to liquid on same side of road is 60'.	No	Yes. Saltcedar within survey area, but not within proposed disturbance.

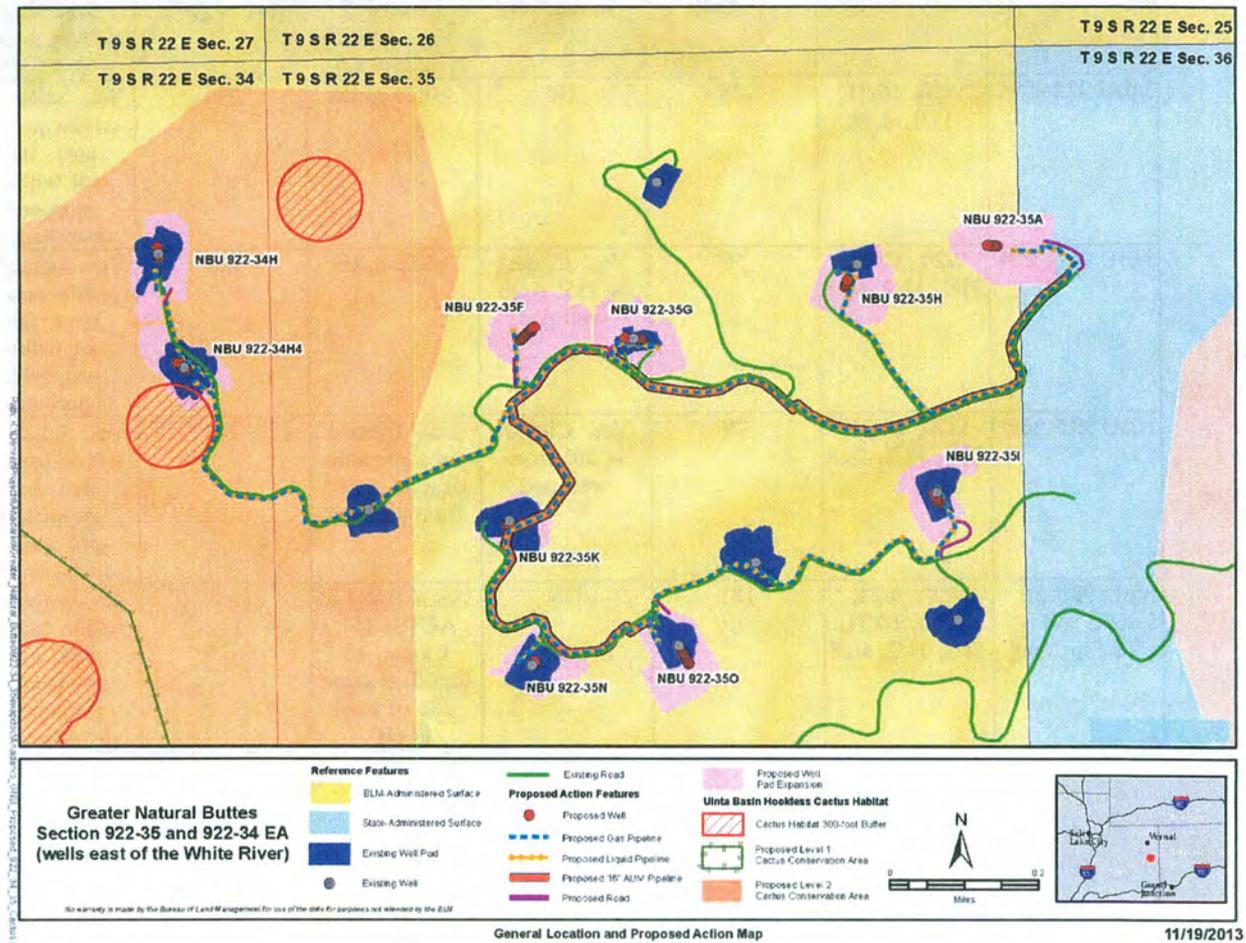


Figure 3.1. Uinta Basin Hookless Cactus Habitat in the Project Area

## 3.5. Wildlife

### 3.5.1. Non-USFWS Designated Wildlife

Wildlife species and habitats occurring within the Project Area are typical of the intermontane zone of the East Tlavaputs Plateau. This area has highly varied topography of sand/gravel washes, dry upland benches, rocky cliffs, and outcroppings (BLM 2012a). Wildlife habitat within the Project Area consists primarily of salt-desert shrub and sagebrush communities with interspersed grasslands. Pronghorn and mule deer are the most prominent big games species in the Project Area, while elk, bighorn sheep, and bison occurrence is infrequent (BLM 2012a). Refer to Section 3.15.1 (pages 3-118 through 3-126) of the GNB Final EIS (BLM 2012a) and Section 3.21 in the BLM Vernal Proposed RMP and Final EIS (BLM 2008b) for a description of non-USFWS designated wildlife species that have the potential to occur in the area.

Proposed well pads 922-34H, 922-34H4, 922-35N, and 922-35O and associated roads and pipelines in the western portion of the Project Area overlap year-long crucial habitat for mule

deer. Crucial habitat is essentially the habitat needed to maintain the core population of a species within a certain region/area. Degradation or unavailability of crucial habitat could lead to declines in carrying capacity and/or numbers of wildlife species in question (BLM 2012a). There is no additional wildlife or fish designated habitats in the Project Area.

### 3.5.2. Migratory Birds (including raptors)

The Migratory Bird Treaty Act (MBTA), and Bald and Golden Eagle Protection Act were implemented for the protection of migratory birds and eagles. Unless permitted by regulations, the MBTA makes it unlawful to pursue, hunt, kill, capture, possess, buy, sell, purchase, or barter any migratory bird, including the feathers or other parts, nests, eggs, or migratory bird products. In addition to the MBTA, Executive Order 13186 sets forth the responsibilities of federal agencies to further implement the provisions of the MBTA by integrating bird conservation principles and practices into agency activities and by ensuring that federal actions evaluate the effects of actions and agency plans on migratory birds. Pursuant to Executive Order 13186, a Memorandum of Understanding (MOU) (BLM MOU WO-230-2010-04[BLM 2010]) between the BLM and USFWS outlined a collaborative approach to promote the conservation of migratory bird populations and avoid or minimize adverse impacts on migratory birds in coordination with state, tribal, and local governments. Based on recent KMG Project Area geographic information system (GIS) information, there is one known golden eagle (*Aquila chrysaetos*) nest located within 0.5 mile of proposed surface-disturbing activities.

Migratory bird species commonly associated with the sagebrush-steppe community within the Project Area include the mountain bluebird (*Sialia currocoides*), brewer's sparrow (*Spizella breweri*), sage sparrow (*Amphispiza belli*), sage thrasher (*Oreoscoptes montanus*), gray vireo (*Vireo vicinior*), gray flycatcher (*Empidonax wrightii*), green-tailed towhee (*Pipilo chlorurus*), horned lark (*Eremophila alpestris*), loggerhead shrike (*Lanius ludovicianus*), western kingbird (*Tyrannus verticalis*), northern mockingbird (*Mimus polyglottos*), vesper sparrow (*Pooecetes gramineus*), and western meadowlark (*Sturnella neglecta*) (Parrish 2002).

Common raptor species that breed in the region include the golden eagle, ferruginous hawk (*Buteo regalis*), red-tailed hawk, Cooper's hawk (*Accipiter cooperii*), sharp-shinned hawk (*Accipiter striatus*), northern harrier (*Circus cyaneus*), prairie falcon, American kestrel (*Falco sparverius*), great-horned owl, burrowing owl, and long-eared owl (*Strix otus*) (BLM 2008b).

Refer to Section 3.15.1.2 (pages 3-125 through 3-134) of the GNB Final EIS (BLM 2012a) for additional information on other migratory birds and raptors that may inhabit the region.

#### 3.5.2.1. Golden Eagle (*Aquila chrysaetos*)

The golden eagle is considered a permanent resident of Utah with primary habitat typically found in open country, prairies, shrub-lands, canyons/cliffs, mountainous areas, open wooded country, and barren areas, especially in hilly or mountainous regions. In addition to the MBTA, the golden eagle is also protected under the Bald and Golden Eagle Protection Act of 1940 (16 U.S.C. 668-668c). Golden eagle nests are typically found on rock ledges on cliffs or in large trees. Pairs may have several alternate nests used in different years, or may use the same nest in consecutive years.

Based on GIS mapping, there is one golden eagle nest located directly adjacent to the Project Area, within 0.5 mile of proposed surface-disturbing activities in the SWSW quarter quarter

of Township 9S, Range 22E, Section 36. In accordance with the BLM Vernal RMP ROD (BLM 2008a), all raptor nests have an associated protective seasonal and spatial buffer which limit surface-disturbing activities, including activities such as pipelines and construction activities based on species-specific breeding requirements. Per the BLM Vernal RMP ROD, surface-disturbing activities occurring outside of the seasonal buffer, but within the spatial buffer of an unoccupied nest would be allowed during a three-year nest monitoring period, provided the activity would not cause the nest site to become unsuitable for future nesting as determined by a BLM wildlife biologist (BLM 2008a). If the nest were determined to be occupied by golden eagles, the seasonal protective buffer would limit surface-disturbing activities within 0.5 mile of nest locations between January 1 and August 31 (BLM 2008a). The seasonal protective buffer associated with the nest location overlaps locations of proposed Project Area activities and buried pipeline locations for proposed well pad locations NBU 922-35I and NBU 922-35A. Pre-construction raptor nest surveys will be required to confirm nest occupancy and the need for seasonal protection. The BLM can grant a surface disturbance exception within an established buffer area if the raptor nest is determined not to be occupied.

Refer to Section 3.15.1.2 (pages 3-125 to 3-126) of the GNB Final EIS (BLM 2012a) for additional information on golden eagles.

### **3.5.3. Wildlife - Threatened, Endangered, Proposed, or Candidate**

Definitions for threatened, endangered, candidate, and special status species designations are located in Section 3.4, *Plants – Threatened, Endangered, Proposed, or Candidate*. The BLM conducted consultation with the USFWS on threatened and endangered animal species during preparation of the GNB Final EIS. Refer to Appendix D of the GNB ROD (BLM 2012b) for the Final Biological Opinion, which describes USFWS and BLM consultation, status and description of species and critical habitat, potential effects, surveys and monitoring, ACEPMs, and other information associated with threatened, endangered, and candidate animal species.

#### **3.5.3.1. Colorado River Fish Species**

The BLM has identified seven special status fish species that are historically associated with the Upper Colorado River Basin and its tributaries. Special status fish species include those fish species federally listed as threatened, endangered, proposed and/or candidate, as well as BLM sensitive species and State of Utah species of concern. Federal and state listed species include the Colorado pikeminnow (*Ptychocheilus lucius*), humpback chub (*Gila cypha*), bonytail (*Gila elegans*), and razorback sucker (*Xyrauchen texanus*). These fish have experienced severe population declines due to flow alterations, habitat loss or alteration, and introduction of non-native fish species. The flannelmouth sucker (*Catostomus latipinnis*), roundtail chub (*Gila robusta*) and bluehead sucker (*Catostomus discobolus*) are state sensitive species due to declining population numbers and distribution, and they receive special management under a conservation agreement in order to preclude the need for a federal listing. The Project Area does not occur within critical habitat for the Colorado River Basin listed fish species. Refer to Section 3.15.2.2 (pages 3-134 through 3-136) of the GNB Final EIS (BLM 2012a) for more information on the special status fish species.

## **Chapter 4. Environmental Impacts**

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The analysis in this chapter is tiered to the GNB ROD (BLM 2012b), incorporates by reference the analysis in the GNB Final EIS (BLM 2012a), and provides additional site-specific analysis and information, where appropriate, to inform decision-making on this specific development proposal. Environmental impacts are only discussed for resources identified as “PI” (present with potential for relevant impact that need to be analyzed in detail in the EA) in the ID Team Checklist (Appendix A).

## **4.1. Proposed Action Environmental Impacts**

This section analyzes the impacts of the Proposed Action on the potentially impacted resources described in the affected environment chapter (Chapter 3).

### **4.1.1. Air Quality and Greenhouse Gas Emissions**

The BLM conducted a comprehensive air quality analysis as part of the GNB Final EIS (BLM 2012a). The air quality analysis incorporated the planned GNBPA development and a prepared set of emissions data for project modeling, including project development alternatives and reasonably foreseeable development. Those emissions data were incorporated into the modeling system for the project base year of 2006, and used to predict potential impacts on visibility, acid deposition, and air quality, including ozone. The analysis identified potential impacts on resources and characterizes the major source or source groups that contribute to those impacts. Under the selected alternative in the GNB ROD (BLM 2012b) infill development in the GNBPA is not expected to result in exceedances of NAAQS. Refer to Section 4.1 (pages 4-2 through 4-24) in the GNB Final EIS (BLM 2012a) for more information on potential air quality impacts.

This Proposed Action is considered a minor air pollution 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, “Proposed Action First Year Emissions (tons/year)” (p. 44). 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.

Well development includes NO<sub>x</sub>, SO<sub>2</sub>, and CO tailpipe emissions from earth-moving equipment, vehicle traffic, drilling, and completion activities. Small amounts of HAPs are emitted by construction equipment. 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<sub>x</sub> and CO emissions, with lesser amounts of SO<sub>2</sub>. These emissions would be short-term during the drilling and completion phases.

During well production, continuous NO<sub>x</sub>, 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. The primary sources of HAPs are from oil storage tanks. Road dust (PM<sub>10</sub> and PM<sub>2.5</sub>) would also be produced by vehicles servicing the wells.

**Table 4.1. Proposed Action First Year Emissions (tons/year)**

Pollutant	Development <sup>1,2</sup>	Production <sup>1</sup>	Total <sup>1,3</sup>
NO <sub>x</sub>	3.8	10.2	14
CO	2.2	9.35	11.55
VOC	0.1	425	425.1
SO <sub>2</sub>	0.005	0.3655	0.3705
PM <sub>10</sub>	1.7	9.35	11.05
PM <sub>2.5</sub>	0.4	2.125	2.525
Benzene	0.0022	3.74	3.7422
Toluene	0.0016	8.755	8.7566
Ethylbenzene	0.00034	0.425	0.42534
Xylene	0.0011	6.46	6.4611
n-Hexane	0.00017	12.325	12.32517
Formaldehyde	0.013	7.34E-03	2.03E-02
CO Carbon monoxide			
NO <sub>x</sub> Oxides of Nitrogen			
PM <sub>2.5</sub> Particulate Matter less than 2.5 microns in diameter			
PM <sub>10</sub> Particulate Matter less than 10 microns in diameter			
SO <sub>2</sub> Sulfur dioxide			
VOC Volatile Organic Compound			
<sup>1</sup> Emissions include 85 producing wells and associated operations traffic during the year in which the project is developed.			
<sup>2</sup> Development emissions would likely only occur during the first year while wells and other infrastructure are being developed.			
<sup>3</sup> Total emissions after the first year would be substantially lower following completion of development.			

#### 4.1.1.1. Greenhouse Gases

The assessment of greenhouse gas emissions and climate change remains in its earliest stages of formulation. Applicable EPA rules do not require any controls and have yet to establish any emission limits related to GHG emissions or impacts. The lack of scientific models that predict climate change on a regional or local level prohibits the quantification of potential future impacts of decisions made at the local level, particularly for small-scale projects such as the Proposed Action. Drilling and development activities from the Proposed Action are anticipated to release a negligible amount of greenhouse gases into the local airshed.

#### *Mitigation Measures for Air Quality and Greenhouse Gas Emissions*

This EA is tiered to and incorporates the COAs and mitigation measures included in Appendix B of the GNB ROD (BLM 2012b). Refer to Section 2.2.10 (*Applicant Committed Environmental Protection Measures*) of this EA for COAs that are specific to well pads and development in the Project Area. No additional mitigation measures were identified for air quality during preparation of this EA.

## **4.1.2. Invasive Plants/Noxious Weeds, Soils, and Vegetation**

### **4.1.2.1. Plant Species and Invasive Plants/Noxious Weed Species Excluding U.S. Fish and Wildlife Designated Species**

The Proposed Action would disturb approximately 0.15 acres of vegetation habitat, primarily in mixed desert shrub communities. Direct impacts to vegetation would be possible from cross country driving along the pipeline route and degradation of habitat through soil compaction. Indirect impacts to vegetation resources may include the invasion and establishment of introduced, undesired plant species. The severity of these invasions would depend on the success of reclamation and revegetation and the degree and success of noxious weed control efforts. Refer to Section 4.11.3 (page 4-114) of the GNB Final EIS (BLM 2012a) for more information on potential impacts to vegetation.

To minimize potential impacts to vegetation, KMG has committed to the COAs for Vegetation, Vegetation: Weed Management, and Reclamation Plan from the GNB ROD Appendix B, Table B-2 (BLM 2012b), and the Green River District Reclamation Guidelines (BLM 2011).

#### **Mitigation Measures for Vegetation and Invasive Plants/Noxious Weeds**

This EA is tiered to and incorporates the COAs and mitigation measures included in Appendix B of the GNB ROD (BLM 2012b). No additional mitigation measures were identified for vegetation during preparation of this EA.

### **4.1.2.2. Soils**

The Proposed Action would disturb approximately 58.46 acres of soils, primarily in high constraint soils. High constraint soils pose limitations to successful implementation of reclamation measures and long-term maintenance of protective and productive vegetative cover.

Potential direct impacts to 58.46 acres of soil include mixing of soil horizons, soil compaction, short-term loss of topsoil and site productivity, contamination of soils with petroleum products, loss of soil/topsoil through wind and water erosion, and vegetation loss. Loss of soil/topsoil in disturbed areas would increase competition by annual weed species with native species. Annual weed species are adapted to disturbed conditions, and have less stringent moisture and soil nutrient requirements than do perennial native species. Refer to Section 4.9.3 (pages 4-93 through 4-94) of the GNB Final EIS (BLM 2012a) for more information on potential impacts to soils.

To minimize potential impacts to soils, KMG has committed to the COAs for Soils and Reclamation Plan from the GNB ROD Appendix B, Table B-2 (BLM 2012b); and the Green River District Reclamation Guidelines (BLM 2011).

#### **Mitigation Measures for Soils**

This EA is tiered to and incorporates the COAs and mitigation measures included in Appendix B of the GNB ROD (BLM 2012b). No additional mitigation measures were identified for soils during preparation of this EA.

### 4.1.3. Paleontology

The Proposed Action would result in approximately 58.46 acres of surface disturbance. All proposed project activities would occur on the Uinta Formation of the Middle Eocene Age, which has a PFYC of 5 (very high). Based on the project location within a PFYC 5 area and presence of high fossil potential areas, fossil locations and occurrences may be encountered during project related construction. Proposed project activities are located within areas identified as high fossil potential areas (SWCA 2013). Therefore, proposed project activities may result in direct impacts to existing, undiscovered paleontological resources. Direct impacts to paleontological resources are primarily associated with loss of vertebrate fossils from surface-disturbing activities, illegal collecting, and potential vandalism. To prevent any adverse impacts to paleontological resources during this project, a BLM-permitted paleontologist must monitor any ground disturbing activities. Refer to Section 4.5 (4-38 through 4-39) in the GNB Final EIS (BLM 2012a) for additional information on potential impacts to paleontological resources.

To minimize potential impacts to paleontological resources, KMG has committed to the COAs for Paleontological Resources from the GNB ROD Appendix B, Table B-2 (BLM 2012b).

#### Mitigation Measures for Paleontology

- This EA is tiered to and incorporates the COAs and mitigation measures included in Appendix B of the GNB ROD (BLM 2012b).
- A paleontological monitor is required during any ground disturbing activities.
- If, during operations, any paleontological resources as described in BLM H-8270-1 are discovered, all operations which would affect such sites will be suspended and the discovery reported promptly to the surface management agency.

### 4.1.4. Plants – Threatened, Endangered, Proposed, or Candidate

#### 4.1.4.1. Uinta Basin Hookless Cactus

The Proposed Action would disturb approximately 58.46 acres (53.93 acres on BLM-administered land and 4.53 acres on state land) within the USFWS 2012 potential habitat polygon for Uinta Basin hookless cactus (Figure 3.1, “Uinta Basin Hookless Cactus Habitat in the Project Area” (p. 38)). Approximately 8.12 acres of disturbance would occur in Proposed Level 2 cactus core conservation Areas (Figure 3.1, “Uinta Basin Hookless Cactus Habitat in the Project Area” (p. 38)) as a result of proposed project activities. As indicated in Section 3.4, multiple occurrences of the Uinta Basin hookless cactus were observed and documented in the Project Area during 2013 onsite surveys, both inside and outside of Proposed Level 2 cactus core conservation areas (Grasslands Consulting 2013a and 2013b). All of Sections 922-34 and the western portion of Section 922-35 are located within Proposed Level 2 cactus core conservation areas (Figure 3.1, “Uinta Basin Hookless Cactus Habitat in the Project Area” (p. 38)). KMG and the BLM coordinated with USFWS during the APD process for approval of surface disturbances within established cactus buffers and determination of appropriate mitigation measures in accordance with the GNB ROD (BLM 2012b). Direct impacts to Uinta Basin hookless cactus from the Proposed Action would primarily be associated with habitat degradation and potential loss of occupied habitat or individuals. Indirect impacts could include habitat fragmentation,

increased erosion and stormwater runoff, and invasion of invasive or noxious vegetation species. The severity of noxious vegetation invasions would depend on the success of reclamation and revegetation and the degree and success of noxious weed control efforts.

Due to the potential for project-related direct and indirect effects, implementation of the Proposed Action “*may affect, is likely to adversely affect*” the Uinta Basin hookless cactus. However, as indicated in Biological Opinion for the GNB ROD (BLM 2012b), project-related impacts are not likely to jeopardize the continued existence of Uinta Basin hookless cactus. Refer to Section 4.11.2 (page 4-109 to 4-110) of the GNB Final EIS (BLM 2012a) and Section IV (pages 22 to 25) of Appendix D of the GNB ROD (BLM 2012b) for more information on potential impacts to Uinta Basin hookless cactus in the GNBPA.

To minimize potential impacts to Uinta Basin hookless cactus, KMG has committed to the COAs for Vegetation: *Sclerocactus wetlandicus* and Reclamation Plan from the GNB ROD Appendix B, Table B-2 (BLM 2012b), and the Green River District Reclamation Guidelines (BLM 2011).

#### **Mitigation Measures for Plants - Threatened, Endangered, Proposed, or Candidate**

This EA is tiered to and incorporates the COAs and mitigation measures included in Appendix B of the GNB ROD (BLM 2012b). Refer to Section 2.2.10 (*Applicant Committed Environmental Protection Measures*) of this EA for COAs that are specific to well pads and development in the Project Area. No additional mitigation measures were identified for threatened, endangered, candidate, and special status plant species during preparation of this EA.

### **4.1.5. Wildlife**

#### **4.1.5.1. Non-USFWS Designated Wildlife**

Proposed well pads 922-34H, 922-34H4, 922-35N, and 922-35O and associated roads and pipelines in the western portion of the Project Area overlap year-long crucial habitat for mule deer. The Proposed Action would result in approximately 13.4 acres of new surface disturbance in the year-long crucial habitat for mule deer. Degradation or unavailability of crucial habitat could lead to declines in carrying capacity and/or numbers of mule deer in the area (BLM 2012a).

Direct impacts to non-USFWS designated wildlife from the Proposed Action would include reduction or degradation of available forage for mule deer in the year-long crucial habitat and increase potential for wildlife-vehicle collisions. Under the Proposed Action, indirect impacts non-USFWS designated wildlife in the Project Area would include increased habitat fragmentation from increased noise levels and human presence, potential establishment of noxious and invasive weed species that reduce habitat quality, displacement of big game species, and potential for dust effects from unpaved road traffic (BLM 2012a). Refer to Section 4.15.3 (4-169 through 4-170) in the GNB Final EIS (BLM 2012a) for additional information on potential impacts to non-USFWS designated wildlife species.

#### ***Mitigation Measures for Non-USFWS Designated Wildlife***

This EA is tiered to and incorporates the COAs and mitigation measures included in Appendix B of the GNB ROD (BLM 2012b). Refer to Section 2.2.10 (*Applicant Committed Environmental Protection Measures*) of this EA for COAs that are specific to well pads and development in the

Project Area. No additional mitigation measures were identified for non-USFWS designated wildlife species during preparation of this EA.

#### **4.1.6. Wildlife: Migratory Birds (including raptors)**

As identified in Chapter 3, the Project Area contains no known raptor nests, but has potential foraging and other potential nesting habitats for other migratory birds. Potential effects of the Proposed Action on avian species include 1) indirect disturbance from human activity (including harassment, displacement, and noise), and 2) increased direct impacts (including poaching, collisions with vehicles).

Impacts to migratory birds within the Project Area would also be dependent upon the time when project activities would occur. If these activities occur in the late fall, most of the species would have left the area during winter migration. If construction activities were to occur during the spring or summer months it could cause birds to move into other adjacent habitats or into habitats where inter-specific and intra-specific competition between species may increase. Noise disturbance associated with project activities would be considered temporary and is anticipated to occur during typical working hours.

##### **Mitigation Measures for Migratory Birds (including raptors)**

No additional mitigation measures were identified for migratory birds during preparation of this EA.

#### **4.1.7. Wildlife – Threatened, Endangered, Proposed, or Candidate**

##### ***Colorado River Fish Species***

The Proposed Action would result in up to 120.61 acre-feet of water depletion from removal of water from the Upper Colorado River Drainage System for dust abatement, construction, and drilling operations. Water depletions reduce the ability of the Upper Colorado River Basin to create and maintain the physical habitat (areas inhabited or potentially habitable to special status fish for use of spawning, development of fish larvae, feeding, or serving as corridors between these areas) and the biological environment for the Colorado River Endangered Fish Species. Refer to Section 4.15.2.2 (page 4-166) in the GNB Final EIS (BLM 2012a) and the Final Biological Opinion in the GNB ROD (BLM 2012b) for additional information on water depletions and potential impacts to special status fish species. Therefore, the Proposed Action “*may affect, is likely to adversely affect*” the endangered Colorado pikeminnow, humpback chub, bonytail, and razorback sucker, as described in the GNB Final EIS (BLM 2012a). The Proposed Action may also affect individuals of bluehead sucker, roundtail chub, and flannelmouth sucker, but it would not result in a trend toward the listing of the species. The Proposed Action is within the scope of the Programmatic Section 7 consultation that was completed and documented in Final Biological Opinion (Appendix D) of the GNB ROD (BLM 2012b).

##### ***Mitigation Measures for Colorado River Fish Species***

This EA is tiered to and incorporates the COAs and mitigation measures included in Appendix B of the GNB ROD (BLM 2012b). Refer to Section 2.2.10 (*Applicant Committed Environmental Protection Measures*) of this EA for COAs that are specific to well pads and development in the

Project Area. No additional mitigation measures were identified for threatened, endangered, candidate, and special status fish and wildlife species during preparation of this EA.

## **4.2. No Action Alternative Environmental Impacts**

Under the No Action Alternative, there would be no impacts from the Proposed Action as the proposed development would be denied. Under the No Action Alternative, currently approved oil and gas development and other activities in the Project Area would continue. Development of 12 existing wells and associated infrastructure in the Project Area has resulted in approximately 53.80 acres of surface disturbance. Refer to Table 2.1, “Proposed Action Development and Surface Disturbance” (p. 9) for additional information on existing wells and surface disturbance in the Project Area and associated surface disturbance.

### **4.2.1. Air Quality and Greenhouse Gas Emissions**

Under the No Action Alternative, KMG would not develop the proposed gas wells or develop the associated pipelines and infrastructure. The 12 existing wells in the Project Area would continue to produce emissions until they are plugged. Refer to Section 4.1.1 (pages 4-6 through 4-10) in the GNB Final EIS (BLM 2012a) for additional information on potential air quality impacts under the No Action Alternative.

### **4.2.2. Invasive Plants/Noxious Weeds, Soils, and Vegetation**

Under the No Action Alternative, there would be no direct disturbance or indirect effects to soil and vegetation from surface-disturbing activities associated with the Proposed Action. Refer to Section 4.9.1 (pages 4–89 through 4–91) and Section 4.11.1 (pages 4–100 through 4–104) in the GNB Final EIS (BLM 2012a) for more information on soils and vegetation impacts under the No Action Alternative.

### **4.2.3. Paleontology**

Under the No Action Alternative, there would be no direct or indirect disturbance to paleontological resources from surface-disturbing activities associated with the Proposed Action. Refer to Section 4.5.1 (page 4-138) of the GNB Final EIS (BLM 2012a) for more information on impacts to paleontological resources under the No Action Alternative.

### **4.2.4. Plants — Threatened, Endangered, Proposed or Candidate**

#### ***Uinta Basin Hookless Cactus***

Development of 12 existing wells in the Project Area has resulted in approximately 53.80 acres of surface disturbance (Table 2.1, “Proposed Action Development and Surface Disturbance” (p. 9)) resulting in direct and indirect impacts to Uinta Basin hookless cactus, similar to those effects described above for the Proposed Action. Under the No Action Alternative, there would be no direct disturbance or indirect effects to this species from surface-disturbing activities associated with the Proposed Action. Refer to Section 4.11.1 (pages 4-100 through 4-104) in the GNB Final EIS (BLM 2012a) for more information on impacts to the Uinta Basin hookless cactus under the No Action Alternative.

## **4.2.5. Wildlife**

### **4.2.5.1. Non-USFWS Designated Wildlife**

Development of 12 existing wells in the Project Area has resulted in approximately 53.80 acres of existing surface disturbance (Table 2.1, “Proposed Action Development and Surface Disturbance” (p. 9)) resulting in direct and indirect impacts to wildlife habitat and available forage similar to those effects described above for the Proposed Action. Under the No Action Alternative, there would be no direct disturbance to non-USFWS designated wildlife or their habitat from surface-disturbing activities associated with the Proposed Action. Refer to Section 4.15.1 (pages 4-150 through 4-152) in the GNB Final EIS (BLM 2012a) for more information on impacts to non-USFWS designated wildlife species under the No Action Alternative.

### **4.2.5.2. Wildlife: Migratory Birds (including raptors)**

Development of 12 existing wells in the Project Area has resulted in approximately 53.80 acres of surface disturbance (Table 2.1, “Proposed Action Development and Surface Disturbance” (p. 9)) resulting in direct and indirect impacts to migratory birds similar to those effects described above for the Proposed Action. Under the No Action Alternative, there would be no direct disturbance to migratory birds or raptor species from surface-disturbing activities associated with the Proposed Action. Refer to Section 4.15.1.1 (pages 4-136 through 4-139) in the GNB Final EIS (BLM 2012a) for more information on impacts to migratory birds and raptor species under the No Action Alternative.

## **4.2.6. Wildlife – Threatened, Endangered, Proposed, or Candidate**

### *Colorado River Fish Species*

Under the No Action Alternative, there would be no direct disturbance to threatened, endangered, or candidate fish species in the Colorado River basin from surface-disturbing activities associated with the Proposed Action. Refer to Section 4.15.1.2 (pages 4-139 through 4-145) in the GNB Final EIS (BLM 2012a) for more information on impacts to USFWS designated threatened, endangered, or candidate fish species under the No Action Alternative.

## **Chapter 5. Reasonably Foreseeable Development and Cumulative Impacts**

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Cumulative impacts are those impacts that result from the incremental impact of each alternative when added to other past, present, and reasonably foreseeable actions, regardless of which agency or person undertakes such other actions. Each section below identifies the Cumulative Impact Analysis Areas (CIAAs) for individual resources and resource issues and the rationale for the selection of each area.

## **5.1. Cumulative Impacts**

Proposed drilling, surface disturbance, and other activities under the Proposed Action (as described in Chapter 2 of this EA) are within the bounds of the cumulative impact analysis in the GNB Final EIS (BLM 2012a). The GNB Final EIS (BLM 2012a) identified past, present, and reasonably foreseeable development and analyzed cumulative impacts to resources and resource uses from the drilling and development of oil and gas resources in the GNBPA. As a result, the cumulative impact analysis in this chapter tiers to and incorporates by reference the analysis in the GNB Final EIS (BLM 2012a). The analysis in this chapter provides additional site-specific analysis and information, where appropriate, to inform decision-making on this specific development proposal.

## **5.2. Past, Present, and Reasonably Foreseeable Development**

Past, present, and reasonably foreseeable future development in the GNBPA primarily includes oil and gas development, but it also includes oil shale; gilsonite; tar sands; sand and gravel; activities associated with recreation, livestock grazing, vegetative treatments, and infrastructure improvements; and other projects. Past, present, and reasonably foreseeable future oil and gas development in the GNBPA has resulted and will continue to result in approximately 26,093 acres of surface disturbance. Refer to Section 5.2 (pages 5–1 through 5–12) in the GNB Final EIS (BLM 2012a) for additional information on past, present, and reasonably foreseeable development.

### **5.2.1. Air Quality and Greenhouse Gas Emissions**

The CIAA for air quality is the Uinta Basin, which is bounded by higher terrain on all sides, resulting in similar climate and dispersion conditions for pollutants in the CIAA. The potential impact of the Proposed Action to Uinta Basin ozone levels cannot be accurately modeled. In lieu of accurate modeling, the GNB Final EIS Air Quality Technical Support Document (BLM 2012c), which is the most recent regional air model information available for the Uinta Basin, and the GNB Final EIS (BLM 2012a) Section 5.3.1, are incorporated by reference and summarized below. The GNB Final EIS (BLM 2012a) discloses that most of the cumulative emissions in the Uinta Basin are associated with oil and gas exploration and production activities. Consequently, past, present, and reasonably foreseeable wells in the Uinta Basin are a part of the cumulative actions considered in this analysis. Table 5.1, “2006 Uinta Basin Oil and Gas Operations Emissions Summary” (p. 54) summarizes the 2006 Uinta Basin emissions as well as the incremental impact of this project’s alternatives. As indicated in Table 5.1, “2006 Uinta Basin Oil and Gas Operations Emissions Summary” (p. 54), the Proposed Action comprises a small percentage of the Uinta Basin emissions summary.

**Table 5.1. 2006 Uinta Basin Oil and Gas Operations Emissions Summary**

County	NO <sub>x</sub> (tpy)	CO (tpy)	SO <sub>x</sub> (tpy)	PM (tpy)	VOC (tpy)
Uintah	6,096	4,133	247	344	45,646
Carbon	995	814	22	40	2,747
Duchesne	3,053	2,448	96	173	19,019
Grand	337	207	16	22	2,360
Emery	273	199	9	14	453
<b>Uinta Basin Total</b>	<b>10,754</b>	<b>7,800</b>	<b>391</b>	<b>592</b>	<b>70,226</b>
Proposed Action	14	11.55	0.3705	2.525 - PM <sub>2.5</sub> 11.05 - PM <sub>10</sub>	425.1
No Action	0	0	0	0	0

Source: GNB Final EIS 2012, Table 5.3-1 (BLM 2012a).

CO Carbon monoxide  
PM Particulate Matter  
SO<sub>x</sub> Oxides of Sulfur  
tpy Tons Per Year  
VOC Volatile Organic Compound

The GNB model predicted the following impacts to air quality and air quality related values for the GNB Proposed Action, which encompassed 3,675 new wells:

- Cumulative impacts from criteria pollutants to ambient air quality are well below the NAAQS at Class I airsheds and selected Class II areas;
- The incremental impacts to visibility would be virtually impossible to discern and would not contribute to regional haze at the Class I areas;
- The 2018 projected baseline emissions would result in impacts of 1.0 deciview for at least 201 days per year at the Class II areas;
- Discernible impacts at Flaming Gorge National Recreation Area and Dinosaur National Monument were anticipated;
- Less than 1 percent would be contributed to the acid deposition in Class I areas, and 4.3 percent at the Flaming Gorge Class II area;
- Acid deposition impacts at sensitive lakes would be below the USFS screening threshold; and,
- Ozone levels would be below the current ozone standard of 75 parts per billion (ppb) for the fourth highest annual level in the Uinta Basin for the 2018 projected baseline, and the Proposed Action would be approximately 3.2 percent of the cumulative ozone impact within the Uinta Basin.

Based on the GNB model results, 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 margin of uncertainty associated with the model and Uinta Basin emission inventory. The No Action Alternative would not result in an accumulation of impacts.

### 5.2.2. Invasive Plants/Noxious Weeds, Soils, and Vegetation

The CIAA for soils, vegetation, and invasive plants/noxious weeds is the GNBPA. Cumulative impacts are primarily attributable to oil and gas development and vegetation management

*Chapter 5 Reasonably Foreseeable Development and Cumulative Impacts  
Invasive Plants/Noxious Weeds, Soils, and Vegetation*

by various federal agencies. Past, present, and reasonably foreseeable future actions would cumulatively and incrementally affect erosion and sedimentation rates within this area, current land uses, revegetation and reclamation success, soil productivity, and the potential introduction and/or spread of noxious weeds and invasive species. Surface-disturbing activity that removes native vegetation and topsoil from the CIAA may cumulatively and incrementally affect general vegetation by fragmenting plant communities and increasing competition with invasive and noxious weeds. Surface-disturbing activities that compact soil, increase erosion and sediment yield, and increase fugitive dust may also cumulatively and incrementally affect general vegetation, as such changes to the landscape may decrease plant productivity and composition in the CIAA.

The past, present, and reasonably foreseeable future total area of disturbance due to oil and gas activity in the CIAA is estimated at 26,093 acres (BLM 2012a), which includes the estimated disturbance from the selected alternative in the GNB ROD (BLM 2012b). The Proposed Action would contribute 0.15 acres to the incremental increase in surface disturbance included in the GNB ROD (BLM 2012b).

Surface disturbance would reduce soil productivity, disturb vegetation communities, and accelerate erosion for the lifetime of oil and gas production until such time that final reclamation is deemed successful in terms of soil stability and soil productivity as measured by amounts and types of vegetative cover and forage. Each acre of disturbance also destroys native vegetation and vegetative cover and introduces or spreads undesired plant species, which may reduce species biodiversity. Noxious weeds and invasive species already exist throughout the CIAA. In general, soils in the Uinta Basin are very thin, slow to develop, and difficult to reclaim because of the arid climate and lack of organic material. Refer to Section 5.3.9 (pages 5-25 through 5-26) of the GNB Final EIS (BLM 2012a) for additional information on cumulative impacts to soils. Refer to Section 5.3.11 (page 5-27) of the GNB Final EIS (BLM 2012a) for additional information on cumulative impacts to vegetation, including weeds. The No Action Alternative would not result in an accumulation of impacts.

### **5.2.3. Paleontology**

The CIAA for paleontology resources is the GNBPA. Cumulative impacts on paleontology resources would result from surface-disturbing activities to fossiliferous rock from either development or collection/vandalism activities (BLM 2012a). The past, present, and reasonably foreseeable future total area of disturbance due to oil and gas activity in the CIAA is estimated at 26,093 acres (BLM 2012a), which includes the estimated disturbance from the selected alternative in the GNB ROD (BLM 2012a). The Proposed Action would contribute 0.15 acres to the incremental increase in surface disturbance included in the GNB ROD. Destruction of scientifically important fossils would irreversibly and irretrievably damage the paleontological information base, and those destroyed fossils would not be available for future analysis (BLM 2012a). Preconstruction surveys and other required mitigation measures required by the BLM would result in recovery of important fossils and reduce potential accumulation of cumulative impacts. Refer to Section 5.3.5 (page 5-16) of the GNB Final EIS (BLM 2012a) for additional information on cumulative impacts to paleontology resources. The No Action Alternative would not result in an accumulation of effects.

## 5.2.4. Plants — Threatened, Endangered, Proposed, or Candidate

The CIAA for Uinta Basin hookless cactus is the area delineated by the USFWS as potential habitat for the species (USFWS 2013). The CIAA covers approximately 537,564 acres of land administered by the BLM, the Ute tribe, the state of Utah, and privately held lands. The past, present, and reasonably foreseeable future total area of disturbance due to oil and gas activity in the CIAA is estimated at 44,254 acres (7.8 percent of the CIAA) (Table 5.2, “Ongoing and Reasonably Foreseeable Development in the Uinta Basin Hookless Cactus CIAA” (p. 56)). The Proposed Action would contribute 58.46 acres to the incremental increase in surface disturbance included in the GNB EIS ROD (BLM 2012b). Within the CIAA, there is also approximately 1,875 miles of roads.

Cumulative impacts to Uinta Basin hookless cactus would include dust impacts to the species and reduction and fragmentation of plant and pollinator habitat resulting from surface disturbance and project-related activity. KMG would adhere to the COAs and Reclamation Plan from the GNB ROD Appendix B, Table B-2 (BLM 2012b), and the Green River District Reclamation Guidelines (BLM 2011) to reduce potential accumulation of cumulative impacts on this species. Refer to Section 5.3.11.1 (page 5-29) of the GNB Final EIS (BLM 2012a) for additional information on cumulative impacts to Uinta Basin hookless cactus. The No Action Alternative would not result in an accumulation of impacts.

Due to inclusion of areas of unsuitable habitat within the CIAA (USFWS 2013), the total acreage of suitable habitat for the Uinta Basin hookless cactus may be less than the 537,564 acres within the CIAA. 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 Uinta Basin hookless cactus from past, present, and reasonably foreseeable actions may be greater or smaller than those described for the total CIAA depending on the distribution of surface disturbance and project activity relative to suitable habitat.

**Table 5.2. Ongoing and Reasonably Foreseeable Development in the Uinta Basin Hookless Cactus CIAA**

	Project Area Acreage  (Acres)	Surface Disturbance Analyzed  (Acres)	Project Area Acreage within the CIAA  (Acres)	Surface Disturbance within the CIAA <sup>1</sup>  (Acres)
<b><i>Ongoing Field Development</i></b>				
Chapita Wells- Stagecoach Area	31,872	1,735	22,678	1,235
Gasco Natural Gas Field Development EIS	236,165	3,604	77,339	1,180
Greater Deadman Bench Oil and Gas Producing Region EIS	98,785	1,239	22,444	282
Greater Natural Buttes Project EIS2	162,911	8,147	97,529	4,877
North Alger Natural Gas Expansion Project EA	2,320	192	943	78

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	Project Area Acreage (Acres)	Surface Disturbance Analyzed (Acres)	Project Area Acreage within the CIAA (Acres)	Surface Disturbance within the CIAA <sup>1</sup> (Acres)
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
<b><i>Past Developments and Current and Future Developments Not Covered by a Field Development NEPA Document</i></b>				
729 abandoned wells <sup>4</sup>	NA	NA	NA	3,565
5,239 existing wells <sup>4</sup>	NA	NA	NA	19,158
752 proposed well <sup>4</sup>	NA	NA	NA	2,377
<b><i>Field Development Proposals</i></b>				
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
<b><i>Total CIAA disturbance from oil and gas</i></b>				
	-	-	-	44,674 (8.3%) <sup>2</sup>
<b><i>GNB EA 922-35 and 34 (Wells East of the White River) Project Development</i></b>				
Proposed Action	NA	NA	NA	58.46
No Action	NA	NA	NA	0
<b><i>Total CIAA disturbance from oil and gas</i></b>				
	-	-	-	44,674 (8.3%) <sup>2</sup>
Source: BLM 2013				
CIAA Cumulative Impact Analysis Area EA Environmental Assessment EIS Environmental Impact Statement NA not applicable				
<sup>1</sup> Assumes surface disturbance was authorized evenly across the analysis area of the document.				
<sup>2</sup> Surface disturbance for the Proposed Action is accounted for in the totals in the GNB EIS and ROD (BLM 2012b)				
<sup>3</sup> Uses the assumption contained within the Greater Uinta Basin Cumulative Impacts Technical Support Document.				
<sup>4</sup> As of 4/8/2013				

## 5.2.5. Wildlife

### 5.2.5.1. Non-USFWS Designated Wildlife

The CIAA for non-USFWS designated species is the GNBPA. Cumulative impacts associated with surface-disturbing activities, including ongoing and planned oil and gas activities, in combination with the Proposed Action would cumulatively contribute to big game habitat fragmentation, habitat loss (including areas designated as year-long crucial habitat), loss of foraging opportunities, and animal displacement until successful final reclamation. Impacts to non-USFWS designated wildlife would be relative to the amount of cumulative habitat loss and disturbance from incremental development, especially in sensitive habitat (e.g., year-long crucial habitat) (BLM 2012a). The past, present, and reasonably foreseeable future total area of disturbance due to oil and gas activity in the GNBPA is estimated at 26,093 acres (BLM 2012a), which includes the estimated disturbance from the selected alternative in the GNB ROD (BLM 2012b). The Proposed Action would contribute 58.46 acres to the incremental increase in surface disturbance included in the GNB ROD (BLM 2012b). Refer to Section 5.3.15.1 (page 5-34 through 5-42) in the GNB Final EIS (BLM 2012a) for more information on cumulative impacts to non-USFWS designated wildlife and big game species and their habitat. The No Action Alternative would not result in an accumulation of impacts.

### 5.2.5.2. Migratory Birds (including raptors)

The CIAA for migratory birds, including raptors, is the GNBPA. Surface disturbance associated with past, present, and reasonably foreseeable actions, including ongoing and planned oil and gas activities, would cumulatively reduce the amount of available cover, foraging opportunities, habitat productivity, abundance and diversity of prey species, and breeding/nesting areas for migratory birds. Human activities would result in short-term or long-term site avoidance, or would preclude migratory birds from using areas of more intensive human activity. The Proposed Action would contribute to cumulative increases in human presence in the CIAA and would result in fragmentation of habitat and increased potential for establishment and spread of non-native invasive plant species that could have adverse impacts on migratory birds that are dependent on native vegetative species for their survival. In general, these impacts would favor non-native and readily adaptive species and would adversely impact native species. In general, the severity of the cumulative effects would depend on factors such as the sensitivity of the species affected, seasonal intensity of use, type of project activity, and physical parameters (e.g., topography, forage, and cover availability).

Impacts to migratory birds would be dependent on the timing and season of construction activities. Any activities completed in late fall would have less impacts to migratory birds and raptors because many of these species would not be nesting in the vicinity and most would have left the CIAA for southern wintering grounds. Construction activities during the spring or summer months could contribute to cumulative temporary displacement of raptors in the CIAA, which may alter nest establishment or displacement.

Past, present, and future land uses have reduced and will likely continue to reduce the quality and quantity of habitats for migratory bird species and raptors. Habitat alteration occurring throughout the range of these species would potentially reduce the ability of such species to recover. The past, present, and reasonably foreseeable future total area of disturbance due to oil and gas activity in the GNBPA is estimated at 26,093 acres (BLM 2012a), which includes the estimated

disturbance from the selected alternative in the GNB ROD (BLM 2012b). The Proposed Action would contribute 58.46 acres to the incremental increase in surface disturbance included in the GNB ROD (BLM 2012b).

The No Action Alternative would not result in an accumulation.

## **5.2.6. Wildlife – Threatened, Endangered, Proposed, or Candidate**

### **5.2.6.1. Colorado River Fish Species**

The CIAA for potential impacts to Colorado River Fish Species is the entire BLM Vernal Field Office management area. Cumulative effects to fisheries resources would primarily be associated with increased potential for erosion and sedimentation in the Colorado River Basin, and water depletions associated with existing and continued oil and gas developments. Erosion and sedimentation increases in the CIAA waterways would affect fish spawning, fish rearing, and feeding behaviors (BLM 2012a).

Water depletions associated with the Proposed Action, in combination with depletions from other activities in the CIAA, would reduce the ability of the Upper Colorado River Basin to create and maintain the physical habitat (areas inhabited or potentially habitable to special status fish for use of spawning, development of fish larvae, feeding, or serving as corridors between these areas) and the biological environment for the Colorado River Endangered Fish Species. In addition, the Colorado River Endangered Fish Species would also be directly affected by project activities if fish become impinged on intakes for water pumping systems.

The Proposed Action would add 120.61 acre-feet of water depletions to water depletions from other past, present, and reasonably foreseeable future projects, and would reduce the volume of flow in the Colorado River Basin. As a result, implementation of the Proposed Action or alternatives, in combination with other activities in the CIAA, would degrade USFWS-designated critical habitat for the Colorado River Endangered Fish Species in the Colorado River Basin. Refer to Section 5.3.15.2 (page 5-42) and Section 5.13.13 (page 5-30) in the GNB Final EIS (BLM 2012a) for more information on cumulative impacts to fisheries and surface water resources. The No Action Alternative would not result in an accumulation of impacts.

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## **Chapter 6. Persons, Groups, and Agencies Consulted**

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## 6.1. Agency and Tribal Consultation

**US Fish and Wildlife Service:** The BLM conducted programmatic consultation with the USFWS under Section 7 of the ESA as part of the GNB EIS process. BLM initiated formal consultation on September 16, 2011, by submitting the Biological Assessment to the USFWS. The USFWS concluded consultation by signing a Biological Opinion on January 27, 2012. This project falls within the scope of the programmatic consultation; therefore, consultation is considered complete. For documentation of this process and additional information, refer to the Final Biological Opinion (Appendix D) of the GNB ROD (BLM 2012b).

**Utah State Historic Preservation Officer:** The BLM conducted consultation with the Utah State Historic Preservation Officer (SHPO) under Section 106 of the National Historic Preservation Act as part of the GNB EIS process. Class III block surveys have been completed for the Project Area and the results of the surveys were sent to the Utah SHPO in March of 2011. Concurrences were included in Appendix E of the GNB ROD (BLM 2012b). No cultural resources were identified within the APE of this proposed undertaking.

**Tribal Consultation:** The BLM initiated Government-to-Government consultation with 12 potentially affected and interested Native American Tribes as part of the GNB EIS process on January 9, 2008. As a result of the consultation request, the Navajo Nation requested notification of any unanticipated discoveries unearthed during the course of the project and the Pueblo of Laguna requested notification in the event any new archaeological sites are discovered and artifacts are recovered. No new sites or unanticipated discoveries have been found associated with the Proposed Action. The Hopi Tribe expressed concern with stone cairn sites previously documented in the GNBPA. At the request of the Hopi, the BLM and Director of the Hopi Office of Cultural Preservation visited several of the stone cairn sites in the GNBPA. In August 2009, the BLM prepared a report summarizing the site visit results. No written responses were received from the Hopi. The BLM met with the Hopi in April of 2011 to follow up on the expressed concerns. No further concerns were expressed. For documentation of this process and additional information refer to Appendix E of the GNB ROD (BLM 2012b).

## 6.2. Summary of Public Participation

The BLM posted notification of this EA on the Eplanning NEPA Register on 12 December 2013. No public interest has been expressed.

## 6.3. List of Preparers

**Table 6.1. List of Preparers**

Name	Title	Responsible for the Following Section(s) of this Document
<i>BLM Preparers</i>		
Tyler Cox	Natural Resource Specialist	Project manager Chapters 1, 2, 3, 4, 5, and 6
Daniel Emmett	Wildlife Biologist	Review and revision of Migratory birds (including raptors).

Elizabeth Gamber	Paleontology Specialist	Review and revision of the Paleontology resource section.
Maggie Marston	Botanist	Review and revision of the Threatened, Endangered, Proposed, or Candidate Plant species section

## **Chapter 7. References Cited**

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## 7.1. References

- Bureau of Land Management (BLM). 2012a. Greater Natural Buttes Final Environmental Impact Statement, Vol. I, Chapters 1-9. BLM-UT-080-07-807. Vernal Field Office, Vernal Utah. March 2012.
- \_\_\_\_\_. 2012b. Greater Natural Buttes Record of Decision. BLM-UT-080-07-807. Vernal Field Office, Vernal Utah. March 2012.
- \_\_\_\_\_. 2011. Green River District Reclamation Guidelines for Reclamation Plans. Instruction Memorandum No. IM UTG000-2011-003 Green River District Reclamation Guidelines, March 2011. BLM Green River District.
- \_\_\_\_\_. 2010. Memorandum of Understanding between BLM and US Fish and Wildlife Service to Promote the Conservation of Migratory Birds. BLM MOU WO-230-2010-04. 14p.
- \_\_\_\_\_. 2009. Vernal Field Office Surface Disturbing Weed Policy. Instruction Memorandum No. UTG010-2010-001. Green River District, Vernal, Utah.
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- \_\_\_\_\_. 2008b. Proposed Resource Management Plan and Final Environmental Impact Statement. Vernal Field Office, Vernal, Utah. August 2008.
- \_\_\_\_\_. 1997. Standards for Rangeland Health and Guidelines for Grazing Management for BLM in Utah (BLM-UT-GI-97-001-4000). BLM, Utah State Office.
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- SWCA Environmental Consultants. 2013. Paleontological Assessment for the NBU 206-9 Pipeline. Uintah County, Utah.
- Uintah County. 2011. Uintah County General Plan. Available online: <http://co.uintah.ut.us/>.
- USDI and U.S. Department of Agriculture. 2007. Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development. BLM/WO/ST-06/021+3071/REV 07. Bureau of Land Management. Denver, Colorado. 84 pp.

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# Appendix A. Interdisciplinary Team Checklist

**Project Title:** Kerr-McGee Oil & Gas Onshore, LP Proposal to Directionally Drill 85 Wells from two New Well Pads and eight Existing and Expanded Well Pads in the Greater Natural Buttes Unit, Uintah County, Utah

**NEPA Log Number:** DOI-BLM-UT-G010-2014-0011-EA

**File/Serial Number:** UTU-01095A

**Project Leader:** Tyler Cox

**DETERMINATION OF STAFF:** (Choose one of the following abbreviated options for the left column)

NP = not present in the area impacted by the proposed or alternative actions

NI = present, but not affected to a degree that detailed analysis is required

PI = present with potential for relevant impact that need to be analyzed in detail in the EA

NC = (DNAs only) actions and impacts not changed from those disclosed in the existing NEPA documents cited in Section D of the DNA form. The Rationale column may include NI and NP discussions.

**Table A.1. ID Team Checklist**

Determination	Resource/Issues	Rationale for Determination	Signature	Date
<b>RESOURCES AND ISSUES CONSIDERED (INCLUDES SUPPLEMENTAL AUTHORITIES APPENDIX 1 H-1790-1)</b>				
PI	Air Quality & Greenhouse Gas Emissions	Emissions from earth-moving equipment, vehicle traffic, drilling and completion activities, daily tailpipe and fugitive dust emissions, and other sources could adversely affect air quality and contribute to Greenhouse Gas Emissions (GHGs).	Tyler Cox	11/5/2013
NP	BLM Natural Areas	None present as per 2008 Vernal RMP and ROD/GIS layer review.	Jason West	11/06/2013
NI	Cultural: Archaeological Resources	The proposed project area has been covered by multiple Class III intensive cultural resource inventories. No cultural resources eligible for inclusion into the National Register of Historic Places (NRHP) are identified within the APE of the proposed undertaking.	Cameron Cox	12/11/2013
NI	Cultural: Native American Religious Concerns	Tribal consultations for this area were initiated and closed under the GNB Final EIS (BLM 2012a) and ROD (BLM 2012b) and no concerns are relevant to the Project Area. Please refer to Appendix E of the GNB ROD for documentation of the Tribal consultation process. The Proposed Action would not hinder access to or affect Native American Religious sites.	Cameron Cox	12/11/2013

Determination	Resource/Issues	Rationale for Determination	Signature	Date
NP	Designated Areas: Areas of Critical Environmental Concern	None present as per 2008 Vernal RMP and ROD/GIS layer review.	Tyler Cox	11/5/2013
NP	Designated Areas: Wild and Scenic Rivers	None Present as per 2008 Vernal RMP/ROD and GIS layer review	Jason West	11/06/2013
NP	Designated Areas: Wilderness Study Areas	None Present as per 2008 Vernal RMP/ROD and GIS layer review	Jason West	11/06/2013
NP	Environmental Justice	No minority or economically disadvantaged communities or populations would be disproportionately adversely affected by the Proposed Action or alternatives.	Tyler Cox	11/5/2013
NP	Farmlands (prime/unique)	Prime or unique farmlands are not present in the Project Area, as designated by the NRCS.	Tyler Cox	11/5/2013
NP	Fuels/Fire Management	No fire or fuel management activities are planned for the Project Area. The proposed project would not conflict with fire management activities due to the use of existing and proposed well pad operations.	Tyler Cox	11/5/2013
NI	Geology/Minerals/Energy Production	If gilsonite is encountered during drilling or construction, please report that information to BLM VFO. The depth and thickness of the vein is important information that should be provided to BLM. Operator must notify any active gilsonite operation within 2 miles of the location 48 hours prior to any blasting for this well.	Elizabeth Gamber	10/29/13

Determination	Resource/Issues	Rationale for Determination	Signature	Date
		<p>Natural gas, oil, gilsonite, oil shale and tar sand are the only mineral resources that could be impacted by the project. Production of natural gas or oil would deplete reserves, but the proposed project allows for the recovery of natural gas and oil per 43 CFR 3162.1(a), under the existing Federal lease. Compliance with "Onshore Oil and Gas Order No. 2, Drilling Operations" would assure that the project would not adversely affect gilsonite, oil shale, or tar sand deposits. Due to the state-of-the-art drilling and wells completion techniques, the possibility of adverse degradation of tar sand or oil shale deposits by the proposed action would be negligible.</p> <p>Wells completion must be accomplished in compliance with "Onshore Oil and Gas Order No. 2, Drilling Operations." These guidelines specify the following: ... <i>proposed casing and cementing programs shall be conducted as approved to protect and/or isolate all usable water zones, potentially productive zones, lost circulation zones, abnormally pressured zones, and any prospectively valuable deposits of minerals. Any isolating medium other than cement shall receive approval prior to use.</i></p>		

Determination	Resource/Issues	Rationale for Determination	Signature	Date
PI	Invasive Plants/Noxious Weeds, Soils & Vegetation	<p>Under the Proposed Action, construction and expansion of ten wells pads, associated gathering pipelines, including the 16-inch buried pipeline, and access roads would result in a total of approximately 58.46 acres of new surface disturbance until interim reclamation is successful.</p> <p>For all disturbances, soils would be recontoured and reseeded after abandonment and during reclamation.</p> <p>KMG would control invasive species along roads, pipeline corridors, and on well pads as required in the Conditions of Approval (COAs) of the GNB ROD (BLM 2012b). Based on KMG's commitment to monitor and control noxious weeds, directional drilling from the existing and expanded well pads and proposed project activities should not increase weed infestations within the Project Area, but an increase in infestations of invasive plants/ noxious weeds is possible, even with mitigation measures in place.</p>	Tyler Cox	11/5/2013

Determination	Resource/Issues	Rationale for Determination	Signature	Date
NI	Lands/Access	The Project Area is located within the Vernal Field Office Resource Management Plan planning area which allows for oil and gas development with associated road and pipeline right-of-ways. No existing land uses would be changed or modified by the implementation of the Proposed Action; therefore there would be no adverse effects.	Tyler Cox	11/5/2013
NP	Lands with Wilderness Characteristics (LWC)	None Present as per 2008 Vernal RMP/ROD and GIS layer review.	Jason West	11/06/2013
NI	Livestock Grazing & Rangeland Health Standards	<p>The Project Area is within the Seven Sisters Sheep allotment, an active sheep allotment. The BLM has seasonally approved this grazing area for the months of 11/1 – 4/15 with up to 1700 AUMs with deferment. The project is in an area that is heavily bisected by oil and gas roads, above ground pipelines and oil pads. The proposed project is not expected to affect livestock movement patterns, access to water, or to largely affect the allotment with the loss of AUMS. In addition, the relatively low impacts are foreseen to Rangeland health Standards due to the small disturbance of the proposed project.</p> <p>KMG would apply the COAs from the GNB ROD (BLM 2012b) to limit potential</p>	Craig Newman	11/14/2013

Determination	Resource/Issues	Rationale for Determination	Signature	Date
		<p>impacts to range resources and livestock operations. Directional drilling and completion activities from the existing and expanded well pad locations would result in temporary increases in industrial traffic and would have impact on grazing activities or livestock operations.</p>		
PI	Paleontology	<p>Two paleontological assessments and surveys were conducted by SWCA for the Project Area in September 2012 and May 2013. Several scientifically important fossils and locations of high fossil potential were found within 922-34 primarily in association with well pad 922-34H, and the 922-34 pipelines. Several scientifically important fossils and locations of high fossil potential were also found within 922-35, primarily in association with well pads 922-35A, 922-35F, 922-35G, 922-35H, 922-35I, and 922-35K, and their associated infrastructure, including the including the 16-inch buried pipeline.</p> <p>Locations where project components intersect high fossil potential areas are identified as requiring paleontological monitoring during proposed project activities. Refer to the</p>	Elizabeth Gamber	10/29/13

Determination	Resource/Issues	Rationale for Determination	Signature	Date
		Paleontological Assessment Reports for NBU 922-34 and NBU 922-35 (SWCA, September 20 and May 15, 2013) for additional information.		
NI	Plants: BLM Sensitive	<p>The following UT BLM sensitive plant species are present or expected within the same or an adjacent subwatershed: <i>Yucca sterilis</i>.</p> <p>Sandy soils within the project area may provide suitable habitat for <i>Yucca sterilis</i>. However, no populations are present within the surveyed areas. Additional BLM Sensitive species are precluded based on soil, elevation, geography and plant population VFO GIS data. Green River shale-derived soils are not present.</p>	Maggie Marston	3/27/2014
PI	Plants: Threatened, Endangered, Proposed, or Candidate	<p>The proposed project is located within U.S. Fish and Wildlife 2012 potential habitat polygon for threatened Uinta Basin hookless cactus. (<i>S. wetlandicus</i>). All of Sections 922-34 and the western portion of Section 922-35 are located within Proposed Level 2 cactus core conservation areas. KMG and BLM has notified and worked with the USFWS as required in the 2012 BO (Notification language is on page 11, item #3 per January 27, 2012 BO.) The Proponent is expanding the</p>	Maggie Marston	3/27/2014

Determination	Resource/Issues	Rationale for Determination	Signature	Date
		pad away from the cactus, is not engaged in new wellpad construction and is utilizing existing infrastructure to the extent possible. The proponent has conducted surveys per the 2012 BO, will have a botanical monitor on-site when required, and will apply all mitigation as presented and amended during the above notification process, and as found in Table 1, Section 2.2.10. Mitigation fund payments have already been fully met in lieu of 3-year VFO RMP monitoring requirements.		
NI	Plants: Wetland/Riparian	Inventoried and observed riparian areas are located within the White River floodplain which is located in the western portion of Section 922-34, Proposed project activities would occur within approximately 0.2 miles of the White River; however, these activities are located on top of a mesa which is well outside of the White River floodplain. Additionally, proposed project activities would adhere to the Conditions of Approval in the GNB ROD (BLM 2012b) for avoidance of floodplains; therefore, no impacts to wetlands/riparian zones in the White River floodplain are anticipated as a result of proposed project activities.	Tyler Cox	11/5/2013

Determination	Resource/Issues	Rationale for Determination	Signature	Date
NI	Recreation	<p>The Project Area is located in the Vernal Extensive Recreation Management Area; currently the VFO does not track quantifiable visitor use data within the Project Area. Recreational use may occur associated with the White River in the western portion of the Project Area. Portions of the proposed well pad expansions of 922-34H and 922-34H4 may be within the viewshed of the White River (assuming 22-foot tank height). Due to the very limited portion of proposed development that may be visible from the White River, impacts to recreational users of the White River would be negligible.</p>	Jason West	11/06/2013
NI	Socio-Economics	<p>No impact to the social or economic status of the county or nearby communities would occur from this project due to its small size in relation to ongoing development throughout the basin. Cumulative effects on socio-economic conditions resulting from past, present, and future development (including the Proposed Action) are described in the GNB Final EIS (BLM 2012a)</p>	Tyler Cox	11/5/2013

Determination	Resource/Issues	Rationale for Determination	Signature	Date
NI	Visual Resources	<p>Visual resources relevant to the Project Area can be characterized by landscape based high desert look consisting of natural browns and reds, rock outcrops, horizontal and vertical broken lines with sparse, low lying vegetation. Existing structures include abandoned well pads in various states of reclamation, existing drilling structures with associated movement, form, lines, textures, and colors. Baseline VRM Inventory includes a scenic rating of A for the white river corridor. An "A" rating is the highest (quality scenery) rating that can be given (see VRI GIS layer, and final VRI Report). An A rating would be the baseline for potential for change by the project. Utilizing this baseline, Visual Contrast rating worksheets would be required for each proposed expansion viewable by the white river.</p> <p>All proposed development would be on VRM Class III and VRM Class IV and would be performed consistent with management objectives for these VRM Classes. The proposed well pad expansion for 922-34H and 922-34H4 would be within the viewshed of the White River (assuming 22-foot tank height). Since</p>	Jason West	11/06/2013

Determination	Resource/Issues	Rationale for Determination	Signature	Date
		<p>only a small portion of the proposed development would be located in the viewshed of the White River, impacts on views from the White River would be negligible.</p> <p>KMG would adhere to visual resource mitigation measures established in Section 4.12.2.2 of the GNB FEIS and the visual resource Conditions of Approval in the GNB ROD (BLM 2012b) to limit the potential for visual impacts resulting from the Proposed Action.</p>		
NI	Wastes (hazardous/solid)	<p>Hazardous materials above reportable quantities will not be produced by drilling or completing the proposed wells or constructing the pipelines/facilities. All wastes subject to regulation will be handled in compliance with applicable laws to minimize the potential for leaks or spills to the environment. KMG also maintains a Spill Control and Countermeasure Plan, which includes notification requirements, including the BLM, for all reportable spills of oil, produced liquids, and hazardous materials.</p> <p>Chemicals subject to reporting under Title III of the Superfund Amendments and Reauthorization Act (SARA) in quantities of 10,000 pounds</p>	Tyler Cox	11/5/2013

Determination	Resource/Issues	Rationale for Determination	Signature	Date
		<p>or more may be produced and/or stored at production facilities (crude oil/condensate, produced water). These chemicals may also be kept in limited quantities on drilling sites (barite, diesel fuel, cement, cottonseed hulls, etc.) for short periods of time during drilling or completion activities.</p> <p>Trash and other waste materials would be cleaned up and removed immediately after completion of operations.</p> <p>Produced Water: Where necessary and if conditions (freeboard, etc.) allow, produced liquids from newly completed wells may be temporarily disposed of into pits for a period not to exceed 90 days as per Onshore Order No. 7 (OSO 7). Permanent approved produced water disposal methods will be employed in accordance with OSO 7 and in accordance with the COAs, applicant committed measures, and the Long-term Water Monitoring Plan for the Greater Natural Buttes Project Area from the GNB ROD (BLM 2012b).</p>		

Determination	Resource/Issues	Rationale for Determination	Signature	Date
NI	Water:  Floodplains	<p>Floodplains exist near the western Project Area boundary. The western boundary floodplain is associated with the White River. No roadways or proposed project activities are located within approximately 0.2 mile of the White River floodplain. Additionally, per the Conditions of Approval in the GNB ROD (BLM 2012b), additional project components and disturbances in floodplains would be avoided.</p> <p>None of the proposed well pad expansions, developments, or associated components cross HUD inventoried floodplains and would not be of concern under Executive Order for Flood Plain Management.</p>	Tyler Cox	11/5/2013
NI	Water:  Groundwater Quality	<p>Ground Water: Compliance with "Onshore Oil and Gas Order No. 1 will assure that the project will not adversely affect groundwater quality. Due to the state-of-the-art drilling and wells completion techniques, the possibility of adverse degradation of groundwater quality or prospectively valuable mineral deposits by the proposed action will be negligible.</p>	Elizabeth Gamber	10/29/13

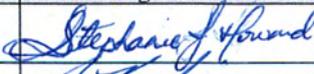
Determination	Resource/Issues	Rationale for Determination	Signature	Date
NI	<p>Water:</p> <p>Hydrologic Conditions (stormwater)</p>	<p>The proposed construction of the new and expanded well pad locations and development of associated access roads would alter the topography of the area to a small degree and change surface water flow patterns. The two new and eight proposed expanded well pads (and associated infrastructure) will have Spill Control and Countermeasure Plans in place, limiting the effects of construction to the landscape. Per the COAs in the GNB ROD (BLM 2012b), KMG will employ industry BMPs to control stormwater runoff, including appropriate measures to prevent disturbed sediments from reaching the White River drainage during precipitation events. It is not expected that surface water or stormwater would be created to the level of concern for Clean Water Act Section 402 (stormwater) review. In addition federal law has exempted energy development from stormwater requirements.</p>	Tyler Cox	11/5/2013

Determination	Resource/Issues	Rationale for Determination	Signature	Date
NI	Water: Surface Water Quality	Up to approximately 58.46 acres of new surface disturbance associated with the two new and eight proposed expanded well pads and other development may have the potential to adversely impact surface water quality. However, COAs and applicant-committed measures and from the GNB ROD (BLM 2012b) associated with surface disturbance, reclamation, and hydrology; and implementation of the Long-term Water Monitoring Plan for the Greater Natural Buttes Project Area would likely reduce the potential for surface water impacts to a negligible level.	Tyler Cox	11/5/2013
NI	Water: Waters of the U.S.	The proposed 85 wells would be located on two new well pads and eight expanded well pads. All wells would be directionally drilled and would not cross any identified wetlands or waters of the U.S.  Development and production at the well sites would not significantly impact waters of the U.S.	Tyler Cox	11/5/2013

Determination	Resource/Issues	Rationale for Determination	Signature	Date
NI	Wild Horses	The Project Area occurs within the Bonanza Herd Area/Herd Management Area as described in the VFO 2008 RMP. However, the Bonanza Herd Area is not actively managed for wild horses and any horses present on Federal lands are in trespass. As a result, the Proposed Action would not affect the management objectives of the Bonanza Herd Area.	Tyler Cox	11/5/2013
PI	Wildlife: Migratory Birds (including raptors)	Two proposed well pads (922-35A and 922-35I) containing 14 proposed wells, and associated pipelines, including part of the proposed including the 16-inch buried pipeline route, and roadway construction activities are located within a 0.5 miles (buffer) for an active golden eagle nest, which may result in impacts to these species. KMG and AUM would apply the COAs in Table B-2 of the GNB ROD (BLM 2012b) and BMPs for raptors and their habitat in Appendix A of the BLM Vernal RMP (BLM 2008).  Migratory birds (passerines, raptors, etc.) are present in the Project Area. Please refer to Appendix J of the GNB FIES (BLM 2012a) for details on potential migratory birds and their habitats which may occur in the Project Area.	Daniel Emmett	11/01/2013

Determination	Resource/Issues	Rationale for Determination	Signature	Date
PI	Wildlife:  Non-USFWS Designated	Project is within crucial habitat for mule deer. No additional fish or wildlife designated areas, including elk crucial winter range, or Lynx linkage zones have been identified relevant to the Project Area.	Daniel Emmett	11/01/2013
PI	Wildlife:  Threatened, Endangered, Proposed or Candidate	Water depletions associated with the Proposed Action could result in adverse impacts to threatened and endangered fish species.  Is the proposed project in sage grouse PPH or PGH? Yes ( ) No (X) If the answer is yes, the project must conform with WO IM 2012-043.	Daniel Emmett	11/01/2013
NP	Woodlands/Forestry	None Present as per Vernal Field Office RMP/ROD and GIS database.	Tyler Cox	11/5/2013

**Table A.2. Final Review**

Reviewer Title	Signature	Date	Comments
Environmental Coordinator		4/23/14	
Authorized Officer		4/24/2014	

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## Appendix B. Proposed New Wells and Associated Well Pads

**Table B.1. Proposed New Wells and Associated Well Pads**

Well Pad	Number of Proposed New Wells	Well Names	Acres of Well Pad Expansion	Number of Proposed New Well on Existing Well Pad	Number of Proposed New Wells on Well Pad Expansion
NBU 922-34H	8	NBU 922-34A4BS, NBU 922-34A4CS, NBU 922-34G4BS, NBU 922-34G4CS, NBU 922-34H1BS, NBU 922-34H1CS, NBU 922-34H4BS, NBU 922-34H4CS	3.12	8	0
NBU 922-34H4	8	NBU 922-34I1BS, NBU 922-34I1CS, NBU 922-34I4BS, NBU 922-34I4CS, NBU 922-34P1BS, NBU 922-34P1CS, NBU 922-34P4BS, NBU 922-34P4CS	2.31	8	0
NBU 922-35A	8	NBU 922-35A1CS, NBU 922-35A4BS, NBU 922-35A4CS, NBU 922-35B1CS, NBU 922-35B4BS, NBU 922-35B4CS, NBU 922-35H1BS, NBU 922-35H1CS	7.09	0	8

Well Pad	Number of Proposed New Wells	Well Names	Acres of Well Pad Expansion	Number of Proposed New Well on Existing Well Pad	Number of Proposed New Wells on Well Pad Expansion
NBU 922-35F	15	NBU 922-35C1CS, NBU 922-35C4BS, NBU 922-35C4CS, NBU 922-35D1CS, NBU 922-35D4BS, NBU 922-35D4CS, NBU 922-35E1BS, NBU 922-35E1CS, NBU 922-35E4BS, NBU 922-35E4CS, NBU 922-35F1BS, NBU 922-35F1CS, NBU 922-35F4BS, NBU 922-35F4CS, NBU 922-35L1BS	6.80	0	15
NBU 922-35G	12	NBU 922-35G4CS, NBU 922-35J1B2S, NBU 922-35J1BS, NBU 922-35J1C2S, NBU 922-35J1CS, NBU 922-35J4B2S, NBU 922-35J4BS, NBU 922-35K1B3S, NBU 922-35K1BS, NBU 922-35K1C3S, NBU 922-35K1CS, NBU 922-35K4BS	4.56	12	0
NBU 922-35H	6	NBU 922-35G1BS, NBU 922-35G1CS, NBU 922-35G4BS, NBU 922-35H4BS, NBU 922-35H4CS, NBU 922-35I1BS	4.68	6	0

Well Pad	Number of Proposed New Wells	Well Names	Acres of Well Pad Expansion	Number of Proposed New Well on Existing Well Pad	Number of Proposed New Wells on Well Pad Expansion
NBU 922-35I	6	NBU 922-35I4BS, NBU 922-35I4CS,  NBU 922-35P1BS, NBU 922-35P1CS, NBU 922-35P4BS, NBU 922-35P4CS	3.24	6	0
NBU 922-35K	3	NBU 922-35L1CS, NBU 922-35L4BS, NBU 922-35L4CS	0.93	3	0
NBU 922-35N	4	NBU 922-35M1BS, NBU 922-35M1CS, NBU 922-35M4BS, NBU 922-35M4CS	2.27	4	0
NBU 922-35O	15	NBU 922-35J4C2S, NBU 922-35J4CS, NBU 922-35K4B3S, NBU 922-35K4C3S, NBU 922-35N1B3S, NBU 922-35N1BS, NBU 922-35N4BS, NBU 922-35N4CS, NBU 922-35O1B2S, NBU 922-35O1BS, NBU 922-35O1C2S, NBU 922-35O1CS, NBU 922-35O4B2S, NBU 922-35O4BS, NBU 922-35O4C2S	4.32	15	0