

**Greater Natural Buttes  
Final  
Environmental Impact Statement  
FES 12-8**

**Volume I  
(Chapters 1 through 9)**

Vernal Field Office/Utah

**Bureau of Land Management**

**March 2012**



### ***BLM Mission Statement***

*The Bureau of Land Management is responsible for the stewardship of our public lands. It is committed to manage, protect, and improve these lands in a manner to serve the needs of the American people for all times.*

*Management is based upon the principles of multiple use and sustained yield of our nation's resources within a framework of environmental responsibility and scientific technology. These resources include recreation, rangelands, timber, minerals, watershed, fish and wildlife, wilderness, air and scenic, scientific, and cultural values.*



# United States Department of the Interior

BUREAU OF LAND MANAGEMENT

Vernal Field Office

170 South 500 East

Vernal, UT 84078

(435) 781-4400 Fax: (435) 781-4410

<http://www.blm.gov/ut/st/en/fo/vernal.html>



IN REPLY REFER TO:

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UT-080-07-807

Dear Public Land User:

Enclosed is the Final Environmental Impact Statement (EIS) for the Greater Natural Buttes Area Gas Development Project, which documents anticipated environmental consequences of developing natural gas resources in the 162,911 acre project area in Uintah County, Utah. Under the Resource Protection Alternative, which is the Agency Preferred Alternative, up to 3,675 new gas wells from 1,484 well pads would be drilled over a period of 10 years. Total new surface disturbance under the Agency Preferred Alternative would be approximately 8,147 acres, or 5% of the total project area.

This Final EIS has been developed in accordance with the National Environmental Policy Act of 1969 and Federal Land Policy and Management Act of 1976. The Bureau of Land Management (BLM) prepared the Final EIS in coordination with numerous Cooperating Agencies including the United States Fish and Wildlife Service, United States Environmental Protection Agency, United States Bureau of Indian Affairs, and Uintah County. The BLM also took into account comments received during the public comment period on the Draft EIS (July 2010) and Supplement to the Draft EIS (June 2011). The Final EIS tracks changes made between the Draft EIS and Final EIS, and includes responses to comments received during the public comment periods for both the Draft EIS and Supplement to the Draft EIS.

This Final EIS is not a decision document. The publication of the Notice of Availability in the Federal Register for this Final EIS initiates a 30-day waiting period. Following conclusion of that period, a Record of Decision (ROD) will be signed to disclose the BLM's final decision and any project Conditions of Approval. Availability of the ROD will be announced through local media, the Vernal BLM website, and Utah BLM's Environmental Notification Bulletin Board.

We appreciate your interest in this project. If you have questions or need additional information, please contact Stephanie Howard at (435) 781-4469.

Sincerely,

Michael G. Stiewig  
Field Office Manager

Enclosures – As Stated

**Final Environmental Impact Statement (EIS)  
Kerr-McGee Oil & Gas Onshore LP (KMG)  
Greater Natural Buttes**

**Lead Agency:** U.S. Department of the Interior Bureau of Land Management (BLM)

**Project Location:** Uintah County, Utah

**Comments & Further Information**

**On the Draft EIS:** Stephanie Howard, Project EIS Team Lead  
Bureau of Land Management  
Vernal Field Office  
170 South 500 East  
Vernal, Utah 84078  
Phone: (435) 781-4400

**BLM Authorized Officer  
Responsible for Preparing  
the Final EIS:**

Mike Stiewig, Field Manager

**Abstract**

KMG proposes to develop oil and gas resources within the 162,911-acre Greater Natural Buttes Project Area (GNBPA) located in Uintah County south of Vernal, Utah. The GNBPA is partially developed with 1,562 existing oil and gas wells and associated infrastructure (including 23 compressor stations, access roads, water management facilities, pipelines, and power lines) with an estimated disturbance of 7,766 acres. The Proposed Action would include the development of an additional 3,675 well pads at 20-acre spacing and associated infrastructure. Construction would begin after the issuance of the Record of Decision (**ROD**), approval of individual Applications for Permit to Drill, and approved Right-of-Way grants. Construction would require approximately 10 years with the productive life of the project estimated at 30 to 50 years.

Four alternatives were analyzed in detail in this **Final EIS**. They are the No Action Alternative, Proposed Action, Resource Protection Alternative, and Optimal Recovery Alternative. The No Action Alternative would consist of denying KMG's proposed development of federal leases, but would include new development on federal leases (1,102 new wells and associated infrastructure) as **approved** through previous National Environmental Policy Act decision documents. The Proposed Action would consist of KMG's proposal for developing the GNBPA. The Resource Protection Alternative (**the Agency Preferred Alternative**) would limit development to 40-acre well pad spacing by utilizing directional drilling, thereby reducing the potential number of new single well pads and reducing the project disturbance. The Optimal Recovery Alternative would involve development of new well pads on 10-acre well spacing to maximize the recovery of hydrocarbon resources, thereby increasing project disturbance. Under all alternatives, development would continue on State and private leases including roads and pipelines crossing federal lands to access the State and private leases. In addition to KMG's commitment to voluntarily apply the applicant-committed environmental protection measures listed in Appendix A of this document, mitigation is recommended that would lessen the environmental effects of the proposed project.

The **Final EIS** will be **available for review** throughout a **30-day public availability** period beginning on the date the United States Environmental Protection Agency publishes a Notice of Availability for this EIS.

## Executive Summary

Kerr-McGee Oil & Gas Onshore LP (KMG), a wholly owned subsidiary of Anadarko Petroleum Corporation, has notified the Bureau of Land Management's (BLM) Vernal Field Office that it proposes to conduct infill drilling to develop the hydrocarbon resources from oil and gas leases owned, at least in part, by KMG within the Greater Natural Buttes Project Area (GNBPA) in Uintah County, Utah (**Figure ES-1**). KMG intends to develop all potentially productive subsurface formations underlying the GNBPA. The formations include, but are not limited to, the Green River Formation, Wasatch Formation, Mesa Verde Group (including the Blackhawk Formation), Mancos Shale, and Dakota Sandstone.

The GNBPA consists of approximately 162,911 acres in an existing gas producing region located on lands owned by the federal government, the State of Utah, the Ute Tribe, and other private land owners. Federal lands in the proposed GNBPA are under the jurisdiction of the BLM Vernal Field Office. The Vernal Field Office has determined that the proposed project constitutes a major federal action requiring the development of an environmental impact statement (EIS). This EIS serves the purpose of disclosing and analyzing impacts resulting from the level of development proposed within the GNBPA, including a no action alternative, with consideration of identified and applied applicant-committed environmental protection measures (ACEPMS) and recommended mitigation measures. A summary of these ACEPMS is provided in **Appendix A**.

***KMG, a private corporation, proposes development of their leases in the GNBPA for the purpose of making a profit on the extraction and sale of oil and gas resources. In addition to developing the subsurface resources in the GNBPA and testing directional drilling technologies, KMG's proposed project would increase the supply of domestic natural gas and liquid hydrocarbons and contribute to the economic vitality of the local communities through increased employment opportunities and expanded tax bases. KMG's proposed natural gas and oil development project is consistent with the National Energy Act of 2005 and the National Energy Policy (President's Plan) because it would provide a domestic source of natural gas and oil to meet rising national energy demand.***

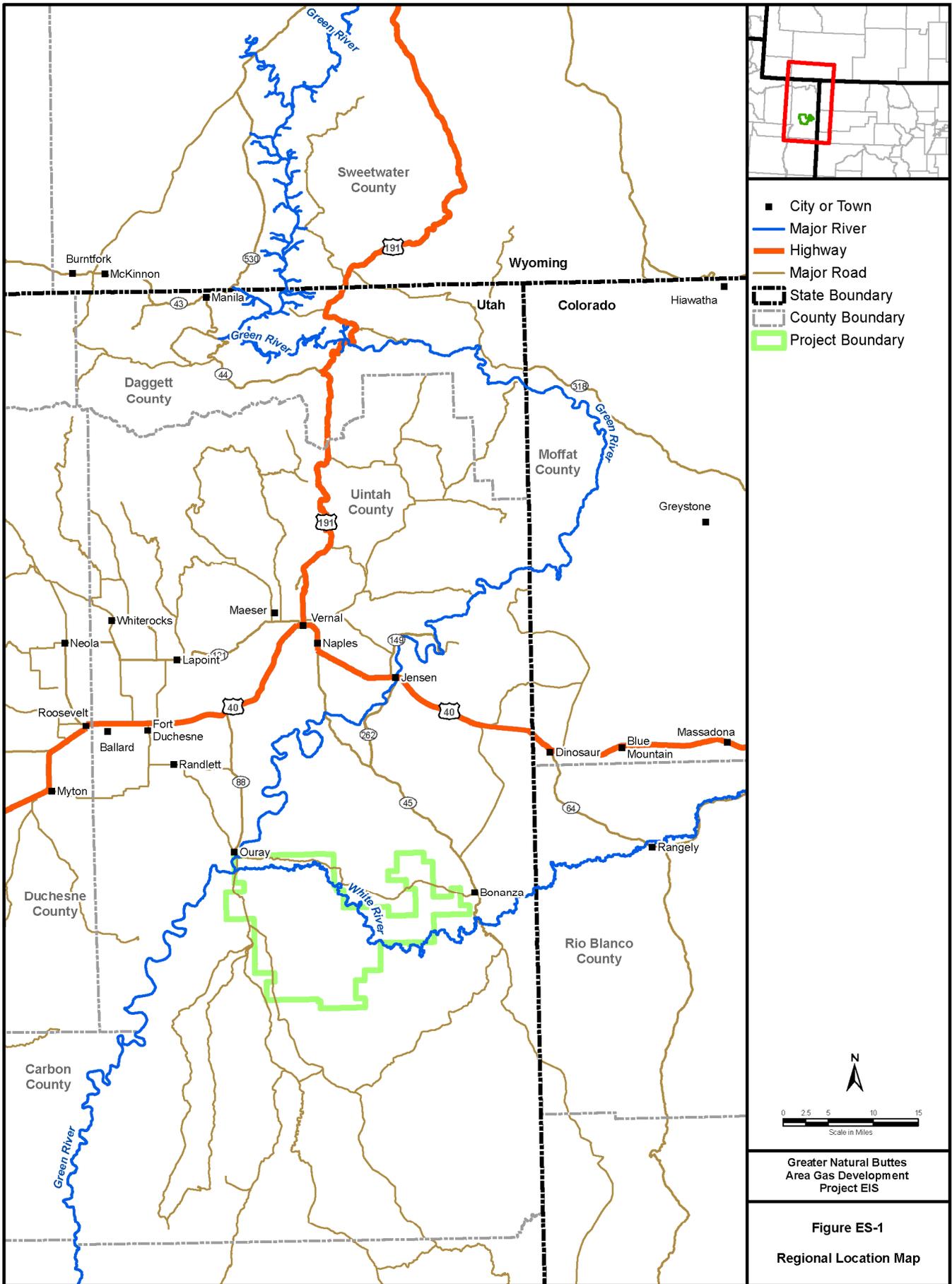
***Changes in this Final EIS are presented in bold italics and indicated by vertical bars that appear in the left margin. These changes were made in response to comments received on the Draft EIS, comments received on the SDEIS, and as a result of updated information that became available after issuance of the Draft EIS.***

### **Purpose and Need**

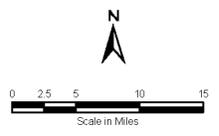
The need for a BLM action is to respond to this proposal and to evaluate action on future plans and applications related to this proposal. The Federal Land Policy and Management Act of 1976 (Public Law 94-579, 43 United States Code [USC] 1701 et seq.) recognizes oil and gas development as one of the "principal" uses of the public lands. Federal mineral leasing policies (Mineral Leasing Act of 1920, 30 USC 188 et seq.) and the regulations by which they are enforced recognize the statutory right of lease holders to develop federal mineral resources to meet continuing national needs and economic demands. The purpose of this EIS is to facilitate the BLM decision-making process of whether to approve, approve with modifications, or disapprove the proposed project or project components based on an evaluation of the expected impacts. Through this process, the BLM's purpose is to minimize or avoid environmental impacts to the extent possible, while allowing KMG to exercise its valid lease rights.

### **Scoping**

The BLM conducted public and internal scoping to solicit input and identify environmental issues and concerns associated with the proposed project. The public scoping process was initiated on October 5, 2007, with the publication of a Notice of Intent in the Federal Register. The BLM prepared a scoping information notice and



- City or Town
- Major River
- Highway
- Major Road
- - - State Boundary
- - - County Boundary
- ▭ Project Boundary



Greater Natural Buttes  
Area Gas Development  
Project EIS

Figure ES-1  
Regional Location Map

provided copies to the public, other government agencies, and Tribes. These announcements included information on a public scoping and open house, which was held at the Western Park Conference Center in Vernal, Utah, on October 23, 2007. The official scoping period ended November 5, 2007. Written comments were received during the public scoping period consisting of nine letters: two from federal agencies, one from state agencies, one from a county agency, one from a non-governmental organization, and four from industry or private individuals. During the scoping period, key concerns were identified for consideration in preparing the Greater Natural Buttes EIS. The BLM **also** conducted internal scoping to compile a list of resources potentially present in the Vernal Field Office area to be considered in this EIS. Based on this list **and public scoping**, the following resources are discussed and analyzed in Chapters 3.0, 4.0, and 5.0 of this document:

- Air Quality;
- Cultural Resources and Native American Traditional Values;
- Geology;
- Land Use;
- Paleontology;
- Range Resources;
- Recreation;
- Socioeconomics and Environmental Justice;
- Soils;
- Transportation and Access;
- Vegetation Resources;
- Visual Resources;
- Water Resources;
- Wilderness Characteristics; and
- Wildlife and Fisheries Resources.

The BLM has determined that the proposed project is in conformance with the BLM management plans and policies and is consistent with other federal and local land management plans and policies. As allowed under 36 Code of Federal Regulations (CFR) 800.8, the BLM **has used** the public comment process under the National Environmental Policy Act (NEPA) to comply with the public consultation requirements of Section 106 of the National Historic Preservation Act.

### **Proposed Action and Alternatives**

Chapter 2.0 of this EIS describes the existing and approved oil and gas facilities and the proposed development alternatives, including a no action alternative, analyzed in this document. In developing the alternatives, the BLM followed guidance set forth in 40 CFR 1500-1508 and the BLM NEPA Handbook H-1790-1 (BLM 2008a). The BLM Instruction Memorandum No. 2005-247, Attachment 1, also provides recommendations on developing a range of reasonable alternatives for oil, gas, and geothermal development activities. Based on this guidance, the BLM developed four alternatives for analysis in this EIS as described in the following paragraphs. The BLM preferred alternative is the Resource Protection Alternative.

Existing oil and gas infrastructure in the GNBPA (as of October 2007) consists of 1,562 vertical productive wells generally drilled on single well pads. Supporting infrastructure associated with this existing development includes access roads, mancamps, compressor stations, a gas processing plant, water management facilities (evaporation, recycling, and injection), gas and water pipelines, and power lines. The existing surface disturbance in the GNBPA as of October 2007 is estimated at 7,766 acres or about 4.8 percent of the GNBPA.

This date was selected as a fixed point in time to represent information that is continuously changing. While the BLM recognizes there is a gap between this point in time and the publication date of this document, the information provides a consistent basis for evaluation of the proposed project and alternatives.

**No Action:** Under the No Action Alternative, drilling and completion of development wells and infrastructure would continue as described in approved NEPA decision documents. An estimated 1,102 wells remain to be drilled in addition to the 1,562 existing wells in the GNBPA (as of October 2007). Supporting infrastructure associated with this alternative includes access roads, compressor stations, water management facilities (evaporation, recycling, and injection), gas and water pipelines, and power lines. Because reclamation is difficult to achieve in the Uinta Basin, all disturbance is assumed to be present for more than 3 years, typically for the life of the project. The estimated new surface disturbance for the No Action Alternative would be approximately 4,702 acres or about 2.9 percent of the GNBPA. ***The total estimated surface disturbance for this alternative would be 12,468 acres, or approximately 7.7 percent of the GNBPA.***

**Proposed Action:** This alternative consists of KMG's proposed infill drilling project within the GNBPA to develop an additional 3,675 wells drilled from a maximum of 3,041 new well pads placed at up to 20-acre surface spacing. KMG and other operators would drill additional wells at an average rate of approximately 358 wells per year over a period of 10 years or until the resource base is fully developed. The productive life of each well is estimated to be approximately 30 to 50 years. In support of the new wells, KMG would construct access roads, pipelines, electric power lines, compression facilities, and water disposal facilities. The estimated new surface disturbance for the Proposed Action would be approximately 12,658 acres or about 7.8 percent of the GNBPA, ***while the total estimated surface disturbance would be 25,125 acres, or approximately 15.4 percent of the GNBPA.***

Portions of the GNBPA pose environmental constraints to drilling a vertical well from the surface, based on the following factors:

- Topography, including steep slopes that preclude construction of a well pad for a vertically drilled well without major cuts-and-fills;
- The viewshed (line-of-sight from the centerline up to 0.5 mile ***on either*** side of the river) of the White River corridor, outside of the Indian Trust Lands; and
- Areas within 600 feet of the White River within the Indian Trust Lands.

In areas where the gas resources in the reservoirs warrant a downhole spacing of less than 20 acres based on reservoir engineering evaluation, or in those areas where environmental constraints preclude vertical wells, KMG would test and attempt to utilize directional drilling technology. Analysis of the Proposed Action Alternative assumes vertical wells would be drilled at all 3,041 new well pad locations.

**Resource Protection Alternative:** This alternative consists of the same number of wells as the Proposed Action (3,675 wells) but surface well pads would be limited to 40-acre spacing, resulting in a reduced number of well pads (approximately 1,484 well pads) and a reduction in the surface disturbance of the project. If full recovery of the natural gas resource requires the drilling of wellbores at a downhole spacing of 20 acres or less, then directional drilling techniques would be required under this alternative. Therefore, impact analysis of this alternative assumed 1,557 directionally drilled wellbores to establish the same number of wellbores (3,675) as the Proposed Action Alternative.

As discussed under the Proposed Action Alternative, KMG and other operators would drill additional wells at an average rate of approximately 358 wells per year over a period of 10 years or until the resource base is fully developed. The estimated productive life of each well would be approximately 30 to 50 years. The disturbance impacts associated with production facilities (man camps, compressor stations, water tank batteries, and water disposal wells) as well as electrical power requirements is expected to be the same for this alternative as it would be for the Proposed Action Alternative. The estimated new surface disturbance for the Resource

Protection Alternative would be 8,147 acres or about 5 percent of the GNBPA. ***The total estimated surface disturbance for this alternative would be 20,615 acres, or approximately 12.7 percent of the GNBPA.***

The location of the 40-acre spaced well pads for this alternative would reflect avoidance of the following constraining factors:

- Topography, including steep slopes that preclude construction of a well pad for a vertically drilled well without major cuts-and-fills;
- The viewshed of the White River corridor (line-of-sight from the centerline up to 0.5 mile along both sides of the river), outside of the Indian Trust Lands;
- Areas within 600 feet of the White River within the Indian Trust Lands; and
- Areas within the 100-year floodplain of the White River ***and Green River*** and 5 miles up major tributaries ***of the White River regardless of surface ownership.***

**Optimal Recovery Alternative:** This alternative maximizes the recovery of natural gas resources by increasing surface well pad spacing to 10 acres throughout the GNBPA. Assuming a vertical well would be drilled from each new well pad, KMG and other operators would drill an estimated 13,446 new wellbores within the GNBPA. KMG's activities would remain largely as outlined under the Proposed Action Alternative. Additional wells would be drilled at an average rate of approximately 672 wells per year using 28 drilling rigs and would be drilled over a period of approximately 20 years or until the resource base is fully developed. The estimated productive life of each well would be approximately 30 to 50 years. The drilling schedule, well drilling and completion parameters, equipment and manpower requirements, compressor stations, water disposal facilities, buried water and gas pipelines, electric power facilities, and ancillary facilities would be similar to that for the Proposed Action Alternative, but in some cases, more facilities would be constructed because of the higher number of wells and increased gas volumes produced under this alternative. The estimated new surface disturbance for the Optimal Recovery Alternative would be 42,620 acres or about 26 percent of the GNBPA.

**Alternatives Considered but Eliminated from Detailed Analysis:** The BLM considered two alternatives to the proposed project that were not carried forward for detailed analysis in subsequent chapters of this document. One of these alternatives was one in which no further development would take place in the GNBPA. This alternative is not the same as the No Action Alternative, which is required under NEPA and is fully analyzed in this document. The No Action Alternative would occur if the BLM were to deny KMG's proposal. The no further development alternative was eliminated from detailed analysis because ongoing development ***already has been approved*** on valid leases within the GNBPA as disclosed under existing NEPA decision documents (Section 2.4.1).

The BLM also considered a phased development alternative, which was intended to rotate concentrated disturbance activities through smaller, pre-defined areas (subareas) while the remainder of the GNBPA would be less impacted than under the Proposed Action. Under this alternative, one subarea at a time would be open to oil and gas construction and development activities for a limited time period, after which construction and development activities would cease. Oil and gas extraction and processing would continue (i.e., operational activities) in the subarea, while construction and development activities would move to another subarea. An additional intent was to encourage concurrent and efficient reclamation of surface disturbance. This alternative was eliminated from detailed analysis because the BLM could not impose phased development on almost one-half (45 percent) of the GNBPA, phased development could delay surface owner benefits (such as payments or hiring preferences for Ute Tribe members), production and maintenance activities would continue throughout the currently developed areas of the GNBPA, and development would be concentrated on individual grazing allotments (Section 2.9).

## Affected Environment

Chapter 3.0 of the EIS describes the affected environment of the GNBPA for each of the resources identified during internal scoping and listed above. These resources are present within the GNBPA and provide the basis to address substantive issues of concern brought forward during internal and public scoping. The information presented in Chapter 3.0 provides quantitative data and spatial information where appropriate to the resource that serves as a baseline for comparison of the direct, indirect, and cumulative impacts of each of the alternatives.

## Environmental Consequences

Chapter 4.0 describes the environmental effects of implementing the alternatives on the affected environment as described in Chapter 3.0. The chapter is divided into subsections addressing the specific incremental impacts for each of the resources identified during internal scoping listed above. **The impact analysis for each resource** was focused on the new disturbance over and above the existing disturbance in the GNBPA **associated with the No Action Alternative**. For each of the action alternatives (Proposed Action, Resource Protection Alternative, and Optimal Recovery Alternative), the new disturbance is over and above the existing disturbance and the new disturbance associated with the No Action Alternative. The resource-specific effects of the alternatives are evaluated quantitatively and qualitatively, as appropriate based on available data and the nature of the resource analyzed. A comparison of disturbance within the GNBPA associated with the four alternatives is provided in **Table ES-1**. A summary of the Chapter 4.0 impact analyses is provided in **Table ES-2**.

## Cumulative Impacts

Cumulative impacts from past, present, and reasonably foreseeable development are presented in Chapter 5.0 of the Draft EIS. For each resource, the Cumulative Impact Study Area (CISA) was developed appropriate to the geographical extent of anticipated cumulative impacts. For some resources (e.g., cultural resources and Native American traditional values, geology, paleontology, soils and vegetation), the CISA is the same as the GNBPA. For other resources (e.g., socioeconomics and air quality), the CISA includes the majority of the Uinta Basin, which encompasses the Vernal planning area.

Due to the intensity of energy development activity in the Vernal planning area, the focus of this analysis is on past, present, and reasonably foreseeable oil and gas development. A total of 18,666 well pads and 82,833 acres of cumulative surface disturbance, including the Proposed Action, is estimated to occur due to past, present and reasonably foreseeable projects in the Vernal planning area. The Proposed Action would represent approximately 20 percent of the total number of well pads and 15 percent of the cumulative surface disturbance in the Vernal planning area. The Proposed Action would represent approximately 48 percent of the 26,411 acres of cumulative surface disturbance (i.e., existing, No Action, and Proposed Action) in the GNBPA.

The 6.07 trillion cubic feet (Tcf) of natural gas production over the life of the project under the Proposed Action is approximately equivalent to total production for a single year for the entire Mountain region (Utah, North Dakota, South Dakota, Montana, Wyoming, Idaho, Nevada, Colorado, Arizona, and western New Mexico). Alternatively, the average annual production under the Proposed Action would represent 3 to 4 percent of the annual regional production over the next two decades. Over the first 30 years of the project, the average annual production for the Proposed Action would be equivalent to approximately 40 to 45 percent of the 442 billion cubic feet annual gas production for the State of Utah in 2008.

Below is a summary of cumulative impacts for key resources:

- **Air Quality:** Cumulative impacts to air quality as predicted from modeling would remain below air quality standards under all alternatives except the Optimal Recovery Alternative, for which there is a potential to exceed the standard for ozone (75 parts per million). Cumulative visibility modeling shows that the No Action Alternative would dominate regional haze impacts at Class I areas, whereas

incremental visibility impacts from the action alternatives would be less than 1.0 deciview (dv). Cumulative acid deposition as predicted from modeling would be below established comparative deposition values at all Class I and Class II areas within the vicinity of the GNBPA.

- **Range Resources:** The 12 grazing allotments that make up the CISA for range resources encompass an area of 470,228 acres. Total cumulative disturbance to these allotments, including impacts from the Proposed Action, would be 37,261 acres; resulting in the loss of 3,149 active animal unit months (AUMs). The Proposed Action would account for 1,018 AUMs, or approximately 32 percent of the total cumulative AUMs lost. Under the Resource Protection Alternative, the proposed project would account for 655 AUMs lost (24 percent of the total cumulative loss); under the Optimal Recovery Alternative, the proposed project would account for 3,425 AUMs lost (62 percent of the total cumulative loss).
- **Vegetation:** The Proposed Action would represent approximately 48 percent of the 26,411 acres of cumulative vegetation loss; the Resource Protection Alternative would represent 37 percent of the 21,900 acres of cumulative vegetation loss; and the Optimal Recovery Alternative would represent 76 percent of the 56,373 acres of cumulative vegetation loss within the GNBPA. While cumulative surface disturbance, particularly linear disturbances such as pipelines, roads, transmission lines and seismic surveys, have the potential to spread noxious weeds and invasive species, these impacts would be minimized through the use of wash stations to control mechanical spreading of seeds, herbicide spraying, and reclamation of disturbed areas.
- **Water:** Cumulative impacts to surface water quantity due to past, present, and reasonably foreseeable oil and gas development activities would be minor because the majority of water use would be limited and short-term in nature as well as substantially less than other demands (particularly agricultural) in the Uintah County region. Compliance with spill prevention and clean-up programs, stormwater management plans, and construction best management practices would reduce cumulative impacts to surface water quality. Increased injection of produced water into subsurface saline aquifers would increase aquifer storage; however, due to implementation of the United States (U.S.) Environmental Protection Agency's Underground Injection Control program, impacts to underground sources of drinking water would not be anticipated.
- **Wildlife:** Cumulative impacts to wildlife resources would be directly related to habitat loss, habitat fragmentation, and animal displacement associated with increased surface disturbance. Within the CISA for wildlife and fisheries, the Proposed Action would represent approximately 15 percent of the 82,833 acres of cumulative surface disturbance; the Resource Protection Alternative would represent approximately 10 percent of the 78,322 acres of cumulative surface disturbance; and the Optimal Recovery Alternative would represent approximately 38 percent of the 112,795 acres of cumulative surface disturbance.

Cumulative impacts to fisheries resources include erosion and sedimentation from increased surface disturbance, water depletions from the White and Green rivers, and the potential leaks and spills of contaminants from facilities or development activities. Due to the presence of federally endangered fish species in the White and Green rivers, these cumulative impacts would be minimized by the protection measures required by the BLM and U.S. Fish and Wildlife Service. Total water depletions of 757 acre-feet/year under the Proposed Action and Resource Protection alternatives, and 1,385 acre-feet/year under the Optimal Recovery Alternative, would account for less than 1 percent of the total water depletions (182,603 acre-feet/year) within the White and Green rivers.

**Table ES-1 Disturbance Comparison for GNBPA Alternatives (Excluding Existing Condition)**

New Facilities	Size (ROW width [feet] or acres/facility)	New Surface Disturbance by Alternative							
		No Action		Proposed Action		Resource Protection		Optimal Recovery	
		Multiplier (number or miles)	Disturbance (acres or % of GNBPA)	Multiplier (number or miles)	Disturbance (acres or % of GNBPA)	Multiplier (number or miles)	Disturbance (acres or % of GNBPA)	Multiplier (number or miles)	Disturbance (acres or % of GNBPA)
<b>Roads</b>									
Access Roads <sup>1</sup>	45 feet	276 miles	1,503	760 miles	4,147	594 miles	3,238	1,627 miles	8,875
<b>Well Pads</b>									
New Single Well Pads	2.5 acres	1,102 each	2,755	3,041 each	7,603	1,484 each	3,710	12,812 each	32,030
Twinned Well Pads (Additional Disturbance)	0.2 acre	0 each	0	634 each	127	634 each	127	634 each	127
Multi-well Pads (Additional Disturbance)	0.2 acre	0 each	0	0 each	0	1,557 each	311	0 each	0
Well Pad Subtotal		1,102 each	2,755	3,675 each	7,729	3,675 each	4,148	13,446 each	32,157
<b>Construction/Production Facilities</b>									
Mancamps	5 acres	0 each	0	2 each	10	2 each	10	2 each	10
Compressor Stations	20 acres	6 each	120	2 each	40	2 each	40	5 each	100
Water Tank Batteries	3 acres	8 each	24	2 each	6	2 each	6	5 each	15
Water Injection Facilities (Additional Disturbance)	0.2 acre	0 each	0.0	15 each	3	15 each	3	25 each	5
Construction/Production Facilities Subtotal			144		59		59		130
<b>Linear Facilities</b>									
Gas Gathering Pipelines – Common ROW	0 feet	262 miles	0	722 miles	0	564 miles	0	1,546 miles	0
Gas Gathering Pipelines – Cross-country	20 feet	14 miles	33	38 miles	92	30 miles	72	81 miles	197
Gas Transport Pipelines (Buried)	75 feet	0 miles	0	35 miles	318	35 miles	318	70 miles	636
Water Gathering Pipelines – Common ROW (Surface)	0 feet	0 miles	0	587 miles	0	458 miles	0	1,256 miles	0
Water Connecting Pipelines (Buried)	75 feet	26 miles	236	25 miles	227	25 miles	227	50 miles	455
Electric Power Lines	100 feet	2.5 miles	30	7 miles	85	7 miles	85	14 miles	170
Linear Facilities Subtotal			300		722		702		1,458
New Surface Disturbance (acre)			4,702		12,658		8,147		42,620
GNBPA New Disturbance (%)			2.9%		7.8%		5.0%		26.2%
No Action Alternative New Disturbance (acre)					4,702		4,702		4,702
Existing Surface Disturbance (acre)			7,766		7,766		7,766		7,766
Total Surface Disturbance (acre)			12,468		25,125		20,615		55,088
Total GNBPA Disturbed (%)			7.7%		15.4%		12.7%		33.8%
<b>Surface Disturbance Interim Reclamation Estimates<sup>2</sup></b>									
Reclaimable New Surface Disturbance (acre)			1,753		4,731		3,387		13,189
Reclaimable No Action New Surface Dist (acre)					1,753		1,753		1,753
Reclaimable Existing Surface Disturbance (acre)			3,267		3,267		3,267		3,267
Total Est. Reclaimable Surface Disturbance (acre)			5,020		9,751		8,407		18,209
Reclaimable Surface Disturbance (%)			40.3%		39%		41%		33%
Reclaimable Surface Dist as % of GNBPA			3.1%		6.0%		5.2%		11.2%

<sup>1</sup> Assume access road length of 0.25 mile/well pad for No Action and Proposed Action; 0.4 mile/well pad for Resource Protection Alternative; 0.127 mile/well pad for Optimal Recovery Alternative.

<sup>2</sup> Interim reclamation estimates are based on the potential to reclaim 0.5 acre per new well pad, 27 feet ROW for new access roads, and all new Linear Facilities summarized in the table above.

**Table ES-2 Impact Comparison by Resource for All Alternatives**

Resource	No Action Alternative	Proposed Action Alternative	Resource Protection Alternative	Optimal Recovery Alternative	Additional Discussion
<b>Air Quality</b>					
Air Quality (exceed National Ambient Air Quality Standards)	No	No	No	Potential <sup>1</sup>	Section 4.1
Acid Deposition (exceed U.S. Forest Service threshold)	Yes (1 area) <sup>2</sup>	Yes (1 area) <sup>2</sup>	Yes (1 area) <sup>2</sup>	Yes (1 area) <sup>2</sup>	Section 4.1
Visibility (Class I)	Cumulative impacts > 1.0 dv	Incremental impacts < 1.0 dv	Incremental impacts < 1.0 dv	Incremental impacts < 1.0 dv	Section 4.1
Visibility (Class II)	Cumulative impacts > 1.0 dv	Incremental impacts > 1.0 dv at 2 areas	Incremental impacts > 1.0 dv at 2 areas	Incremental impacts > 1.0 dv at 2 areas	Section 4.1
Greenhouse Gas Emissions (10 <sup>3</sup> tonne carbon dioxide equivalents/year)	1,761	2,754	2,754	5,485	Section 4.1
<b>Cultural Resources and Native American Traditional Values</b>					
Sites potentially encountered (incremental due to new surface disturbance)	52	142	90	475	Section 4.2
<b>Geology</b>					
Recoverable Gas Resources Over the Life of the wells (Tcf)	1.41	6.07	6.07	15.44	Section 4.3
Recoverable Condensate Resources Over the Life of the Wells (million barrels [bbl])	22.3	86.5	86.5	118	Section 4.3
<b>Land Use</b>					
White River Special Recreation Management Area (incremental acres disturbed)	7.8	49	32	164	Section 4.4
<b>Paleontology</b>					
Potential Fossil Yield Classification Class 4 or 5 areas (potential incremental acres disturbed)	4,467	12,025	7,740	40,489	Section 4.5
<b>Range Resources</b>					
AUMs Lost – BLM	352	947	609	3,186	Tables 4.6-1, 4.6-2, 4.6-4, and 4.6-6
AUMs Lost – BIA	26	71	46	239	Tables 4.6-1, 4.6-2, 4.6-4, and 4.6-6
Total AUMs Lost	378	1,018	655	3,425	
Number Rangeland Improvements Impacted (BLM land only)	12	26	15	27	Tables 4.6-3, 4.6-5, and 4.6-7
<b>Socioeconomics</b>					
Energy Resource Recovery					Section 4.8 and Table 4.8-1
Natural Gas (Tcf)	1.41	6.07	6.07	15.44	
Oil Condensates (million bbl)	22.3	86.5	86.5	117.9	
Projected end of production (year)	2051	2059	2059	2066	
Employment (number jobs)					Section 4.8 and Tables 4.8-5, 4.8-9, and 4.8-13
Peak – development	1,790	4,302	4,302	9,024	
Average – production	239	875	875	1,712	
Population – Duchesne and Uintah counties					Section 4.8 and Tables 4.8-6, 4.8-10, and 4.8-14
Peak – development	2,585	5,590	5,590	8,368	
Average – production	450	1,508	1,508	2,732	

**Table ES-2 Impact Comparison by Resource for All Alternatives**

<b>Resource</b>	<b>No Action Alternative</b>	<b>Proposed Action Alternative</b>	<b>Resource Protection Alternative</b>	<b>Optimal Recovery Alternative</b>	<b>Additional Discussion</b>
Temporary and permanent housing demand in Duchesne and Uintah counties during development (units)	1,593	3,447	3,447	5,159	Section 4.8 and <b>Tables 4.8-6, 4.8-10, and 4.8-14</b>
Grazing – Reduction in annual cash farm receipts (\$24 per AUM lost)	As much as \$7,632 lost	As much as \$24,432 lost	As much as \$15,720 lost	As much as \$82,200 lost	Section 4.8
Public Sector Revenues – Cumulative Life of Field <sup>3</sup> (millions of 2006 dollars)					Section 4.8 and <b>Tables 4.8-8, 4.8-12, and 4.8-16</b>
Ad Valorem Taxes	89.2	343.8	343.8	856.1	
Utah Severance Taxes	270.5	1,146.7	1,146.7	2,709.5	
Federal and Tribal Mineral Royalties	417.9	2,692.4	2,692.4	<b>6,332.8</b>	
State Public School Fund Royalties	158.9	673.1	673.1	1,582.5	
Combined Public Sector Revenues	1,154.3	4,856.0	4,856.0	11,481.0	
Percent Increase over No Action	N/A	321	321	895	
<b>Soils</b>					
High Constraint (incremental acres disturbed)	4,396	11,835	7,618	39,849	<b>Table 4.9-1, Appendix F</b>
Moderate Constraint (incremental acres disturbed)	141	380	244	1,279	
Low Constraint (incremental acres disturbed)	165	443	285	1,492	
<b>Transportation and Access</b>					
New Access Roads (miles)	276	760	594	1,627	Section 4.10
Increase in Traffic Volume at Full Production (total number vehicle miles)	0	20,948	20,948	59,162	Section 4.10
Number of Annual Incidents (mostly minor accidents and spills)	22	58	58	201	Section 4.10
<b>Vegetation</b>					
Uinta Basin hookless cactus potential preferred habitat (estimated incremental acres disturbed)	<b>1,600</b>	<b>4,266</b>	<b>2,667</b>	<b>13,866</b>	Section 4.11
Vegetation Type (estimated incremental acres disturbed)					<b>Tables 4.11-1, 4.11-2, 4.11-3, 4.11-4</b>
Salt-desert shrubland	1,932	5,279	3,437	17,775	
Sagebrush shrubland	1,663	4,548	2,961	15,313	
Grassland	455	1,246	811	4,194	
Cliff/Canyon	217	593	386	1,997	
Riparian	143	189	29	637	
Pinyon-juniper woodland	82	225	147	758	
Agriculture	30	81	53	274	
Barren	178	490	319	1,650	
Developed	2	7	4	22	
<b>Visual Resources</b>					
Visual Resource Management Class II areas on federal lands (incremental acres disturbed)	0	91	58	305	Section 4.12
Incremental Disturbance Visible from (acres):					Section 4.12
Boaters on the White River	1,287	3,461	2,218	11,536	
Goblin City Overlook	140	377	242	1,257	

**Table ES-2 Impact Comparison by Resource for All Alternatives**

Resource	No Action Alternative	Proposed Action Alternative	Resource Protection Alternative	Optimal Recovery Alternative	Additional Discussion
<b>Water Resources</b>					
100-year Floodplains (incremental acres disturbed)	325	288	0	1,510	Section 4.13
<b>Total Water Use (acre-feet/year)</b>	<b>454</b>	<b>757</b>	<b>757</b>	<b>1,385</b>	<b>Section 4.13</b>
<b>Produced Water Withdrawals (acre-feet per year)</b>	<b>415</b>	<b>1,385</b>	<b>1,385</b>	<b>5,067</b>	<b>Sections 2.4.2.5, 2.6.2.6, 2.7.2.4, and 2.8.2.6</b>
<b>Produced Water Injected (acre-feet per year)</b>	<b>62</b>	<b>1,032</b>	<b>1,032</b>	<b>4,714</b>	<b>Sections 2.4.2.5, 2.6.2.6, 2.7.2.4, and 2.8.2.6</b>
<b>Wilderness Characteristics</b>					
BLM White River Natural Area (incremental acres disturbed)	0	0	0	0	Section 4.14
Non-wilderness Study Area Lands with Wilderness Characteristics (estimated incremental acres disturbed)	81	217	139	724	Section 4.14
<b>Wildlife Resources</b>					
Big Game Habitat (estimated incremental acres disturbed)					<b>Tables 4.15-1, 4.15-3, 4.15-5, and 4.15-7</b>
Pronghorn Year-long Crucial	3,183	10,264	6,607	34,562	
Pronghorn Year-long Substantial	67	179	116	604	
Mule Deer Year-long Crucial	553	1,488	958	5,011	
Mule Deer Winter Substantial	68	183	118	615	
Elk Winter Substantial	9	24	16	82	
Rocky Mountain Bighorn Sheep Year-long Crucial	781	2,103	1,354	7,082	
Bison Year-long Crucial Range	3,406	9,168	5,901	30,869	
Potential White-tailed Prairie Dog Habitat (estimated incremental acres disturbed)	4,258	11,644	7,581	39,206	Section 4.15
Greater Sage-grouse Habitat (estimated incremental acres disturbed)					<b>Tables 4.15-2, 4.15-4, 4.15-6, and 4.15-8</b>
2.0 Mile Lek Buffer	442	1,190	766	4,007	
Nesting	675	1,817	1,169	6,117	
Brooding	1,782	4,797	3,088	16,153	
Winter	1,356	3,649	2,349	12,288	
<b>Fisheries Resources</b>					
Estimated total water depletions for life of the project (acre/feet)	2,270	7,571	7,571	27,700	Section 4.15

<sup>1</sup> 2006 meteorological data show modeled concentrations of ozone between 76 and 79 ppb; 2005 meteorological data show modeled concentrations of ozone below 76 ppb.

<sup>2</sup> Modeled deposition from action alternatives does not exceed Federal Managers' Air Quality Related Values Workgroup thresholds, except for Mesa Verde National Park, which is predicted to exceed thresholds for the No Action Alternative.

<sup>3</sup> The public sector revenue projections assume constant natural gas prices of \$4.59/thousand cubic feet and \$45/barrel for liquids. However, energy prices fluctuate over time. Actual sector revenues could be higher or lower than shown, depending on future prices and production. Such variance would affect all alternatives.

## Acronyms and Abbreviations

°F	degrees Fahrenheit
µg/m <sup>3</sup>	micrograms per cubic meter
<b>µS/cm</b>	<b><i>microSiemens per centimeter</i></b>
ACEC	Area of Critical Environmental Concern
ACEPM	applicant-committed environmental protection measure
ADT	average daily traffic
AHPA	Archaeological and Historical Preservation Act of 1974
AIRFA	American Indian Religious Freedom Act of 1978
AMP	Allotment Management Plan
amsl	above mean sea level
AO	Authorized Officer
APD	Application for Permit to Drill
API	American Petroleum Institute
APLIC	Avian Power Line Interaction Committee
AQRV	Air Quality Related Value
<b>AQS</b>	<b><i>Air Quality System</i></b>
<b>ARMS</b>	<b><i>Air Resource Management Strategy</i></b>
ARPA	Archaeology Resources Protection Act of 1979
AUM	animal unit month
BA	biological assessment
bbl	barrels
BCC	Birds of Conservation Concern
Bcf	billion cubic feet
<b>BCPD</b>	<b><i>barrels of condensate per day</i></b>
BHCA	Bird Habitat Conservation Area
BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
BMP	best management practice
BSC	biological soil crusts
<b>BTEX</b>	<b><i>benzene, toluene, ethyl benzene, and xylene</i></b>
Btu	British thermal unit
BWPD	barrels of water per day
CAA	Clean Air Act

CAGR	Compounded Annual Growth Rate
CCC	Civilian Conservation Corps
CDOW	Colorado Division of Wildlife
CDP	Census Designated Place
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CH <sub>4</sub>	methane
CISAs	Cumulative Impact Study Areas
CMAQ	Community Multiscale Air Quality
CO	carbon monoxide
CO <sub>2</sub>	carbon dioxide
CO <sub>2</sub> e	carbon dioxide equivalents
COA	Condition of Approval
CWA	Clean Water Act
dBA	decibels on the A-weighted scale
dv	deciview
DWSPZ	drinking water source protection zone
EA	environmental assessment
EIA	Energy Information Administration
EIS	environmental impact statement
EO	Executive Order
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FLAG	Federal Land Managers' Air Quality Related Values Workgroup
FLMs	Federal Land Managers
FLPMA	Federal Land Policy and Management Act of 1976
FMR	federal mineral royalty
FOOGLRA	Federal Onshore Oil and Gas Leasing Reform Act of 1987
<b>FR</b>	<b><i>Federal Register</i></b>
FY	Fiscal Year
GHG	greenhouse gas
GIS	Geographic Information System
GNBPA	Greater Natural Buttes Project Area
GWP	global warming potential
H <sub>2</sub> S	hydrogen sulfide
HAP	hazardous air pollutant

hp	horsepower
IC	internal combustion
<b>IM</b>	<b><i>Instruction Memorandum</i></b>
IPCC	Intergovernmental Panel on Climate Change
kg/ha-year	kilograms per hectare-year
km	kilometer
KMG	Kerr-McGee Oil & Gas Onshore LP
KOSLA	Known Oil Shale Leasing Areas
kV	kilovolt
MACT	Maximum Achievable Control Technology
MBTA	Migratory Bird Treaty Act
MCD	multi-county district
Mcf	thousand cubic feet
mg/L	milligrams per Liter
MLA	Mineral Leasing Act of 1920
MMbl	million barrels
MMcfd	million cubic feet per day
mmhos/cm	millimhos per centimeter
<b>MOU</b>	<b><i>Memorandum of Understanding</i></b>
<b>MPE</b>	<b><i>Model Performance Evaluation</i></b>
N <sub>2</sub> O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act of 1990
<b>NAIP</b>	<b><i>National Agriculture Imagery Program</i></b>
NEPA	National Environmental Policy Act
<b>NESHAP</b>	<b><i>National Emissions Standards for Hazardous Air Pollutants</i></b>
NHPA	National Historic Preservation Act of 1986
NNSR	Non-attainment New Source Review
NO <sub>2</sub>	nitrogen dioxide
<b>NOA</b>	<b><i>Notice of Availability</i></b>
NOI	Notice of Intent
NOS	Notice of Staking
NO <sub>x</sub>	oxides of nitrogen
NPS	National Park Service
NRCS	Natural Resource Conservation Service
NRHP	National Register of Historic Places

NSO	No Surface Occupancy
NSPS	New Source Performance Standards
NWIS	National Water Information System
OHV	off-highway vehicle
OSEC	Oil Shale Exploration Company
PFYC	Potential Fossil Yield Classification
PIF	Partners in Flight
PILT	payments-in-lieu of taxes
PL	Public Law
PM	particulate matter
PM <sub>10</sub>	particulate matter with an aerodynamic diameter of 10 microns or less
PM <sub>2.5</sub>	particulate matter with an aerodynamic diameter of 2.5 microns or less
PMZ	Primary Management Zone
<b>ppb</b>	<b>parts per billion</b>
ppm	parts per million
ppmw	parts per million weight
PSD	Prevention of Significant Deterioration
<b>psi</b>	<b>pound per square inch</b>
<b>PTE</b>	<b>potential to emit</b>
PWR	Public Water Reserve
RAPPS	Reasonable and Prudent Practices for Stabilization
RDG	Resource Development Group
<b>RfC</b>	<b>Reference Concentrations</b>
RFD	reasonably foreseeable development
RIP	Recovery and Implementation Program
RMP	Resource Management Plan
ROD	Record of Decision
ROW	right-of-way
RVs	recreational vehicles
SAAQS	State Ambient Air Quality Standards
SARA	Superfund Amendments and Reauthorization Act
scf	standard cubic feet
<b>SDEIS</b>	<b>Supplement to the Draft EIS</b>
<b>SDWA</b>	<b>Safe Drinking Water Act</b>
SHPO	State Historic Preservation Officer
SI	spark-ignition

SMA	surface management agencies
SO <sub>2</sub>	sulfur dioxide
SPCC <i>Plan</i>	Spill Prevention, Control, and Countermeasures Plan
SR	State Road
SRMA	Special Recreation Management Area
SSA	sole source aquifer
SSD	Special Service District
SSURGO	Soil Survey Geographic
SSXP II	Southern System Extension II
STATSGO	General Soil Map
STSA	Special Tar Sand Areas
SWPPP	Storm Water Pollution Prevention Plan
SWReGAP	Southwest Regional Gap Analysis Project
Tcf	trillion cubic feet
TDS	total dissolved solids
TEG	tri-ethylene glycol
tpy	tons per year
<b>TSL</b>	<b>Toxic Screening Level</b>
TSS	total suspended solids
UCAT	Utah College of Applied Technology
UDAQ	Utah Division of Air Quality
UDEQ	Utah Department of Environmental Quality
UDNR	Utah Department of Natural Resources
UDOGM	Utah Division of Oil, Gas, and Mining
UDOT	Utah Department of Transportation
UDOWS	Utah Department of Workforce Services
UDWR	Utah Division of Wildlife Resources
UGOPB	Utah Governor's Office of Planning and Budget
UGS	Utah Geologic Survey
UIC	Underground Injection Control
UNHP	Utah Natural Heritage Program
UNPS	Utah Native Plant Society
UPDES	Utah Pollution Discharge Elimination System
U.S.	United States
USACE	U.S. Army Corps of Engineers
USC	United States Code

USCA	United States Code Annotated
USDA	U.S. Department of Agriculture
USDOE	U.S. Department of Energy
USDOI	U.S. Department of the Interior
USDOT	U.S. Department of Transportation
USDW	underground source of drinking water
USEPA	U.S. Environmental Protection Agency
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
<b>USGCRP</b>	<b>U.S. Global Change Research Program</b>
USGS	U.S. Geological Survey
USITLA	Utah School and Institutional Trust Lands Administration
<b>UTAG</b>	<b>Utah Air Resource Technical Advisory Group</b>
VOC	volatile organic compound
VRM	Visual Resource Management
WIC	Wyoming Interstate Company
WMU	wildlife management unit
WRAP	Western Regional Air Partnership
WSA	wilderness study area

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# 1.0 Introduction and Background

## 1.1 Project Location and Background

Kerr-McGee Oil & Gas Onshore LP (KMG), a wholly owned subsidiary of Anadarko Petroleum Corporation, has notified the Bureau of Land Management's (BLM) Vernal Field Office that it proposes to conduct infill drilling to develop the hydrocarbon resources from oil and gas leases owned, at least in part, by KMG within the Greater Natural Buttes Project Area (GNBPA) in Uintah County, Utah (**Figure 1.1-1**). KMG intends to explore and develop all potentially productive subsurface formations underlying the GNBPA. The formations include, but are not limited to, the Green River Formation, Wasatch Formation, Mesaverde Group (including the Blackhawk Formation), Mancos Shale, and Dakota Sandstone. KMG owns contractual leasehold rights for more than 85 percent of the lands within the GNBPA. In most cases, KMG's lease rights include the right to occupy the surface to explore, develop, operate, and produce the subsurface oil and gas resources.

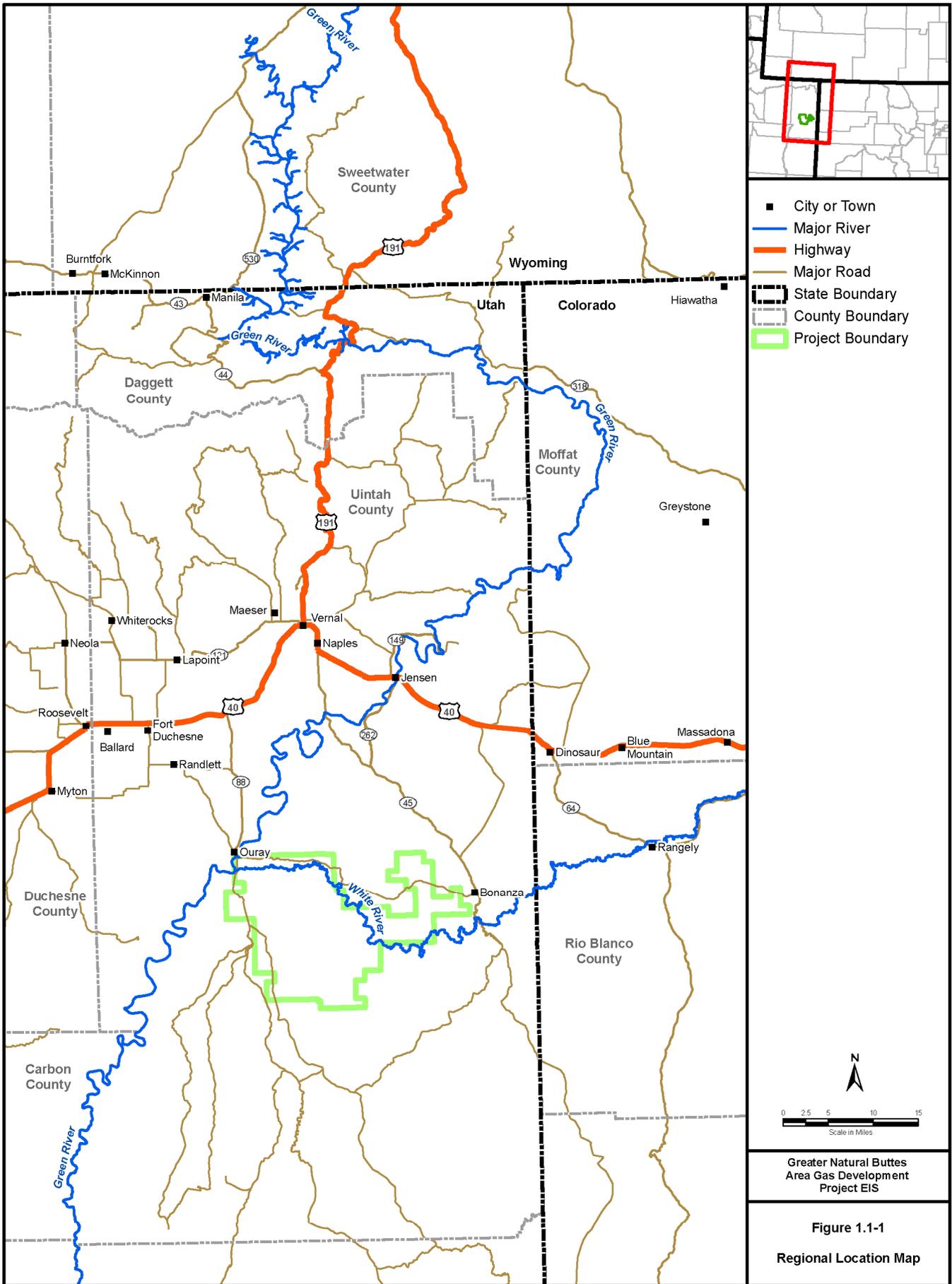
The GNBPA consists of approximately 162,911 acres in an existing gas producing region (Township 8 South, Range 20-23 East; T9S, R20-24E; T10S, R20-23E; and T11S, R21-22E) located on lands owned by the federal government, the State of Utah, the Ute Tribe, and other private land owners. The GNBPA includes portions of at least nine oil and gas fields, most of which are included in the larger Natural Buttes Field, currently the most productive gas field in Utah (**Figure 1.1-2**). The oil and gas fields located within the GNBPA are the Devil's Playground Field, the Love Field, the Natural Buttes Field, the Southman Canyon Field, the Uintah Field, the Chapita Wells Field, the Bitter Creek Field, the Ouray Field, and the Stagecoach Field.

Federal lands in the proposed GNBPA are under the jurisdiction of the BLM Vernal Field Office. The Vernal Field Office has determined that the proposed project constitutes a major federal action requiring the development of an environmental impact statement (EIS). This EIS serves the purpose of disclosing and analyzing impacts resulting from the level of development proposed within the GNBPA, including a no action alternative, with consideration of applied applicant-committed environmental protection measures (ACEPMs), BLM best management practices (BMPs), and mitigation measures. A summary of the ACEPMs is provided in **Appendix A**.

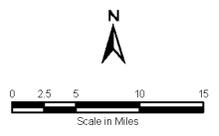
## 1.2 Summary of Proposed Action

KMG's proposed infill drilling project within the GNBPA (the Proposed Action) is the subject of the analysis contained in this EIS. KMG and other operators would explore and develop potentially productive subsurface formations underlying the GNBPA by drilling up to 3,675 additional wellbores from up to 3,041 new well pads over a period of 10 years. The productive life of each well is estimated to be approximately 30 to 50 years. In support of the new wells, KMG would construct access roads, pipelines, electric power lines, compression facilities, and water disposal facilities. The total estimated new surface disturbance for the Proposed Action would be approximately 12,658 acres or about 7.8 percent of the GNBPA.

Infill drilling would be performed on 40-acre and 20-acre surface spacing throughout the GNBPA, which is equivalent to a density of 16 to 32 surface well pads per section (or square mile). KMG defines a 40-acre well pad as the first well pad located in a governmental 40-acre quarter-quarter section. A 20-acre well pad is defined as the second well pad located in a 40-acre quarter-quarter section. Downhole or subsurface spacing would be based on the ongoing reservoir engineering evaluation and would be site-dependent, potentially ranging from 16 wells per section (40-acre spacing) to 64 wells per section (10-acre spacing) or more.

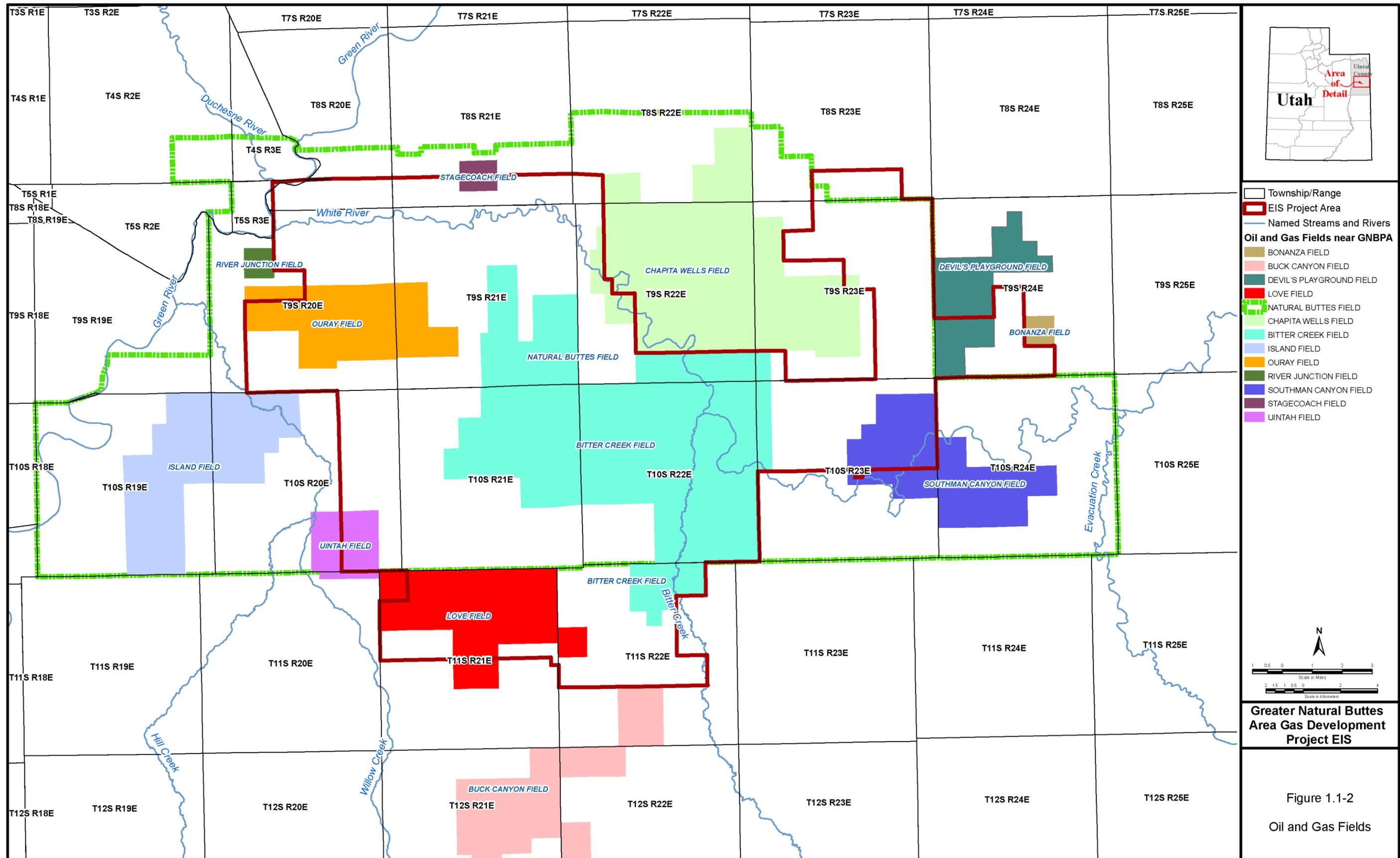


- City or Town
- Major River
- Highway
- Major Road
- State Boundary
- County Boundary
- Project Boundary



Greater Natural Buttes  
Area Gas Development  
Project EIS

Figure 1.1-1  
Regional Location Map



KMG is a private corporation intending to make a profit through development of their leases in the GNBPA. Specific purposes for KMG's proposed project are to:

- Conduct infill drilling on 40-, 20-, and 10-acre downhole spacing to determine the efficiency of reservoir drainage of the various spacings;
- Determine whether directional drilling would be technically and economically feasible for achieving desired downhole spacing and for producing from tight gas reservoirs in environmentally constrained areas;
- Increase the available supply of domestically produced natural gas by a daily delivery of 500 million cubic feet or greater;
- Increase the available supply of domestically produced liquid hydrocarbons;
- Support local economies by providing and maintaining employment opportunities, sustaining local businesses, and expanding the tax base;
- Reduce dependence on potentially unstable foreign sources of energy and contribute to our nation's energy security; and
- Contribute to the available supply of a clean-burning fuel for domestic and industrial use.

In addition, KMG's proposed natural gas and oil development project is consistent with the National Energy Act of 2005 and the National Energy Policy (President's Plan) because it would provide a domestic source of natural gas and oil to meet the rising national energy demand.

### **1.3 Purpose and Need**

The need for a BLM action is to respond to this proposal and to evaluate potential impacts resulting from implementing future plans and applications related to this proposal. The Federal Land Policy and Management Act of 1976 (FLPMA) (Public Law [PL] 94-579, 43 United States Code [USC] 1701 et seq.) recognizes oil and gas development as one of the "principal" uses of the public lands. Federal mineral leasing policies (Mineral Leasing Act of 1920 [MLA], 30 USC 188 et seq.) and the regulations by which they are enforced recognize the statutory right of lease holders to develop federal mineral resources to meet continuing national needs and economic demands. The purpose of this EIS is to facilitate the BLM decision-making process whether to approve, approve with modifications, or disapprove the proposed project or project components based on an evaluation of the expected impacts. Through this process, the BLM's purpose is to minimize or avoid environmental impacts to the extent possible, while allowing KMG to exercise its valid lease rights.

### **1.4 Environmental Analysis Process**

This EIS was prepared in accordance with the National Environmental Policy Act (NEPA) and in compliance with the FLPMA, Council of Environmental Quality (CEQ) regulations (40 Code of Federal Regulations [CFR] Parts 1500-1508), United States (U.S.) Department of the Interior (USDOI) requirements (Department Manual 516, Environmental Quality, under **43** CFR Part 46), and guidelines listed in the BLM NEPA Handbook, H-1790-1 (BLM 2008a) and in the BLM Utah NEPA Guidebook (BLM 2006a).

According to the terms of the MLA as amended by the Federal Onshore Oil and Gas Leasing Reform Act of 1987 (FOOGLRA), the BLM is the agency authorized to manage federal mineral interests underlying federal or split estate lands. Approximately 54 percent of the surface of the GNBPA and 79 percent of the mineral interests underlying the GNBPA are owned by the United States and administered by the BLM. Therefore, the BLM is the lead agency in this process, and federal jurisdiction of the GNBPA natural gas development project is assumed by the BLM, which would issue a Record of Decision (ROD) for this EIS.

Within the ROD, the BLM Authorized Officer (AO) would determine:

- Whether the analysis contained within this document is adequate for the purpose of reaching informed decisions regarding GNBPA project development;
- Whether to approve the Proposed Action, select a different alternative, or a combination of alternatives;
- Whether the Proposed Action or other alternatives are in conformance with applicable land and resource management plans and programmatic plans developed under NEPA, FLPMA, CEQ regulations, USDOJ Department Manual 516, and the BLM NEPA Handbook H-1790-1 (BLM 2008a); and
- The Conditions of Approval (COAs), if any, that may be attached to the ROD.

The BLM decision would only apply to federal lands; however, the analyses in this EIS consider the impacts for all proposed activities regardless of surface ownership.

Uintah County and the Bureau of Indian Affairs (BIA) are cooperating agencies. Copies of the Preliminary Draft EIS were submitted to Uintah County and the BIA for their review and comment prior to distribution to the public, and their comments were taken into account.

#### **1.4.1 Decisions to be Made After the EIS Process**

Although the ROD may approve the proposed oil and gas wellfield development on a conceptual basis, a site-specific environmental review of areas proposed for surface disturbance and sub-surface mineral extraction would be completed to determine the final location of facilities based on environmental considerations. Prior to drilling on BLM-administered land, the project proponent must submit an Application for a Permit to Drill (APD) to the BLM, which includes a Surface Use Plan of Operation and a Drilling Plan. At that time, the BLM would conduct a site-specific NEPA review and attach appropriate measures to the permit to protect natural and human resources. The BLM is responsible for approval of the drilling program, protection of groundwater and other sub-surface resources, and final approval of the APD on BLM-administered lands and/or minerals. Access roads and utilities such as pipelines and electrical powerlines on federal lands may require a right-of-way (ROW) grant from the BLM, based on the APD applications or other independent applications. The regulations and guidelines that are used to administer the construction and operation of oil and gas facilities are further discussed in Section 2.3, Management Common to All Alternatives.

Tribal surface and mineral estate is administered in trust by the BIA. While the BLM would approve drilling permits on Tribal Lands, approval of surface disturbance and granting of ROWs would be approved by the BIA. All lands belonging to the State of Utah within the GNBPA are administered by the Utah School and Institutional Trust Lands Administration (USITLA). USITLA issues oil and gas leases and would approve surface disturbance activities on state lands. Approval of APDs on state and privately owned lands would be subject to requirements of the Utah Division of Oil, Gas, and Mining (UDOGM).

#### **1.4.2 Supplement to the Draft EIS**

***In response to comments on the Draft EIS for the Greater Natural Buttes Area Gas Development Project, the BLM developed a Supplement to the Draft EIS (SDEIS) to address comments specific to air quality. The comments that provided the basis for the BLM's development of the SDEIS raised issues regarding new information and additional analyses to be included in the document and can be summarized as follows:***

- ***Since completion of the air quality impact analysis for this project, U.S. Environmental Protection Agency (USEPA) established new 1-hour standards for nitrogen dioxide (NO<sub>2</sub>) and***

*sulfur dioxide (SO<sub>2</sub>). These standards are addressed through additional near-field modeling analyses in the SDEIS.*

- *Monitoring of ozone levels in the Uinta Basin during 2010 and 2011 have revealed concentrations at levels above the National Ambient Air Quality Standards (NAAQS), prompting the BLM to consider additional mitigation measures in the impact analysis.*
- *The new information and analyses prompted the BLM to re-evaluate potential environmental justice impacts on nearby communities.*

*The SDEIS presented additional analysis of near-field impacts to address newly promulgated standards for NO<sub>2</sub> and SO<sub>2</sub> as well as to address comments related to mitigation and environmental justice impacts due to potential air quality impacts. The SDEIS was formatted to follow the same outline as the Draft EIS; however, only those sections that were revised or newly added to the document were presented in the SDEIS. For those sections that were referenced in the SDEIS but text was not included, the reader was referred to the same section number of the Draft EIS.*

*The SDEIS was released for public review as a separate document on June 10, 2011, to obtain comment on the revised and newly added sections. The BLM reviewed and responded to public comments and made appropriate revisions to the text in the SDEIS. The sections presented in the SDEIS have been incorporated into this Final EIS.*

### **1.4.3 Final EIS**

*Changes in this Final EIS are presented in bold italics and indicated by vertical bars that appear in the left margin. These changes were made in response to comments received on the Draft EIS, comments received on the SDEIS, and as a result of updated information that became available after issuance of the Draft EIS.*

## **1.5 Legal and Policy Considerations**

### **1.5.1 Leases and Leasing History**

KMG operates the oil and gas leases underlying approximately 85 percent of all lands in the GNBPA. For those leases where KMG is the designated operator, KMG is responsible for ensuring that lease stipulations are followed during oil and gas development.

Many of the leases covering BLM-administered minerals within the GNBPA were issued before the current Resource Management Plan (RMP) for the project area was approved and, therefore, may not contain stipulations other than the standard lease terms. Typical stipulations that may apply to federal oil and gas leases in the vicinity of the GNBPA include:

- Stipulations to protect lands in oil shale withdrawal, Executive Order (EO) 5327 of April 15, 1930;
- Surface disturbance restrictions to protect erosive soils and sensitive plants;
- Seasonal restrictions to protect raptor species and other wildlife;
- Threatened and Endangered Species Act of 1973 (ESA) stipulations; and
- Protection of cultural resources.

Surface stipulations and timing restrictions, threatened and endangered species lease notices for oil and gas development, and BLM-committed conservation measures that may apply to federal leases within the GNBPA are provided in **Appendix K** of the Vernal Field Office ROD and Approved RMP (BLM 2008b).

### 1.5.2 Conformance with BLM Management Plans and Policies

Policies for development and land use decisions for federal lands and minerals within the GNBPA are contained in the following federal documents.

- The Vernal Field Office ROD and Approved RMP (BLM 2008b)
- Environmental Analysis Record Oil and Gas Leasing Program for the Vernal District (BLM 1975)

Additional guidance for the GNBPA is contained in the following NEPA documents.

- The Vernal Field Office Proposed RMP and Final EIS (BLM 2008c)
- EA No. 1997-13, Coastal Oil & Gas Corporation Natural Buttes Unit Environmental Assessment (EA), Uintah County, Utah (BLM 1997a)
- Final EA of Coastal's Proposed Development of the Ouray Field, Uintah County, Utah (Buys & Associates 2000)
- EA No. UT-080-2006-240, Kerr-McGee's Bonanza Area EA (BLM 2006b)
- EA No. UT-080-2006-253, Kerr-McGee's Love Unit EA and Biological Assessment (BA) (BLM 2006c)
- EIS No. UT-080-2005-0010, EOG Resources' Chapita Wells-Stagecoach Area EIS and BA (BLM 2008d)
- EIS No. UT-080-2003-0369V, Questar Exploration and Production Company's Greater Deadman Bench EIS (BLM 2008e)

Management objectives within the Vernal RMP ROD include leasing oil and gas resources while protecting or mitigating impacts to other resource values. As such, the proposed GNBPA natural gas development project is consistent with the management decisions contained in the RMP. It is noted that surface occupancy or some existing oil and gas leases may not **appear to** be in conformance with the Vernal RMP; **however**, existing lease terms are not affected **or altered** by the recently approved RMP (**as stated on page 21 of the Vernal RMP ROD**). To the extent feasible, the proposed project would be expected to comply with the BLM's Utah Public Lands Health Standards (BLM 1997b). The proposed project also would be required to comply with federal policies related to riparian habitats, floodplains, and drainages.

### 1.5.3 Consistency with Other Federal and Local Land Management Plans and Policies

The BIA is a cooperating agency on this EIS. A formal management plan does not exist for the Uintah and Ouray Reservation; however, the elected Ute Tribe Business Committee and the BIA determine approval of land use activities on Tribal Lands. Production from tribal leases provides royalties, tax revenues, and surface access and use fees to the Tribe, which contributes to the Tribe's economic well being. The Proposed Action is consistent with the regulatory responsibilities of the BIA, which include promoting the economic development objectives of the Ute Tribe under its government-to-government relationship with, and trust responsibility to, the Tribe. Therefore, the range of the BIA's reasonable alternatives is limited to those that would serve the Tribe's economic development objectives consistent with the trust responsibility.

There are no comprehensive State of Utah plans for the GNBPA. USITLA has leased all of the state lands within the GNBPA for oil and gas production. Because the main objective of USITLA is to produce funding for the state school system, and because production on federal leases could lead to further interest in drilling state leases in the area, the Proposed Action is assumed to be consistent with the objectives of USITLA.

Uintah County has developed a Uintah County General Plan (Uintah County 2005) regarding development on public lands within the County. The Uintah County General Plan emphasizes multiple-use public land management practices, responsible use, and optimum utilization of public land resources. Multiple-use is

defined in the plan as including, but not limited to, the following historically and traditionally practiced resource uses: grazing, recreation, timber, mining, oil and gas development, agriculture, wildlife habitat, and water resources. The proposed project is consistent with the Uintah County General Plan.

#### 1.5.4 Authorizing Actions and Project Relationships to Statutes and Regulations

Private exploration and production from federal oil and gas leases is an integral part of the BLM oil and gas leasing program under authority of the MLA and FLPMA. The BLM oil and gas leasing program encourages development of domestic oil and gas reserves in accordance with the Mining and Minerals Policy Act and the reduction of U.S. dependence on foreign energy sources. Natural gas is an integral part of the energy future for the U.S. due to its availability and the presence of an existing market delivery infrastructure. The environmental advantages of burning natural gas, rather than coal, were emphasized by the U.S. Congress and by the President when the Clean Air Act (CAA) Amendments of 1990 were signed into law. Furthermore, the Energy Policy acts of 2001 and 2005 emphasize the development of domestic natural gas reserves for supply and economic stability.

Various aspects of oil and gas development are regulated under the BLM Onshore Oil and Gas Orders, as authorized in 43 CFR 3160 including:

- Onshore Order No.1 – Approval of Operations;
- Onshore Order No. 2 – Drilling Operations;
- Onshore Order No. 3 – Site Security;
- Onshore Order No. 4 – Measurement of Oil;
- Onshore Order No. 5 – Measurement of Gas;
- Onshore Order No. 6 – Hydrogen Sulfide Operations;
- Onshore Order No. 7 – Disposal of Produced Water;
- Onshore Order No. 8 – Well Completions/Workovers/Abandonment (Proposed Rule);
- Onshore Order No. 9 – Waste Prevention and Beneficial Use of Oil and Gas (Not Published); and
- Notices to Lessees.

In addition to the BLM, numerous other federal, state, and local governmental agencies may be involved in regulation of oil and gas development. A summary of the key permits, approvals, and authorizing actions that may apply to the action alternatives is provided in **Table 1.5-1**.

**Table 1.5-1 Key Federal, State, and Local Permits, Approvals, and Authorizing Actions for Construction, Operation, Maintenance, and Abandonment of the Proposed Action**

Issuing Agency	Name and Nature of Permit/Approval	Regulatory Authority (if appropriate)
<b>FEDERAL AGENCIES</b>		
<b>USDOJ</b> BLM	Permit to Drill, Deepen, or Plug Back (APD/Sundry Process); Controls drilling for oil and gas on federal onshore lands. Also see Chapter 2.0, <b>Table 2.3-1</b> .	MLA (30 USC 181 et seq.); 43 CFR 3162; National Mining and Minerals Policy Act of 1970, the FOGLRA of 1987, (Onshore and Gas Orders #1 and #2 [43 CFR 3164])
	ROW Grants and Temporary Use Permits; grants ROW use on BLM-managed lands.	MLA as amended (30 USC 185); 43 CFR 2880; FLPMA (43 USC 17611771); 43 CFR 2800
	Antiquities, Cultural, and Historic Resource Permits; issue antiquities and cultural resources use permits to inventory, excavate, or remove cultural or historic resources from federal lands.	Antiquities Act of 1906 (16 USC Section 431-433); Archaeological Resources Protection Act of 1979 (ARPA) (16 USC Sections 470aa47011); 43 CFR Part 3; Section 106 of the National Historic Preservation Act (NHPA)
	Approval to dispose of produced water; controls disposal of produced water from federal leases. Also see Chapter 2.0, <b>Table 2.3-1</b> .	MLA (30 USC 181 et seq.); 43 CFR 3164; Onshore Oil and Gas Order No. 7

**Table 1.5-1 Key Federal, State, and Local Permits, Approvals, and Authorizing Actions for Construction, Operation, Maintenance, and Abandonment of the Proposed Action**

Issuing Agency	Name and Nature of Permit/Approval	Regulatory Authority (if appropriate)
USDOJ BLM (Continued)	Pesticide Use Permit and Daily Pesticide Application Record.	BLM Authorization for Herbicide Applications on Federal Lands
	Federal Noxious Weed Act compliance.	Plant Protection Act of 2000 (PL 106-224, 7 USC 7701); Federal Noxious Weed Act of 1974, as amended (USC 2801-2814); EO 13112 of February 3, 1999
	Initiation of Section 7 consultation.	Section 7 of the ESA, as amended (16 USC et seq.)
	Mineral Material Sales Permit; for use of BLM-managed borrow pits in road construction.	Materials Act of 1947 as amended (30 USC, 601 et seq.)
	Paleontological Resource Use Permit; approval for surveys and potential data collection at well pads and road sites.	FLPMA (302[b])
BIA	ROW Grants and Temporary Use Permits; grants ROW use on Tribal Lands.	25 CFR 169
	Tribal/allotted Land Activities. In coordination with the Northern Ute Tribe, the BIA has authority to approve any and all activities on Tribal/allotted lands.	25 CFR 225
U.S. Fish and Wildlife Service (USFWS)	ESA Section 7 consultation.	Section 7 of the ESA, as amended (16 USC et seq.)
	Migratory Bird Treaty Act (MBTA) consultation.	MBTA of 1918, as amended (15 USC 703-712); EO 13186
	Bald and Golden Eagle Protection Act consultation.	Bald Eagle Protection Act of 1940, as amended (16 USC 668-668d)
	Section 404 Permit Consultation; review of permit for compliance with ESA.	Consultation as established under the Fish and Wildlife Coordination Act
Advisory Council on Historic Preservation	Cultural resources compliance (Section 106); coordinated with the Utah State Historic Preservation Officer (SHPO).	NHPA, Section 106
U.S. Department of Defense Army Corps of Engineers (USACE) – Sacramento District	Section 404 permit (Nationwide and Individual); controls discharge of dredged or fill materials into waters of the U.S.	Section 404 of the Clean Water Act of 1972 (CWA) (33 USC 1344)
USEPA Region 8	USEPA has responsibility for implementing environmental programs for Indian Country (as defined at 18 USC § 1151) until Tribal governments are formally authorized to implement these programs ( <i>the GNBPA lies within Indian Country</i> ). <b>Regardless of surface ownership</b> , USEPA's <b>responsibility</b> is to provide scoping comments, review EISs, and provide CAA and CWA permitting, information, and appropriate technical assistance during and following the environmental analysis process.	CAA, as amended, 42 USC Annotated (USCA) Section 7410-762 (PL 95-604, PL 95-95) Federal Water Pollution Control Act, as amended by the CWA, 33 USCA Section 1251-1376 (PL 92-500, PL 95-217) Safe Drinking Water Act ( <i>SDWA</i> ), 452 USCA Section 300F-300J-10 (PL 93-523)
	Underground Injection Control (UIC) – also see Chapter 2.0, <b>Table 2.3-1</b> .	UIC (40 CFR 146.21 through 146.24)
U.S. Department of Transportation (USDOT) Utah	Approval of construction and operation of natural gas pipelines. Prescribes minimum safety requirements for pipeline facilities and the transportation of natural gas.	Pipeline safety regulations (49 CFR 190-199)
<b>STATE AGENCIES</b>		
Utah Division of State History Utah SHPO	Consult on Section 106 compliance process; approve cultural resource clearances; provide for protection of cultural resources.	NHPA, Section 106
	Antiquities Annual Permit; to conduct archeological surveys on state and private lands.	Archaeological Permit Rules Utah R694-1
	Antiquities Projects Permit; regulates all archeological excavations on state and private lands.	Archaeological Permit Rules Utah R694-1
Utah Department of Natural Resources (UDNR) UDOGM	Regulates activities associated with drilling of oil and gas wells in state, including pressure monitoring and permitting of injection wells and well spacing – also see Chapter 2.0, <b>Table 2.3-1</b> .	Permitting of Wells, Utah R649-3-4 et seq., R649-3-18; UIC Rules Utah R649-5 and R649-3-2
Division of Water Rights	Review and issuance of stream alteration permit.	Utah Code 73-3-29
	Approval to Appropriate Water; grants permit to appropriate water.	Utah Code 73-3-2

**Table 1.5-1 Key Federal, State, and Local Permits, Approvals, and Authorizing Actions for Construction, Operation, Maintenance, and Abandonment of the Proposed Action**

Issuing Agency	Name and Nature of Permit/Approval	Regulatory Authority (if appropriate)
Division of Water Resources	Determination of adequate water supply and cumulative impacts on water supply. Section 401, CWA Water Quality Certification Stream and Wetland Crossings Section 401, CWA Water Quality Certification Stream and Wetland Crossings.	CWA as it pertains to state government (Section 401)
Utah Division of Wildlife Resources (UDWR)	Protection and management of state wildlife and fish resources. Participation in the Section 404 Permit process and review of the Draft EIS.	Utah Code 23-22
	Consultation and input on fish and wildlife habitat for state listed species.	Utah Code 23-13 through 23-21
Forestry, Fire, and State Lands	ROW grant for construction activities on State lands.	Easement Rules Utah R652-40
Utah Department of Environmental Quality (UDEQ) <sup>1</sup> Division of Water Quality	Protection of water quality. Responsible for the Utah Pollutant Discharge Elimination System (UPDES) storm water discharge permit. Prior to construction the preparation of a Storm Water Pollution Prevention Plan (SWPPP) is required. <b>SDWA review and administration.</b>	Utah Code 19-5; UPDES Rules Utah R317-8
	UPDES Construction Dewatering Permit; discharge of dewatering and hydrostatic test waters from property to U.S. waters.	Utah Code 19-5; UPDES Rules Utah R317-8
Division of Air Quality	Approval order; permit for operation of certain stationary emissions sources; Air Quality Permit to Construct.	Utah Code Stationary Source Rules Utah R307-210; Operating Permit Rules Utah R307-415
	New Source Review Permit; controls emissions from new or modified sources.	New and Modified Source Permit Rules Utah R307-401
	Fugitive Dust Control.	Fugitive Dust Rules Utah R307-205
Utah Department of Transportation (UDOT)	Transport Permit; authorizes oversize, over length, and overweight load transportation on state highways.	Motor Carrier Rules Utah R909-1
	Encroachment Permit; authorizes pipeline crossings of access roads that tie into state or federal highways.	Access Openings Rules Utah R933-3
USITLA	Issue a ROW grant/permit for construction and use activities on State Trust Lands.	USITLA Rights-of-Entry Rules Utah R850-41
<b>LOCAL AGENCIES</b>		
Uintah County Commissioners	County zoning/land use plan consultation.	Uintah County Code, Uintah County General Plan (Uintah County 2005)
	Road Use and Opening permits.	Uintah County Code
	Construction permits, licenses.	Uintah County Code
	Noxious Weed Act enforcement.	Uintah County Code
	Solid Waste Disposal permits.	Uintah County Code
	Special Use and Conditional Use permits.	Uintah County Code

<sup>1</sup> USEPA has responsibility for environmental permitting and review on lands in Indian Country.

## 1.6 Scoping

### 1.6.1 Public Scoping

The BLM conducted public and internal scoping to solicit input and identify environmental issues and concerns associated with the proposed project. The public scoping process was initiated on October 5, 2007, with the publication of a Notice of Intent (NOI) in the Federal Register (**FR**). The BLM prepared a scoping information notice and provided copies to the public, other government agencies, and Tribes. These announcements included information on a public scoping and open house, which was held at the Western Park Conference Center in Vernal, Utah, on October 23, 2007. The official scoping period ended November 5, 2007.

Written comments were received during the public scoping period. Public response to the NOI and meetings included a total of nine letters: two from federal agencies, one from the state agencies, one from a county agency, one from a non-governmental organization, and four from industry or private individuals.

During the scoping period, the following key concerns were identified for consideration in preparing the Greater Natural Buttes EIS.

- Analysis of proposed development throughout the GNBPA in a manner compatible with previous or ongoing NEPA projects covering portions of the proposed GNBPA.
- Off-site mitigation opportunities or other management options.
- Laws, regulations, or BLM policies that may have changed since the Book Cliffs RMP.
- Impacts associated with tribal trust resources.
- Detailed transportation analysis that identifies methods to reduce traffic during drilling and production, defines maintenance standards, and determines the ultimate disposition of roads at project termination.
- Generation of solid wastes including garbage and human waste.
- Disposal of produced water on-site, use of produced water in drilling and fracing operations, and use of gathering water with pipelines versus trucking water to disposal sites.
- Comprehensive reclamation plan that includes post-reclamation monitoring and annual reporting.
- Additional surface disturbance associated with pipelines and analysis of surface versus sub-surface pipelines.
- Feasibility of locating production facilities outside the 100-year floodplain.
- Comprehensive air-quality analyses and region-wide air-quality modeling.
- Direct and cumulative impacts to pronghorn population, forage availability, and ability of numbers to meet herd unit objectives.
- Direct and cumulative impacts to sage grouse leks and surrounding nesting and brood-rearing habitats with consideration of mitigative habitat restoration and other mitigation measures.
- Cumulative impacts on current grazing permits, including direct impacts to livestock, forage, water developments, and economic returns.
- Identification of hunting value of lands in the GNBPA and impacts to hunting activities.
- Impacts to visual resources and recreational use along the White River.
- Economic effects of the proposed project to the local economy, the state, and the school trust lands.
- Balance between environmental protection and economic growth.

### **1.6.2 Internal Scoping and Issue Identification**

The BLM has compiled a list of resources potentially present in the Vernal Field Office area. These resources represent issues considered in all Vernal Field Office EAs and EISs and are discussed and analyzed in Chapters 3.0, 4.0, and 5.0 of this document. A listing of these resources and their status within the GNBPA is presented in **Appendix B**. The resources and issues identified in this appendix that are not within the vicinity of the GNBPA, and therefore would not be affected by the proposed project, are not carried forward for detailed analysis in Chapters 3.0, 4.0, and 5.0 of this EIS.