

6.0 COORDINATION AND CONSULTATION

6.1 PUBLIC INVOLVEMENT

A legal Notice of Intent (NOI) was published in the Federal Register on December 19, 2003 to prepare an EIS on the QEP proposal for the GDBR project. Additionally, a scoping packet with a letter inviting participation in public scoping was mailed to approximately 80 individuals, groups, and agencies. A formal scoping notice was then distributed to interested individuals and organizations. BLM conducted a public scoping and information open house at the Uintah County Building in Vernal, Utah on January 14, 2003. From November 14, 2003 through February 4, 2004, BLM conducted internal and public scoping to solicit input and identification of environmental issues and concerns associated with the proposed QEP Project. BLM then prepared a scoping information packet and provided copies of it to federal, state, and local agencies, and members of the general public.

The Vernal Field Office received letters commenting on the proposed GDBR project. The contents of these letters may be found in the project record at the Vernal Field Office. In general, the concerns and comments about the proposed project are summarized in Section 1.6 of this EIS.

The formal DEIS was published on February 10, 2006. Written comments were accepted from February 10 to April 27, 2006 on the DEIS. Seven comment letters were received. A formal public meeting for the receipt of oral or written comments was held on the DEIS in Vernal, Utah, on March 1, 2006. Written DEIS and project maps were made available. Members of BLM, Uintah County as a cooperating agency, and Buys & Associates were available for questions and comments. Except for two QEP representatives, no one from the public or other government agencies attended the public meeting. The seven written comments received were reviewed and issues to be addressed for the FEIS were identified.

The list of persons, groups, and agencies that were sent a copy of the DEIS and the FEIS is shown below. Table 6-1 lists the summary of the comments received on the DEIS and the responses to these comments. The copies of the letters received are on file at the Vernal BLM Field Office in Vernal, Utah.

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Fillmore UT 84631

Ashley National Forest
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Vernal, UT 84078

Bureau Of Indians Affairs
Uintah And Ouray Agency
Ft. Duchesne, UT 84026

Daggett County Commissioners
Po Box 219
Manila, UT 84047

Utah State Division Of History
Antiquities Section
300 Rio Grande Ave
Salt Lake City, UT 84101

Deseret News
30 East 100 South
Salt Lake City, UT 84111

Dinosaur National Monument
Po Box 210
Dinosaur, Co 81610

Duchesne County Commissioners
Po Box 270
Duchesne, UT 84021

Uintah County Library
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Vernal, UT 84078

KVEL Radio
Po Box 307
Vernal, UT 84078

KNEU Radio
Route 2 Box 2384
Roosevelt UT 84078

High Country News
Box 1090
Paonia, Co 81428

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Salt Lake City, UT 84105

Mr. Herb Mcharg
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76 South Main Street – Suite 9
Moab UT 84532

Sierra Club
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Suite 204
Salt Lake City, UT 84106

The Nature Conservancy
Utah Field Office
559 East South Temple
Salt Lake City, UT 84102

The Wilderness Society
1660 Wynkoop Street #850
Denver, Co 80202-1269

The Salt Lake Tribune
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Salt Lake City, UT 84111

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Uintah Mountain Club
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Uintah Basin Standard
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Roosevelt, UT 84066

Vernal Area Chamber Of Commerce
Conservation Issues Committee
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Vernal, UT 84078

Vernal Express
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Vernal, UT 84078

UDWR
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Vernal, UT 84078

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BYU
Provo, UT 84601

Dept Of Zoology
BYU
Provo, UT 84601

Utah Environmental Congress
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Salt Lake City, UT 84115

Utah Rivers Council
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Salt Lake City, UT 84105

Duchesne County Planning, Zoning
Public Lands & Community Dvlpmt
Po Box 317
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Dinosaur Travel Board
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Uintah County Public Lands Committee
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Uintah County Planning Office
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Washington Dc 20240

U.S. EPA
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The list of responses to the comments received are shown below.

Table 6-1. Comments and Responses on the GDBR DEIS.

Comment	Response
<p>U.S. Environmental Protection Agency (EPA) Region 9 999 th Street – Suite 300 Denver, CO 80202-2466</p>	
<p>EPA 1. The DEIS fails to compare the proposed action to any alternative that meets the purpose of QEP utilizing its valid existing rights. EPA suggests that the following alternatives should be analyzed in a Supplemental Draft EIS or the Final EIS:</p>	<p>Additional alternatives were considered. The mitigation identified in chapter 4 comprise an alternative to the proposed action that resolves relevant environmental impacts. The other alternatives considered are described in the Alternatives Considered but not Evaluated in Detail Section. Section 2.4 has also been revised to include the alternatives suggested by EPA.</p>
<p>EPA 2. A Phased Development Alternative could decrease the distances between each new rig setup, address issues of unitization and gas capture, and reduce field-related vehicular traffic. Phased development would also allow time for additional technical advances, such as improving directional drilling techniques, which could result in increased oil and gas production with fewer environmental impacts.</p>	<p>It is unclear how this alternative would reduce impacts. The 10-year developmental phase of the GDBR project is a type of phased development. As improved drilling techniques would become available over the 10-year period, QEP would apply these techniques if enhanced recovery of the reserves would occur and the new methods would be economically feasible. However, it appears that the EPA-recommended phased development would restrict exploration and development in distant areas until all development within a given area would be complete. As a result, the phased development scenario would deny the operator the opportunity to expand far enough out from existing development to drill exploratory type of wells. These exploratory wells are needed to determine the extent, quantity, and quality of oil and gas potential reserves at locations distant from existing development. The exploratory drilling may indeed lessen overall impacts if it is found that the exploratory wells would not have the desired economic potential. In a phased development scenario, the traffic would tend to be more concentrated in distinct areas thereby increasing traffic impacts on the roads in the vicinity of the construction and development.</p>
<p>EPA 3. A Directional Drilling Alternative should be considered in areas where there are low risks such as infill locations and within the “exceptional recovery areas”.</p>	<p>Currently, QEP has drilled and completed 7 directional gas wells. These wells were each drilled on an existing pad that had another vertical well. Four of these directional wells were 40-acre spacing (due to topography) and three were on 20 acre spacing (infill drilling). QEP has also identified the portion of the field that has the topography and infill potential characteristics and the DEIS analyzes them</p>

Comment	Response
	<p>as directional wells from an existing pad.</p> <p>As for considering directional drilling field wide, the DEIS on page 2-31 specifically states, “As shown on Figure 2-5 in the DEIS, the Estimated Ultimate Recovery of directional wells would have to exceed 1.1 billion cubic feet for wells with a probability of success greater than 85%. This is generally not the case for the GDBR wells.” However, under the Proposed Action, the use of directional drilling may still be considered on a case-by-case basis as necessary to reduce impacts to resources of concern.</p>
<p>EPA 4. A Minimum Setback Distances Alternative should be considered that assures adherence to all minimum setback distances from riparian zones, floodplains, springs, or sensitive wildlife, geologic, and cultural resource areas that could be used to highlight where such conflicts may occur. EPA recommends this alternative to analyze the difference in environmental effects compared to the Proposed Action and other alternatives.</p>	<p>It is unclear how this alternative would reduce impacts. Minimum setback distances are part of the Proposed Action. Setbacks are already incorporated into the proposed action. Regulations at 43 CFR 3101.1-2 dictate that facilities can be moved 200 meters to reduce or avoid any impacts. The mitigation and applicant committed measures take into account many of the suggested setback distances, both in time and space. The well pad and access road locations in this document are conceptual, so that the need for setbacks will be identified and analyzed through additional NEPA documentation on a site-specific basis during the review phase of the specific project Application. As stated on page 4-3 of the DEIS, “Executive Order 11988 requires federal agencies to make decisions in a manner that promotes avoidance of adverse impacts and reduces the risk of property loss and human safety due to floodplain development/modification, and preserves the natural and beneficial values of floodplains. Floodplain development/modification is allowed only after there are no other feasible alternatives.” Since the minimum setback distances alternative is incorporated into the proposed action so there is no need to address minimum setbacks as a separate alternative.</p>
<p>EPA 5. A Green River Protection Alternative should be considered that provides for no development within the Green River floodplain and riparian corridor.</p>	<p>The comment is unclear how the suggestion will reduce impacts. However, a Green River Protection alternative is not needed because this document is a conceptual analysis. This alternative is similar to the setback alternative. As noted above, the onsite, plus 43 CFR 3101.1-2 allows for 200 meter movement during the onsite survey to avoid violating riparian policy. Since the vegetation extends east and west from the banks of the Green River, it is likely that</p>

Comment	Response
	moving all of the facilities 200 meters east would probably alleviate, if not eliminate, any impacts to riparian vegetation. Furthermore, the movement of facilities 200 meters east could move these facilities from the Green River floodplain.
EPA 6. Since the project area is located on Indian lands within the exterior boundary of the Uintah and Ouray Indian Reservations, EPA directly implements federal environmental protection programs with regard to activities associated with the proposed project. This includes permitting authority for the proposed water injection wells for enhanced recovery and any produced water disposal wells pursuant to the Underground Injection Control (UIC) program.	None of the surface or mineral ownership in the GDBR is Indian land, but is located on lands within the exterior boundary. EPA Region 8, has jurisdiction for water injection permitting actions for all portions of the lands south of Vernal and east of the Uintah and Ouray Indian Reservation to the Utah/Colorado border. Therefore, Table 1.1 has been changed to identify EPA as the permitting agency for water wells and the Underground Injection Control Program.
EPA 7. Under Section 365 of the Energy Policy Act, the Vernal Field Office has been designated as a pilot project office. It may be possible to improve the efficiency of field inspections regarding environmental compliance based on the additional staffing provided to pilot offices. EPA requests that the Final EIS specify the number of staff and percentage of time allocated to enforcement inspection.	The information requested by EPA is administrative in nature and is not necessary since the analysis assumes that sufficient staff and funding would be available to monitor project development and enforce the required mitigation.
EPA 8. EPA believes that it is important to specifically designate which entity (BLM, the Operators, resource organizations, or some combination) will have responsibility for implementing activities that require management, mitigation, and monitoring of construction and operational impacts, as well as reclamation status and effectiveness. All of these activities should be verifiable and an agency/entity needs to be held accountable for performance oversight both throughout the life of the project and after the project has been decommissioned. EPA also recommends that BLM provide public disclosure of these performance oversight activities.	<p>On BLM-administered land, the BLM is responsible for approving a project component's final APD, the surface use and subsurface drilling programs, and appropriate mitigation, compliance, and reclamation measures.</p> <p>BLM records regarding oversight of field development are available to public inspection and review, subject to restrictions for proprietary information and privacy act considerations. EPA and the public may request such information at any time.</p>
EPA 9. The project area should be difficult to revegetate due to high erosion potential, poor topsoil, and soils with a potential for severe water erosion in about 45% of the GDBR. Studies show that new roads can become a pathway for the spread of noxious weeds. The Final EIS should address the control of such intrusions via new roads during the initial review and planning stages and document the implementation of proper management and mitigation.	The DEIS discloses the potential effects of intrusions of noxious weeds. Furthermore, the operator's committed BMP indicates the following: "QEP would monitor and control noxious and invasive weeds along access road use authorizations, pipeline route authorizations, well sites, or other applicable facilities by spraying or mechanical removal. On BLM administered land, a Pesticide Use Proposal would be submitted and approved prior to the application of herbicides, pesticides

Comment	Response
	or other hazardous chemicals.” This procedure would be included in the Surface Use Plan developed for the APD.
EPA 10. Page 1-11, Table 1-1. Since the project area is located entirely on Indian lands within the exterior boundary of the Uintah and Ouray Indian Reservations, EPA has the authority to approve and issue Underground Injection Control (UIC) permits for the produced water disposal wells. EPA also has jurisdiction over the National Pollutant Discharge Elimination System, General Permit for Storm Water Discharges, and the New Source Review and Prevention of Significant Deterioration air permitting programs. The Final EIS should list these permits under EPA authority, as appropriate.	Table 1.1 has been corrected to reflect EPA as the lead agency for these matters. This does not change the analysis since it is assumed that the applicant will obtain all necessary permits and authorizations.
EPA 11. Page 2-30. The economic rationale used to reject the full-field directional drilling alternative is unclear. For deep oil wells, the analysis indicated that a directional well would cost \$190,000 more than a vertical well. Despite increased drilling costs, the economic analysis indicates that “unrisked” directional wells in the exceptional recovery zone would have a favorable return on investments exceeding 20% based on a gas price of \$4.84/Mcf. Current limitations regarding the technical and economical aspects of directional drilling should be updated because advances in directional drilling technology are very rapid.	<p>No deep oil wells are anticipated within this field. The analysis on deep wells is for gas wells. The DEIS (see page 2-30) provides technological data as to why shallow oil wells cannot be directionally drilled. As many as 132, 20-acre wells are to be considered as a part of this Proposed Action. These 20-acre infill wells would typically be drilled directionally off of the same 40-acre spaced well pads, requiring no additional surface disturbance.</p> <p>Since the 2004 QEP report on directional drilling, there have not been any significant, cost reducing technological advances. In fact, due to supply and demand for directional drilling crews, the cost has more than doubled. The cost for drilling a directional well is now an additional \$300,000.00 more than a vertical well. OPAL spot gas prices have only gone up slightly, varying between \$5.00 and \$6.00 per thousand cubic feet (mcf). The increase in spot gas pricing is not commensurate with the increased costs of directional drilling. Also see response to comment EPA 1.</p>
EPA 12. Page 33-3, Table 3.3-3. The source of background data, as well as the statistics selected, need to be included as footnotes to this table as well as Tables 4.3-4 and 4.3-5.	The tables have been updated. The background values reflect the most current data for the Uinta Basin obtained from the Utah Department of Environmental Quality, Utah Division of Air Quality.

Comment	Response
EPA 13. Page 4-8. The percentage of air quality standards in the text are not consistent with the results shown in Table 4.3-5.	The table is correct. The text has been changed to agree with the table.
EPA 14. Page 4-11. The results indicate that the maximum visibility impact at the Ouray National Wildlife Refuge would be 4 days having a visibility reduction of over 1.0 deciviews with a maximum impact being 1.51 deciviews. Please clarify whether this would be a direct impact from project emissions and not a cumulative effect.	As indicated in the introduction to Chapter 4, these discussions in Chapter 4 all refer to the Direct and Indirect Impacts of the Proposed and No Action alternatives. Cumulative impacts are discussed in Chapter 5.
EPA 15. Page 4-11. Section 4.3.2 begins with the reference that the permitting authority is the Utah DEQ, Division of Air Quality. EPA has the authority for air permits in Indian Country on the Uintah and Ouray Reservations.	The text has been corrected to reflect EPA as the lead agency for these matters. Although none of the surface or mineral ownership in the GDBR is Indian, EPA Region 8, in an agreement with the State of Utah, has jurisdiction for air permitting actions for all portions of the lands south of Vernal and east of the Uintah and Ouray Indian Reservation to the Utah/Colorado border.
EPA 16. Page 4-12. There is no figure 3.4-3 that illustrates erosion potential.	Figure 3.4-1 shows the dominant soil type distribution within the GDBR, and is found on page 3-41 of the DEIS. Table 3.4-1 shows soil characteristics of the GDBR and is found on page 3-42. Page 4-12 has been changed to reflect this information.
EPA 17. Page 4-18. Utah has a state-wide policy (UT-93-93) that protects riparian habitat on BLM lands. This policy “requires” that riparian areas be maintained and/or improved to Proper Functioning Condition”.	This information can be found in the DEIS on page 4-18. Given BLM’s discretion to move operations up to 200 meters, oil and gas activities would be located outside riparian areas on BLM lands, and the requirements of the riparian policy would be met.
EPA 18. Page 5-9. The list of proposed projects should include the BIA projects mentioned on page 5-11. The list should also include Ute/FNR’s gas development project on the former Naval Oil Shale Reserve #2 with the notation that federal action is not required for oil and gas development on these lands.	These projects have been added to Table 5.1. However, the BIA was contacted concerning future development on the NOSR #2. They did not respond with any specific plans at this time.
Office of the Governor The Resource Development Coordinating Committee Public Lands Section 5110 Sate Office Building PO Box 141407 Salt Lake City, UT 84114-1107 Comments by: Department of Environmental Quality Division of Water Quality	

Comment	Response
<p>UDEQDWQ 1. Vegetative and/or structural measures to control erosion should be implemented within 60 days of initial disturbance to prevent erosion leaving the site from exceeding tolerable rates defined by the Natural Resource Conservation Service.</p>	<p>The need for erosion control is identified at the onsite, and is put in place at the time of construction.</p> <p>BLM has used the NRCS website to obtain the natural soil erosion conditions as defined through the Russell System. The majority of the soils in this area are rated by the NRCS as either moderately or severely erodible soils, which means that natural erosion rates exceed the tolerable rate of erosion. Therefore, reducing erosion to levels below the tolerable rates defined by the NRCS may not be a realistic goal. However, a prime consideration of land management is the control of erosion and potential sedimentation to nearby water bodies. To that end, mitigation which have been developed to reduce or contain soil erosion are described in detail throughout the DEIS.</p>
<p>UDEQDWQ 2. If vegetation surrounding the well pad does not provide at least 60% cover, engineering practices such as mulching, use of fiber mats, cross slope trenching, contour furrows, rock dams, and terracing, should be implemented within 60 days to control erosion.</p>	<p>The need for erosion control is identified at the onsite, and is put in place at the time of construction.</p> <p>Vegetation in the GDBR is mostly sagebrush, desert shrub and badlands which are relatively void of vegetation. Also, when reclaiming areas disturbed by the oil or gas activities, the goal is to return the disturbed area to original conditions as much as possible.</p>
<p>UDEQDWQ 3. No disturbance or degradation should be permitted beyond the defined well pad or permitted road.</p>	<p>Permitted activities will be restricted to those that have been analyzed. Additional activities are beyond the scope of this document, and would be analyzed separately.</p>
<p>UDEQDWQ 4. No spills nor runoff of chemicals including hydrocarbons, lubricants, salts, antifreeze or other potentially damaging materials should be permitted.</p>	<p>Spills are not permitted activities. However, they accidentally happen from time to time. Measures to reduce the potential impact of spills are described in the DEIS.</p>
<p>UDEQDWQ 5. Before well pad use is discontinued, permit holder should restore the site to prevent stormwater runoff from exceeding water quality standards.</p>	<p>See page 2-18 of the DEIS for a description of the reclamation processes that would be implemented prior to final abandonment of any well location, access road, or other facility. The applicant has committed to clean up any spills, if they should occur, so that exceedance of water quality standards is not expected.</p>
<p>UDEQDWQ 6. The use of new roads created should be limited in duration to not extend beyond the life of the</p>	<p>If access roads on BLM-administered lands no longer have a beneficial use, the roads would be</p>

Comment	Response
<p>mineral lease. Access road and pipeline easements should include restrictions and requirements to prohibit erosion rates from exceeding the tolerable erosion rate as established by the USDA/NRCS. The restrictions and requirements might include:</p> <p>a. Revegetation of ground cover equal to or greater than the conditions before pipeline installation.</p> <p>b. Structural BMPs to infiltrate runoff from slopes greater than 5% for greater than 10 feet in pipeline excavation.</p> <p>c. Maintaining the erosion rate on the pipeline below the standard NRCS acceptable level.</p> <p>d. Structural BMPS to capture sediment and suspended solids in runoff before it would enter intermittent or perennial streams, or washed, or gullies.</p>	<p>reclaimed as near to the original condition as possible. However, BLM may decide through separate future decisions to retain some roads for recreation or other uses. Measures, as described throughout this document, will be taken site-specifically to minimize erosion rates on disturbed areas. See UDEQDWQ 1 for a discussion on the tolerable erosion rates.</p> <p>a. See UDEQDWQ 2.</p> <p>b., c., and d. All of these measures are included in the “Gold Book”(BLM and USFS 2006) and are therefore a part of this document as the company has committed to have all roads meet the standards in the Gold Book. See section 2.1.1.</p>
<p>UDEQDWQ 7. It would be prudent to consult with USDA/NRCS to consider appropriate standards of erosion control to adopt into such requirements.</p>	<p>Standards are developed during the onsite process and are implemented during construction. Fieldwide standards were developed through the RMPs.</p> <p>BLM land managers and resource specialists regularly confer with other land managers in the federal government, state agencies, and private industry to discuss all aspects of land management.</p>
<p>UDEQDWQ 8. It would be beneficial to implement the road standards (Hydrologic Modification for Roads) similar to those required on roads on the Price District of BLM lands. Leasors have found that the initial costs are higher, but maintenance costs are lower. Leasors have also found that roads constructed to these standards are more accessible during unfavorable weather conditions and seasons. The UDEQDWQ recommends and strongly advises that provisions similar to the Price Field Office be included in all future mineral leases offered through Trust Land Administration.</p>	<p>Vernal BLM requires roads to be built to the Gold Book standard, as well as other applicable policies on a site-specific basis in the development and maintenance of roads. BLM has no authority to require SITLA to apply any particular road standards as part of their leases.</p>
<p>Uintah County County Building 152 East 100 North Vernal, UT 84078</p>	
<p>Uintah County 1. Page 4-26. Soft wording is used to describe mitigation. The word “could” begs the question “will, or will not” mitigation be used to address such impacts.</p>	<p>Mitigation methods result from the analysis of impacts in the NEPA process. Mitigation is developed to minimize the impacts of construction, development, operation, interim reclamation, and final reclamation. Mitigation are taken into consideration by the Decision Maker for the EIS process. In the Record of Decision, those mitigation</p>

Comment	Response
	that are adopted by the Decision Maker are disclosed in the affirmative form using the wording “will”, “shall”, etc. These mitigation will then be incorporated into APDs and ROWs for individual well pads, access roads, pipelines, central tank facilities, compressor station sites, and utility lines.
<p>Uintah County 2. Page 4-82. The loss of vegetation, until reclamation, does not appear to be an irretrievable effect. Reclamation makes it retrievable as most of the losses reported are to be mitigated or would be prevented through proper reclamation.</p>	<p>The loss of vegetation during the life of the project is irretrievable but is not irreversible as vegetation may be re-established over the long term. The loss of vegetation over a period of time is correctly characterized as an irretrievable loss. From page 4-86 of the DEIS “Commitment of a resource would be considered irretrievable when the project would directly eliminate the resource, its productivity, or its utility <i>for the life of the project</i> and possibly beyond.”</p>
<p>Uintah County 3. Anywhere where BMPs are addressed, they must be adopted for local conditions. We object to the utilization of national BMPs until they have been analyzed and adjusted to be compatible with local conditions, both environmental and type of development.</p>	<p>QEP has committed to several BMPs (section 2.3) designed specifically for this project. If the Proposed Action is chosen in the Record of Decision, BLM may require the application of those BMPs when and where appropriate. The terminology BMPs may be confusing. The description of the Applicant-Committed BMPs in Section 2.3 uses the terminology “BMP” to indicate those measures that the applicant has voluntarily agreed to. Furthermore, terminology BMP is used rather than the traditional NEPA wording “applicant committed mitigation” because BMPs indicate procedures that will be done in advance to eliminate the need for mitigation later. This document in no way blindly adopts the national BMPs. The national BMPs recommended in the document “Best Management Practices for Fluid Minerals, Parts 1-4” are intended as guidelines. Any mitigation developed from the impact analysis are intended for use in the Uintah Basin.</p>
<p>Uintah County 4. Page 2-34. It states that the operators in the Uinta Basin and Uintah Basin officials are developing a comprehensive list of improved standard operating practices and additional BMPs. To our knowledge, this process has come to a halt. Thus, the statement should be struck.</p>	<p>The process was temporarily halted. The mitigation developed through this document is not dependent on that process. Such measures, if developed, would be considered site-specifically.</p>
<p>United States Department of the Interior Bureau of Indian Affairs Uintah and Ouray Agency P.O. Box 130, 988 East, 7500 South Fort Duchesne, UT 84026-0130</p>	

Comment	Response
BIA 1. The Bureau of Indian Affairs, the Uintah and Ouray Agency, wishes to be a cooperating agency on this project. BIA apologizes for any inconvenience this causes at this late date. Please update all areas of this document. Comments are being prepared through the Uintah and Ouray Agency.	As of May 19, 2006, the Uintah and Ouray Agency Bureau of Indian Affairs is a cooperating agency, and is identified as such in appropriate areas in this document.
BIA 2. The following Tribal and Allotted lands should be included as part of the Proposed Action: T8S R21E, Sections 1, 10-16, and 19-23; T 8S R22E Sections 3, 5-8, 16-19, 27 and 30; T8S R20E Section 34. Please extend the estimates for surface damage for well pads, access roads, and pipelines and number of wells, and associated analysis/effects (air quality, surface and subsurface hydrologic issues, water depletion issues, erosion, wildlife, socio-economics, and AUM reduction, etc.) to the Proposed Action. BIA's Record of Decision will be issued through the Western Regional Office. All further comments assume that the Indian lands will be added and a new DEIS would be prepared because of the much larger project boundary.	No Tribal lands are included in the Proposed Action boundary. Any facilities on Tribal lands would be outside the boundary and would have a separate purpose and need so would not be reasonably connected to the Proposed Action.
BIA 3. State how this document conforms to the new RMP.	This document conforms to the Book Cliffs RMP and Diamond Mountain RMP decisions. As the draft Vernal RMP is not yet signed, there is no decision for this document to conform to. However, relevant information on the resources and values of the public lands in the project area, and BLM's ability to select an alternative have not been precluded by this proposal.
United States Department of the Interior Fish and Wildlife Service Utah field Office 2369 West Orton Circle, Suite 50 West Valley City, UT 84119	
USFWS 1. The abstract, Table S-1, and Table 2-3 have well count discrepancies.	The correct numbers are 1,020 new gas wells and 893 new pads. The values have been corrected.
USFWS 2. USFWS recommends following the Utah Oil, Gas and Mining Environmental Handbook for considering whether a liner is needed for reserve pits. USFWS recommends consideration of distance to groundwater, distance to other water wells, distance to surface water, and fluid type among others.	As described in Section 2.1.1.1 Well Pad and Access Roads, the decision for a liner is made during the on-site inspections for the APD process. All of the mentioned factors are considered.
USFWS 3. USFWS recommends that success criteria, frequency of control, and monitoring protocols be incorporated into the Pesticide Use Proposal.	These procedures are Standard Operating Procedures for inclusion in the weed control programs. The contents of the required plans are listed on page 4-26 and 4-27 of the DEIS.
USFWS 4. USFWS recommends the extra mitigation to	These mitigation are generally applied on a case-by-

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<p>mitigate potential effects to bald eagles:</p> <ol style="list-style-type: none"> 1. Temporary activities within winter roost areas, e.g., cottonwood galleries, will not occur during the winter roost season from November 1 to March 31. 2. No permanent facilities will be placed within 0.5 miles of winter roost areas. 3. Avoid loss or disturbance to large cottonwood gallery riparian habitats. 4. Use directional drilling where technically and economically feasible to reduce disturbance and drilling in suitable roosting habitat. 5. All areas of disturbance within riparian areas and/or adjacent uplands should be revegetated with native species. 	<p>case basis, as necessary to reduce impacts, and have been added into the mitigation section.</p> <p>No winter roosting areas have been identified in the GDBR, although there are winter roost areas within ½ mile of the GDBR boundary. Cottonwood galleries are in the GDBR, and suitable roosting habitat has been identified along the Green River. BLM agrees that reclamation should include native species, however non-native species may be included where deemed necessary to allow for stabilization of a site with high potential for weed invasion. These procedures are described on page 4-26 of the DEIS.</p>
<p>USFWS 5. USFWS recommends using the Utah Field Office Guidelines for Raptor Protection from Human and Land Use Disturbances.</p>	<p>Raptor guidelines within the Vernal Field Office are determined by the provisions listed in the Diamond Mountain RMP. These provisions are described on pages 4-31 and 4-32 of the DEIS.</p>
<p>USFWS 6. USFWS requests copies of all reports indicating the presence of the Horseshoe Milkvetch. USFWS does not recommend mechanical or herbicide treatments for noxious weeds in horseshoe Milkvetch habitat.</p>	<p>The reports have been provided. Plants would be avoided through the onsite inspection. Pesticide Use Permits are required prior to herbicide treatments, and include guidelines to minimize drift. For areas known to be habitat, PUPs will develop a protocol to avoid accidental spraying of the milkvetch.</p>
<p>USFWS 7. The analysis does not consider the effect of development within the floodplain of the Green River. USFWS recommends that no development should occur in the 100-year Green River floodplain. USFWS recommends directional drilling to avoid the floodplain.</p>	<p>See response to EPA comment 5.</p>
<p>USFWS 8. USFWS recommends removing crested wheatgrass from the seed mixes listed in Attachment 2 as this introduced species has not been shown as occurring in the area.</p>	<p>Based on field experience in this area, crested wheatgrass competes better with weeds than many of the native species. Crested wheatgrass, in proper amounts, can also act as a nurse crop for native species.</p>
<p>U.S. Department of the Interior U.S. Geological Survey Reston, VA 20192</p>	
<p>USGS 1. Potential hydrologic effects of the proposed water usage are not described. Further assessments could address possible changes to the potentiometric surface of affected aquifers and the direction of groundwater flow, effects on spring or seep flows in the area, and potential effect of pumping water from deep production wells located within 100 yards of the Green River.</p>	<p>Potential hydrologic effects include water depletion from the unconfined aquifer of the Green River. This information has been included in the document in the Endangered Colorado River Fish on page 4-38 and 4-39 in the DEIS. The total annual withdrawal for the project would represent only 0.23% of the lowest annual mean flow since 1947,</p>

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	<p>and only 0.04% of the annual maximum flow during the same period.</p> <p>Deep ground water would not be affected due to compliance with Onshore Order 2. The procedures to protect or isolate groundwater resources are completely described in Appendix 2-1 Questar Exploration and Production Standard Operating Procedures and Surface Use Plan.</p>
<p>USGS 2. The USGS gauging station near Jensen should be numbered 09261000. The peak flow for this station is misleading. The lowest “annual” peak during the period was 7,250 cfs</p>	<p>The correct gauging station number has been inserted. Along with the graph showing daily flow over a 10-year period, the text indicates that the daily flow ranges from less than 5,000 cfs to over 25,000 cfs during spring runoff.</p>
<p>USGS 3. If the intent is to compare the overall flow conditions at this site, a discussion of monthly mean or daily streamflow data may be more appropriate. Monthly mean streamflows of less than 1,000 cfs were measured during the summer of 2002, with some daily streamflows below 850 cfs.</p>	<p>The intent of the discussion is to give an indication of general flow of the River with particular emphasis on the periods when flow would be the highest and the lowest. Figure 3.2-3 clearly shows well below average flow in both the Green and White Rivers from October 2001 to October 2002.</p>
<p>USGS 4. Similarly, the description of the White River flow is misleading.</p>	<p>See response to USGS 3.</p>
<p>USGS 5. A peak streamflow of 852 cfs was reported on October 5, 1981, which is larger than the “up to 600 cfs” reported on page 3-16. Instantaneous peak flow information can be found on the NWIS website.</p>	<p>The website was rechecked. The information in the DEIS for Coyote Wash is correct.</p>
<p>Questar Exploration and Production Company Independence Plaza 1050 17th Street, Suite 500 Denver, CO 80265</p>	
<p>Questar 1. The abstract states, “In addition to QEP’s commitment to voluntarily apply Best Management Practices, mitigation has been disclosed to lessen the environmental effects.” This leads the reader to believe that QEP will apply all Best Management Practices and that the mitigation disclosed will be carried out. This should be rewritten for clarification: “In addition to QEP’s commitment to voluntarily apply selected Best Management Practices, mitigation has been disclosed, that if applied, could lessen the environmental effects.”</p>	<p>This sentence will be rewritten to: “In additional to QEP’s commitment to voluntarily apply selected Best Management Practices of those identified in the BLM Washington Office Instruction Memorandum 2002-194 listed in Chapter 2 of this document, mitigation has been disclosed, that once directed by the Decision of Record could lessen the environmental effects.</p>
<p>Questar 2. Page 2-33, Section 2.4.6 Best Management</p>	<p>Section 2.4.6 has been changed to quote WO IM</p>

Comment	Response
<p>Practices: Paragraph 1 defines Best Management Practices as “innovative, dynamic, and economically feasible mitigation applied on a site-specific basis...” QEP feels it is necessary, to reiterate that Best Management Practices (BMPs) must be economically feasible and that they should also be technically feasible. BLM Instruction Memorandum No. 2004-194 refers to BMPs that field offices and operators are encouraged to consider and provides the following criterion before listing examples of typical case-by-case BMPs: “Other BMPs are more suitable for Field Office consideration on a case-by-case basis depending on their effectiveness, the balancing of increased operating costs vs. the benefit to the public and resource values, the availability of less restrictive mitigation alternatives, and other site specific factors.”</p>	<p>2004-194. It now reads: “Other BMPs are more suitable for Field Office consideration on a case-by-case basis depending on their effectiveness, the balancing of increased operating costs vs. the benefit to the public and resource values, the availability of less restrictive mitigation alternatives, and other site specific factors. Examples of typical case-by-case BMPs include, but are not limited to the following:”</p>
<p>Questar 3. Page 3-21, Section 3.2.6 Groundwater, 4th paragraph: The text inaccurately states that the Birds Nest aquifer may be present beneath the GDBR, leading the reader to question its existence below the project area. The Birds Nest is present beneath the GDBR and provides important technical rationale for not being able to directionally drill. The text should be changed to: “The Birds Nest Aquifer, which is present beneath the GDBR...”</p>	<p>The text has been corrected to include the Birds Nest Aquifer.</p>
<p>Questar 4. Page 3-72, Section 3.6.8.8 Greater Sage-grouse (<i>Centrocercus urophasianus</i>), 1st paragraph, last sentence: This section claims, “Since 1967, the abundance of male grouse attending breeding grounds in Utah has declined by approximately 50 percent.” Please site the source for this data.</p>	<p>The reference is: UDWR 2001. Sage-Grouse in Utah, Utah Division of Wildlife Resources, 9 November 2001.</p> <p>The text is changed to the more precise statement “From 1967 to 2001, the average number of males per breeding ground in Utah has declined by approximately 40 percent.”</p>
<p>Questar 5. Page 3-72, Section 3.6.8.8 Greater Sage-grouse (<i>Centrocercus urophasianus</i>), 2nd paragraph: “UDWR records indicate that 14 leks exist within 5 miles of the GDBR, half of which occur within its boundary (Figure 3.6.4).” Figure 3.6.4 depicts White Tailed Prairie Dog Habitat; a map of Greater sage-grouse leks is not provided. Of the 14 leks that exist within 5 miles of the GDBR, please indicate which leks are active vs. inactive. Appendix 3.5.2, USFWS T&E Species Consultation letter states on page 2, last paragraph: “There are two active sage grouse leks in the project area.”</p>	<p>A map of Greater sage-grouse leks is provided as Figure 3.6.3. The text has been corrected to reflect the correct figure number.</p> <p>Because the use of leks vary from year to year, the current activity of a lek would need to be determined during the APD phase.</p>
<p>Questar 6. Page 4-5, Section 4.2.2 Mitigation [Water Resources]: The text states, “Roads crossing floodplains would be constructed at the narrowest part of the floodplain as designated by the Authorized Officer.”</p>	<p>The change has been made.</p>

Comment	Response
<p>While attempts to follow this guidance will be made, it should be recognized that site-specific conditions would dictate the road construction location. The text should be changed to read, “Roads crossing floodplains would be constructed at the narrowest part of the floodplain and perpendicular to the floodplain, where feasible.”</p>	
<p>Questar 7. Page 4-26, Section 4.5.2 Mitigation [Vegetation], paragraph 2: The text states, “All construction equipment and vehicles could be power-washed prior to the start of construction. Any construction or operational vehicles traveling between the GDBR and outside areas should be power-washed on a weekly basis”. This mitigation measure should be removed from the final EIS. QEP employees typically wash their vehicles once per week but QEP cannot control whether and how often contractors wash their vehicles. QEP will encourage its contractors and vendors to comply with this guideline; however this requirement is unenforceable either by QEP or the BLM.</p>	<p>The text has been deleted and changed to that listed below. However, Questar is responsible for treating weeds on permitted activities.</p> <p>Power washing of all construction and drilling equipment would occur prior to the equipment entering the GDBR project area from outside the Vernal Field Office area.</p>
<p>Questar 8. Page 4-27, Section 4.6.1, Direct and Indirect Effects [Wildlife]: There are several statements that imply certain consequences “would” take place. It should not be assumed that indefinite consequences such as mortality or displacement “would” take place; indefinite consequences “could” take place. The first sentence should be changed to read, “Direct impacts from the Proposed Action and alternative could include....” The 4th sentence should be changed to read, “Indirect impacts from the proposed action could include....” The same comment applies to all indefinite consequences in this section found in pages 4-27 through 4-48.</p>	<p>The analysis is based on assumptions regarding the development of the proposed action and the application of measures. In most cases, these effects would always take place as land is disturbed and human activity takes place in an area. The purpose of the analysis is to determine whether these effects are significant and what mitigation could be applied to lessen significant impacts.</p>
<p>Questar 9. Page 4-49, Section 4.6.2.1 Wildlife [Mitigation]:</p> <p>Bullet #3: “Avoid placing well pads within 0.5 to 1 mile of raptor nests, depending on the species.” This mitigation measure should clarify active vs. inactive nests and should be rephrased: “Avoid placing well pads within 0.5 to 1 mile of active raptor nests, depending on the species.”</p> <p>Bullet #6: “Conduct annual raptor nest activity and winter roosting inventories of their project area plus a one-mile radius during the seven-year drilling and construction phase.” This mitigation measure does not state who will pay for this survey although it is implied that QEP would bear the expense. Annual surveys would impose an</p>	<p>Bullet #3 – The change has been made.</p> <p>Bullet #6. The requirement for QEP to complete an annual survey was removed from the document, as nest activity is tracked by the UDWR and BLM. Also, site specific raptor nest surveys will occur on a site specific basis in conjunction with the Application for Permit to Drill review process, and is the BLM’s responsibility. The text has been changed to reflect this.</p> <p>Bullet #12. The wording is changed to “Field personnel should be encouraged to notify BLM, USFWS or UDWR when animal carcasses are seen on or along roads in the GDBR.”</p>

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<p>unnecessary expense because raptor nest and winter roosting inventories are already performed with every on-site inspection by a BLM wildlife biologist. This mitigation measure should be removed from the final EIS.</p> <p>Bullet #12: “Where such actions would not endanger human safety, require field personnel to remove animal carcasses along lease roads within the project area and place them at least 100 feet from the road.” Because this action could potentially endanger human safety and health at any time, could violate state game laws, and could result in conflicts with provisions of the Endangered Species Act, this mitigation measure should be removed from the final EIS.</p>	
<p>Questar 10. Page 4-50, Section 4.6.2.2 Special Status Wildlife:</p> <p>Bullet #1: “Remove dead animals from roads and ROWs to prevent mortality to the raptors.” Again, because this action could potentially endanger human safety and health at any time, could violate state game laws, and could result in conflicts with provisions of the Endangered Species Act, this mitigation measure should be removed from the final EIS.</p>	See response to Questar 9 Bullet #12.
<p>Questar 11. Page 4-50, Section 4.6.3.1 Wildlife and Section 4.6.3.2 Special Status Species [Unavoidable Adverse Impacts]: Again, it should not be assumed that indefinite consequences “would” take place; indefinite consequences “could” take place. The first sentence in each section should be rephrased: “Unavoidable adverse impacts to wildlife species from the Proposed Action or No Action Alternative could include:”</p>	See the response to Questar 8.
<p>Questar 12. Page 4-60, Section 4.10.2 Mitigation [Transportation]: “QEP should implement and enforce speed limits for their employees and contractors while driving on roads within the GDBR.” While efforts are made by all to maintain proper speed limits, QEP does not have the authority to implement and enforce speed limits.</p>	The wording has been changed to “QEP would include the adherence to speed limits as part of their employee training. Furthermore, QEP would include adherence to speed limits as part of their contractor contracts.”
<p>Questar 13. Page 5-19, Section 5.4.6 Visual Resources [Cumulative Impacts Associated with the Proposed Action]: The first paragraph states, “...the Uinta Basin Best Management Practices that are currently being developed would be applied...” and “Such measures would include:” These sentences should be restated as “could be applied” and “could include”. Use of the word “would” implies that these considerations are mandatory</p>	The reference to the Uinta Basin BMPs was erroneous. The listed measures are standard operating procedures, and would be implemented as necessary. See Section 5.3.6.

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<p>when in fact, they are examples given for consideration, are voluntary, and acceptable only when technically and economically feasible.</p>	
<p>Center for Native Ecosystems 1536 Wynkoop, Suite 302 Denver, CO 80202</p>	
<p>CNE 1. The BLM presents only the preferred alternative and a No Action alternative, both of which involve drilling in sensitive habitats. Many other alternatives could have been considered which conserve irreplaceable resources and meet the stated purpose and need: "to extract and transport oil and natural gas, at a profit, from the portions of the GDBR leased by its companies" (p. 1-1). Therefore, the FEIS must consider additional alternatives, including delaying approval until the RMP revision is complete and prohibiting surface disturbance in habitat for special status species, floodplains, and in other sensitive areas - these can all be accommodated with QEP still making a profit.</p>	<p>A separate alternative to avoid sensitive areas is not needed because BLM retains the ability to protect sensitive areas as part of the proposed action. The regulations at 43 CFR 3101.1-2 dictates that facilities can be moved 200 meters to reduce or avoid any impacts. The mitigation developed in the DEIS and the applicant committed BMPs take into account the need for pre-construction surveys to identify TES plant populations and minimize/avoid disturbance to TES plants. The well pad and access road locations in this EIS are conceptual, so that the need for setbacks would be identified and analyzed through additional NEPA documentation on a site-specific basis during the review phase of the specific project application. Finally, concerning the issue of floodplain development, it is stated on page 4-3 of the DEIS, "Executive Order 11988 requires federal agencies to make decisions in a manner that promotes avoidance of adverse impacts and reduces the risk of property loss and human safety due to floodplain development/modification, and preserves the natural and beneficial values of floodplains. Floodplain development/modification is allowed only after there are no other feasible alternatives." Also see the responses to EPA-4,EPA-5, EPA-17, USFWS-4, USFWS-5 and USFWS-7.</p> <p>This EIS has been developed under the provisions of the existing Book Cliffs and Diamond Mountain RMPs. These RMPs are the guiding directive of the Vernal Field Office until a new plan revision takes effect. However, under all Draft RMP alternatives, the same mineral management prescriptions/restrictions that are in place under the Book Cliffs RMP are carried forward, so that management of the area would not change.</p>
<p>CNE 2. Horseshoe milkvetch is only found in one site, which includes part of the planning area. Figure 3.1-4 suggests that all of its habitat is found within the Horseshoe Bend oil and gas field. We are currently evaluating whether an emergency listing petition is warranted for this species, and this project's proposed</p>	<p>The following paragraph was added to Section 5.3.3: According to BLM data files of mapped horseshoe milkvetch habitat, the proposed Greater Deadman Bench project is the only field development project that overlaps horseshoe milkvetch habitat. However, there</p>

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<p>disturbance of over 1000 acres of potential habitat argues for the need for immediate protection. The DEIS claims that there will be no direct impacts, but page 3-54 acknowledges that the actual extent of the occupied habitat in the project area is not known. The DEIS provides no information on how the potential habitat in this project area compares to the total potential habitat believed to be available. There is no discussion of cumulative impacts from other oil and gas drilling, including wells approved outside of field development projects. I think this is the fourth time we've argued this in the past week - the BLM must disclose not just the estimated extent of the potential impacts in the project area; it must also give the public some context as to what this means for the species as a whole, or at the very least, within the Field Office.</p> <p>How does the BLM arrive at the conclusion that there is a 4% chance of taking horseshoe milkvetch (p. S-16), especially if the potential habitat has not been surveyed for the plant? This is a Candidate species found in a single site. Allowing surface disturbance in potential habitat shows that the BLM lacks the regulatory mechanisms necessary to recover the species, and that the agency is contributing to the need to list this wildflower under the Endangered Species Act. Instead, the BLM should not approve any surface disturbance in potential (or occupied) habitat and should immediately begin working on a comprehensive conservation plan for horseshoe milkvetch. We are participating with the BLM in the Uinta Basin Rare Plant Forum, and strongly encourage the agency not to allow this surface disturbance which will further imperil one of the most at-risk plants in the basin.</p>	<p>are 13 plugged and abandoned wells, four producing wells, two temporarily abandoned wells, and two plugged wells within milkvetch habitat. Potential cumulative impacts to horseshoe milkvetch include loss or modification of potential habitat, habitat fragmentation caused by increased road and well pad development, the potential for the introduction and spread of invasive weed species, and sedimentation.</p> <p>Since the issuance of the DEIS, the USFWS has reviewed the status of this species, and has removed it from the candidate species list. However, this species remains a special status species. The Final EIS reflects this change in status.</p> <p>The DEIS discloses that direct impacts should not occur to the Horseshoe milkvetch because surveys would be conducted during the site-specific onsites to determine the presence or absence of plants on the staked well pads, access roads, surface pipeline corridors, central tank facilities, and compressor stations. Modifications to the placement and design of the facilities would be evaluated to avoid direct impacts to the plants.</p> <p>Horseshoe milkvetch is endemic to a single population in central Uintah County east of Horseshoe Bend. The Proposed Action could also result in the introduction of noxious weeds into occupied and/or potential habitats. However, QEP would implement mitigation methods to minimize the introduction and spread of invasive weeds. Based on these potential impacts, the Proposed Action may affect the horseshoe milkvetch. However, the Proposed Action is not likely to result in a loss of viability of this species in the Book Cliffs and Diamond Mountain resource areas, nor cause a trend to federal listing or a loss of species viability, rangewide.</p> <p>The reference to the 4% chance of taking the plant is incorrect and has been deleted from the Final EIS. The discussion refers to the pre-construction surveys and modifications to the placement and design of facilities in potential habitat to minimize or avoid direct impacts to the plant. These measures are the BLM's mechanism to protect the species while allowing the proponent's access to valid lease rights.</p>

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<p>CNE 3. The Vernal Field Office's track record on raptors is appalling. Page 3-62 indicates that only 17 of 232 nests in the project area (plus one-mile buffer) are presently active - about 7%. None of the 15 Artificial Nest Structures in the project area showed signs of use. Yet page 4-42 states that "appropriate measures to avoid disturbing active nest sites and to protect the viability of all nest sites for potential future nesting" may include "the construction of Artificial Nest Structures in appropriate locations". NEPA requires that mitigations be effective, and the existing ANSs in the project area itself are demonstrably ineffective. The DEIS tries to downplay the effects of additional disturbance on raptors because "overall abundance of nests should result in small overall effect" (p. S-16). Well, not if one of the 17 active nests is impacted, not if most of the 232 nests have already been impacted by other drilling, and not if the limiting factor isn't availability of nests but rather of undisturbed nests. The BLM must do a better job of analyzing the real impacts of approving this action. The DEIS states on page 2-36 that "43 new wells and associated access roads would be constructed within raptor guideline buffers." The BLM must not violate the MBTA, or its special status species Manual obligations.</p>	<p>The reference to the raptor survey on page 3-62 is based on the April 2004 aerial and ground survey. The survey found 66 previously unidentified nests and confirmed the status of another 166 nests previously identified. This survey simply acts as a "snapshot in time" to serve as the current inventory.</p> <p>The DEIS states the following on page 4-42: "If nests are determined to be present, the AO shall determine appropriate measures to avoid disturbing active nest sites and to protect the viability of all nest sites for potential future nesting. Such measures may include: timing limitations on new construction and surface-disturbing activities within 0.5 mile of known nests (1.0 mile for nesting peregrine falcons); the use of terrain features to shield the nest site from human activities; and, the construction of Artificial Nest Structures in appropriate locations." The construction of artificial nest structure is just one of the many mitigation available.</p> <p>For example, QEP installed two tall nesting platforms on tribal lands. In 2006, one nest fledged three ferruginous hawks and the other nest fledged four ferruginous hawks.</p> <p>The reference to the 43 wells is based on the conceptual location of proposed wells. The provisions of 43 CFR 3101.1-2 dictate that any facility can be moved 200 meters to reduce or avoid any impacts. This provision, in addition to the proposed mitigation for active raptor nests to include distance and timing restrictions that would be considered for each and every APD, would virtually eliminate the overall negative impact to raptors.</p>
<p>CNE 4. This is just one of a flurry of projects that are being approved during plan revision, which makes the planning process essentially irrelevant. The project area includes white-tailed prairie dog ACECs that the RMP process may designate - this is just one of the potential improvements in oil and gas management that waiting until after revision could provide. Field Managers have discretion to delay decisions while under plan revision, and Vernal should take advantage of that opportunity. Staff already are overwhelmed with processing and monitoring all the already-permitted projects.</p>	<p>The Book Cliffs RMP, that provide land management guidance for the area, is valid until superseded. As noted, the planning process for the Vernal Field Office RMP is underway. The potential ACECs considered in that document are not official until approved through the formal process, in this case the signing of the ROD for the Vernal RMP.</p> <p>The white-tailed prairie dog ACEC referenced is referenced in the Draft RMP as the potential Coyote Basin ACEC. The Draft RMP alternatives range from not designating the ACEC to designating the ACEC including up to 124,161 acres. The value for which the ACEC was nominated is the white tailed prairie dog and it's habitat. However, under all</p>

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	Draft RMP alternatives, the same mineral management prescriptions/restrictions that are in place under the Book Cliffs RMP are carried forward, so that management of the area would not change even if the ROD selected the largest ACEC alternative. The impacts to white tailed prairie dogs and their habitat are disclosed in section 4.6 of this Final EIS.
CNE 5. The BLM must carefully consider impacts to air quality, and obtain the proper state permits.	See Sections 4.3 and 5.3.1 of the DEIS. Air quality impacts have been disclosed in detail. BLM does not obtain air permits. Air permits are the responsibility of the proponent. A correction to the DEIS indicates that the EPA Region 8 is the permitting authority for new facilities in the GDBR, not the State of Utah Department of Environmental Quality.
CNE 6. This DEIS analyzes impacts assuming that interim reclamation will occur. However, the Chapita Wells DEIS that we commented on recently acknowledges that interim reclamation has been ineffective, and that impacts should be considered long-term. This view is borne out by other portions of the Greater Deadman Bench DEIS that discuss the near impossibility of preventing weed infestation once soils have been disturbed. The BLM must revise this section to be in keeping with the more honest Chapita Wells analysis; doing otherwise would clearly be arbitrary and capricious and thus violate the APA.	Discussions of short- and long-term disturbance and potential success of interim reclamation are discussed throughout the document. To avoid further confusion with BLM’s position, the following statement (and repeated as key locations within the document) has been placed at the beginning of Chapter 4. “Although interim reclamation efforts would take place within the GDBR, the percent of success would be limited due to the low annual precipitation and the physical and chemical properties of the soils. Recent BLM monitoring has documented that interim reclamation efforts in oil and gas development areas have largely been unsuccessful at reestablishing soil stability and vegetation. Accordingly, BLM field inspections are indicating that initial disturbance should be more accurately portrayed as long-term impacts for the life of the project. Therefore, for the sake of analysis in this document, the acreage initially disturbed for construction, drilling and completion would remain void of desired vegetation for the long-term length of the GDBR project. The difference between the short-term and long-term disturbances are presented for informational purposes if reclamation would be successful.”
CNE 7. The DEIS suggests that white-tailed prairie dogs will thrive if their forage is removed and they are left with bare ground to make a living on. Again, the BLM takes the inconsistent view that these areas will be successfully reclaimed, rather than becoming dominated by cheatgrass: "when these disturbed areas are reclaimed, the regrowth of native vegetation provides ideal forage for the prairie dog" (p. 4-35). That would be nice, but the real story in	The DEIS does not suggest that white-tailed prairie dogs will ‘thrive’ if some areas are bladed and used for oil and gas development. This was mentioned as a possible positive impact by providing larger tracks of bare ground for prairie dog colony development. However, this positive impact is highly speculative and unrealistic. The paragraph has been removed.

Comment	Response
the basin involves massive die off of native sagebrush and noxious weed proliferation, not recolonization of disturbed areas by natives.	

6.2 CONSULTATION

The following organizations were contacted or consulted with during the scoping process and the preparation of the EIS.

- Federal Offices
- The National Park Service was sent a copy of the Scoping Notice. They responded that they had no concerns.
- The U.S. Forest Service was also contacted during the scoping process and responded that they had no concerns.
- The U.S. Fish and Wildlife Service was notified during the scoping process. The USFWS responded with a letter (see Appendix 3.5.2) indicating the requirement for formal consultation under Section 7 of the Endangered Species Act and the requirement for a Biological Assessment to be prepared in conjunction with the EIS process. Consultation was initiated by a letter dated January 18, 2004 that requested a list of species. A reply, including a list of species was received on February 3, 2004. Formal consultation was initiated on January 23, 2007. The response and Biological Opinion were received on May 15, 2007. Conservation measures were identified in the Opinion. Those will be incorporated into the ROD as conditions of approval. Consultation may be reinitiated as necessary during the site specific review phase of individual applications.
- The U.S Environmental Protection Agency Region 8 was contacted during the scoping process. They did not respond until the draft EIS was issued. EPA's comments and BLM's responses are shown later in this chapter.

State Offices

On December 9, 2003, a briefing of the Proposed Action was made to the State of Utah Resource Development Coordinating Committee (RDCC). This briefing included representatives of State of Utah agencies that may have an interest in the EIS.

- The Utah Division of Wildlife Resources provided data concerning big game ranges and other terrestrial species in the GDBR.
- The Utah Department of Environmental Quality provided water quality data and background air pollutant levels for the Uintah Basin.
- Neither the Utah Division of Oil Gas and Mining nor the Utah School and Institutional Trust Lands Administration provided input for the EIS.
- During the scoping period, and in a letter dated January 8, 2004, BLM initiated consultation with the Utah State Historic Preservation Office. A reply was received on January 26, 2004 stating that statements in the scoping notice were accurate, and that consultation concerning the undertaking would occur as the undertaking was developed. A second letter requesting consultation was sent on February 13, 2005. No reply was received from that office. Consultation is therefore considered to be closed. However, consultation may be reinitiated as necessary during the site specific review phase of individual applications.

Potential Permitting Agencies

Permitting agencies that would issue permits concerning the GDBR project are listed in Table 1-8 in Chapter 1 of this EIS. All of these permits would be issued during and after the APD process when final plans are completed.

Tribes

During the scoping period, and in a letter dated January 8, 2004, BLM initiated consultation with the following Native American Tribes: Southern Ute Tribe, Navajo Nation, Paiute Indian Tribe of Utah, Pueblo of Zuni and Ute Mountain Ute, Hopi Tribe, Northern Ute Tribe, Shoshone-Bannock Tribe, and the Ute Indian Tribe. Scoping letters were received from the Hopi, Paiute, and the Southern Ute Tribes. The Southern Ute Tribe stated that no known impacts to sites sensitive to the tribe were expected to occur, but that new discoveries should be reported immediately. The Paiute Tribe expressed interest in the project and its impacts, and asked for future copies of the document. No specific concerns were identified. The Hopi Tribe expressed support for the identification and avoidance of prehistoric archaeological sites, and expressed interest in the need to identify and avoid those sites. Additional consultation occurred with the tribes during the public comment period. No responses were received. Consultation is therefore considered to be closed. However, consultation may be reinitiated as necessary during the site specific review of individual applications

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7.0 LIST OF REVIEWERS AND PREPARERS

BLM List of Reviews		
Name	Responsibilities	
William Stringer, BLM	Decision Maker	
Jean Nitschke-Sinclear, BLM	NEPA Compliance, Project Management	
Robert Specht, BLM	Vegetation, T&E Species	
Kyle Smith, BLM	GIS, Maps	
Tim Faircloth, BLM	Wildlife, T&E Species	
John Mayers, BLM	Geology, Paleontology	
Marc Stavropoulos, BLM	Rangeland Management	
Kim Bartel, BLM	Recreation	
Blaine Phillips, BLM	Cultural Resources	
Karl Wright, BLM	Water Resources	
Darlene Burns, Uintah County	Cooperating Agency	
Chester Mills, Superintendent, Bureau of Indian Affairs, Uintah and Ouray Agency, Fort Duchesne, UT	Cooperating Agency	
Buys & Associates List of Preparers		
Name	Education and Experience	Responsibilities
Marty Buys	M.S. Environmental Science 26 Years Experience	Project Director
Don Douglas	M.S. Atmospheric Science 33 Years Experience	Project Manager, NEPA Compliance, Air Quality, Noise, Transportation, Visuals
Chris Freeman	B.S. Environmental 15 Years Experience	Socioeconomics, Recreation, Health & Safety, Land Use
Andy Dworak	B.S. Natural Resource Management 4 Years Experience	Vegetation
Kirby Carroll	M.S. Zoology 5 Years Experience	Wildlife, Vegetation, Soils, Rangeland Management.
Dawn Martin	M.S. Wildlife Biology 10 Years Experience	Wildlife, BA, Technical Editor
Philip Brown	M.S. Environmental Engineering 29 Years Experience	Hydrology
Roger Melick	B.A. Geology and Chemistry 15 Years Experience	GIS, Cartography
Marion Fischel	Ph D, Aquatic Biology 24 Years Experience	Wildlife, BA
Dave Nicholson	M.S. Environmental Engineering and Geology, 15 Years Experience	Geology
Keith Montgomery	Montgomery Archaeological Consultants, M.S. Anthropology 30 Years Experience	Cultural Resources
Danni Langdon	Montgomery Archaeological Consultants M.S. Anthropology 15 Years Experience	Cultural Resources
Ron Sheetz	Montgomery Archaeological Consultants Ph D. Paleontology 15 Years Experience	Paleontology

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8.0 ACRONYMS AND GLOSSARY

ACRONYMS

AADT	Annual Average Daily Traffic
ACEC	Areas of Critical Environmental Concern
ACHP	Advisory Council on Historic Preservation
ANC	Acid Neutralization Capacity
APD	Applications for Permit to Drill
AQR	Air Quality Related Value
AUM	Animal Unit Month
BA	Biological Assessment
bbls	Barrels
BCF	Billion Cubic Feet
BLM	Bureau of Land Management
BMP	Best Management Practices
BTEX	Benzene, Toluene, Ethylbenzene, Xylene
CAA	Clean Air Act
CaCO ₃	Calcium Carbonate
CASTNet	Clean Air Status and Trends Network
CDP	Census Designated Place
CFR	Code of Federal Regulations
cfs	Cubic Feet per Second
CO	Carbon Monoxide
CWA	Clean Water Act
dBA	A-weighted Decibel
UDEQ	Utah Department of Environmental Quality
DOE	U.S. Department of Energy
DOI	U.S. Department Of the Interior
dv	Deciview
EDA	Economic Development Agency
EO	Executive Order
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FLAG	Federal Land Managers' Air Quality Related Values Workgroup
FWS	Fish and Wildlife Service
FR	Federal Register
gpm	Gallons Per Minute
GPS	Global Positioning System
HAP	Hazardous Air Pollutant
IDT	Interdisciplinary Team

IMPROVE	Interagency Monitoring of Protected Visual Environments
LOP	Life Of Project
mcf	Million Cubic Feet
Meq/L	Milliequivalents per Liter
mg/L	Milligrams per Liter
µg/l	Micrograms per liter
µg/m ³	Micrograms of pollutant per cubic meter air
MMBTU	Thousands British Thermal Units
MSDS	Material Safety Data Sheet
N/A	Not Applicable or Not Available
NAAQS	National Ambient Air Quality Standards
NADP	National Atmospheric Deposition Program
NEPA	National Environmental Policy Act
NG	Nongame Species
NHPA	National Historic Preservation Act
NOS	Notice Of Staking
NO _x	Nitrogen Oxides
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
OHW	Ordinary High Water Mark
ORV	Off-road Vehicles
OSHA	Occupational Safety and Health Administration
POD	Plan Of Development
PM ₁₀	Particulate Matter Less Than 10 Microns Diameter
PPM	Parts Per Million
PPP	Pollution Prevention Plan
PSD	Prevention of Significant Deterioration
QEP	Questar Exploration and Development, Inc.
RCRA	Resource Conservation and Recovery Act
RMP	Resource Management Plan
ROD	Record of Decision
ROW	Right Of Ways
RUSLE2	Revised Universal Soil Loss Equation Version 2
SGU	Small Game Unit
SHPO	State Historic Preservation Office
SPCC	Spill Prevention, Control, and Countermeasure Plan
TCF	Trillion Cubic Foot
TCP	Traditional Cultural Properties
TDS	Total Dissolved Solids
TG	Trophy Game

TSP	Total Suspended Particulates
T&E	Threatened and Endangered
USDA	United States Department of Agriculture
USDC	United States Department of Commerce
USDI	United States Department of the Interior
USDOE	United States Department of Energy
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
UTM	Universal Transverse Mercator Coordinates
UW	University of Wyoming
VOC	Volatile Organic Compound
VR	Visual Range
VRM	Visual Resource Management

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GLOSSARY

ADAPTATION. Adjustment to environmental conditions.

AERIAL COVERAGE. The ground area circumscribed by the perimeter of the branches and leaves of a given plant or group of plants.

ASTHETICS. Relates to the pleasurable characteristics of a physical environment as perceived through the five senses of sight, sound, smell, taste, and touch.

ALLUVIUM. Unconsolidated terrestrial sediment composed of sorted or unsorted sand, S.H, gravel, and clay that had been deposited by water.

AMBIENT. The environment as it exists at the point of measurement and used as a basis to measure changes or impacts. Synonymous with background.

AMBIENT NOISE LEVEL. Cumulative effect from all noise generating sources in the area.

ARTHROPODS. Insects, mites, scuds and crayfish.

ANTICLINAL. Pertaining to anticline which is a convex upward rock fold in which strata have been bent into an arch; the strata on each side of the core of the arch are inclined in opposite directions away from the axis or crest; the core contains older rocks than does the perimeter of the structure.

AQUIFER. A body of rock or unconsolidated sediments that contains sufficient saturated permeable material to yield significant quantities of water to wells and springs.

AREAS OF CRITICAL ENVIRONMENTAL CONCERN (ACEC). Areas within the public lands where special management attention is required to protect or prevent irreparable damage to important resources.

ARROYO. A watercourse (as a creek) in an arid region, or a water-carved gully or channel.

ARTESIAN AQUIFER. Synonymous with confined aquifer.

ARTESIAN WELL. A well deriving its water from an artesian or confined aquifer, in which the water level stands above the top of the aquifer.

ASSOCIATION. Organisms living together in any given combination of environmental conditions.

ATMOSPHERIC DEPOSITION. Atmospheric deposition refers to the processes by which air pollutants are removed from the atmosphere and deposited on terrestrial and aquatic ecosystems, and is reported as the mass of material deposited on an area (kilograms per hectare or kg ha^{-1}). Air pollutants are deposited by wet deposition (precipitation) and by dry deposition (gravitational settling of particles and adherence of gaseous pollutants).

ATMOSPHERIC DISPERSION. The process by which pollutants are transported and vertically mixed in the atmosphere.

ATMOSPHERIC STABILITY. A measure of turbulence in the atmosphere. Three general classes of stability include neutral, unstable, and stable. Influenced by vertical temperature gradients and wind profiles.

BACKGROUND. The environment as it exists at the point of measurement and used as a basis to measure changes or impacts.

BENTONITE. Absorbent aluminum silicate clay formed from volcanic ash.

BERM. A barrier constructed to confine water or other substances.

BEST MANAGEMENT PRACTICES (BMP). Improved actions developed to produce improved results. BMPs include construction techniques designed to reduce the “footprint” of oil and gas activities or reduce negative effects of construction and operation.

BIOTA. The plant and animal life in an area.

BROOD. Hatchlings in a given nest or being raised by a given female bird.

BROWSER. An animal, which feeds on leaves, wigs, and young shoots of trees or shrubs; i.e., deer.

CARNIVORE. An organism, which acquires life-sustaining nutrients by using animals as food.

CATION. An ion that has a positive electrical charge. That is, an atom that has lost one or more electrons.

CHARACTERISTIC LANDSCAPE. The established landscape within an area being viewed. This does not necessarily mean a naturalistic character. It could refer to an agricultural setting, an urban landscape, a primarily natural environment, or a combination of these types.

CHERT. A sedimentary form of amorphous or extremely fine-grained siliceous, partially hydrous, found in concretions and beds.

CLAYSTONE. A consolidated rock that consists of any mineral fragments smaller than 1/255 mm in diameter.

CLEAN AIR ACT (CAA). Public Law 84-159, established July 14, 1955, and amended numerous times since. The Clean Air Act establishes federal standards for air pollutants emitted from stationary and mobile sources; authorizes states, tribes, and local agencies to regulate polluting emissions; requires the agencies to improve air quality in areas of the country which does not meet federal standards; and to prevent significant deterioration in areas where air quality is cleaner than the standards.

CLIMATOLOGY. Science of climate and its causes.

CLUTCH. The eggs of birds, reptiles, or amphibians of a given nest.

COLLUVIUM. Unconsolidated terrestrial sediment composed of sorted or unsorted sand, S.H, gravel, and clay that had been deposited due to the action of gravity.

COMMERCIAL WATER USE. Water for motels, hotels, restaurants, office buildings, other commercial facilities, and institutions. The water may be obtained from a public supply or may be self-supplied.

COMMUNITY. A group of plants and animals, which occupy a given locale.

COMPRESSOR BUILDING. A building or cluster of buildings, that house the required equipment to pressurize underground gas lines for the purposes of gas transport.

COMPRESSOR PLANT (STATION). A facility consisting of one or more compressors, auxiliary treatment equipment, and pipeline installations to pump natural gas under pressure over long distances.

CONDENSATE. A low-density liquid hydrocarbon phase that generally occurs in association with natural gas. Its presence as a liquid phase depends on temperature and pressure conditions in the reservoir allowing condensation of liquid from vapor.

CONFINED AQUIFER. An aquifer bounded above and below by impermeable beds or by beds of distinctly lower permeability than that of the aquifer itself; an aquifer containing confined groundwater.

CONFINING BED. A body of impermeable or distinctly less permeable material stratigraphically adjacent to one or more aquifers.

CONGLOMERATE. A clastic sedimentary rock composed of lithified beds of rounded gravel mixed with sand.

CONSUMPTIVE USE. Recreational activities, such as hunting, fishing and trapping, that involves the taking of wild animals.

CONTRAST. Opposition or unlikeness of different forms, lines, colors, or textures in a landscape.

CONTRAST RATING. A method of analyzing the potential visual impacts of proposed management activities.

COVER. That part of the environment, living or dead, utilized by animals for resting, feeding, nesting, and protection.

COVER-TYPE. The part of the environment or landscape characterized by a predominant plant community.

CRITERIA POLLUTANTS. Six common air pollutants for which the Environmental Protection Agency (EPA) has established national air quality standards, including (SO₂), nitrogen dioxide (NO₂), carbon monoxide (CO), ozone (O₃), and particulate matter less than 10 microns in diameter (PM₁₀) and less than 2.5 microns in diameter (PM_{2.5}), and lead.

CROSS-BEDDED. An arrangement of laminations of strata transverse to the main planes of stratification.

CRUCIAL RANGE. Any particular seasonal range or habitat component that is documented as the determining factor in a big games species' ability to sustain a viable population. A viable population is defined as the species' capability to maintain and reproduce itself at a certain population level specific to that species.

CULTURAL MODIFICATION. Any man-caused change in the landform, water form, vegetation, or the addition of a structure, which creates a visual contrast in the basic elements (form, line, color, texture) of the naturalistic character of a landscape.

CUMULATIVE IMPACT. The impact on the environment, which results from the incremental impact of the action when added to other past, present, and reasonable foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor, but collectively significant actions taken place over a period of time (40 CFR 1508.7).

DECIBEL (dB). The measurement unit commonly used to describe sound levels. The A-weighted decibel (dBA) scale is a logarithmic function that emphasizes the audio frequency response curve audible to the human ear and thus more closely describes how one perceives sound.

DECIVIEW (dv). A unit of measure for visibility. The deciview index was developed as a linear perceived visual change.

DIRECT IMPACTS. Effects that are caused by the action and occur at the same time and place (40 CFR 1508.8).

DIRECTIONAL DRILLING. The intentional deviation of a wellbore from vertical to reach subsurface areas some distance from the well pad.

DISSOLVED SOLIDS. The portion of solids in water that can pass through a 0.45-micron filter.

DOLOMITE. A mineral, calcium-magnesium carbonate (Ca, Mg[CO₃]₂); also the name applied to sedimentary rocks composed largely of the mineral. It is white, colorless, or tinged yellow, brown, pink or gray; has perfect rhombohedral cleavage; appears pearly to vitreous; effervesces feebly in cold dilute hydrochloric acid.

DOMESTIC WATER USE. Water for household purposes, such as drinking, food preparation, bathing, washing clothes and dishes, flushing toilets, and watering lawns and gardens. Also called residential water use. The water may be obtained from a public supply or may be self-supplied.

DRAIN. A ditch that removes surplus water from irrigated land and returns it to the surface watershed.

EASEMENT. An interest in land owned by another that entitles its holder to a specific limited use or enjoyment.

ECOSYSTEM. A system of biological communities interacting with each other and with their nonliving surroundings

ECOSYSTEM INTEGRITY. A measure of the health of an entire area or community based on how much of the original physical, biological and chemical components of the area remain intact.

EPHEMERAL. A stream that flows only in direct response to a runoff event.

EPIFAUNA. Part of the benthos living on the sediment surface.

EVAPORATION POND (PIT) OR RESERVE PIT. A pit dug to contain drilling fluids, drill cuttings, and other wastes from drilling operations that disposes of the liquids by evaporation. Some evaporation ponds are lined with plastic or asphalt to keep water from filtering through and contaminating nearby aquifers.

FAUNA. All animal life associated with a given habitat.

FLORISTIC. All plant life associated with a given habitat.

FORAGE. Vegetation utilized by animals as food.

FORB. Flowering herbaceous plants.

FUGITIVE DUST. Dust that escapes the general vicinity of an area where activity is occurring. Dust can be generated by construction traffic, surface clearing operations etc., and can then be carried by wind into the air, creating a plume that may be visible from greater distances than the activity directly causing the dust.

GEOMORPHOLOGY. The study of landforms.

GROUNDWATER, CONFINED. Confined groundwater is under pressure substantially greater than atmospheric throughout, and its upper limit is the bottom of a bed of distinctly lower permeability than that of the material in which the confined water occurs.

GROUNDWATER, UNCONFINED. Unconfined groundwater is water in an aquifer that is under atmospheric pressure and is considered under water table conditions.

HABITAT. A place where a plant or an animal lives.

HAZARDOUS AIR POLLUTANTS (HAPs). 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 Environmental Protection Agency (EPA) has classified 189 air pollutants as HAPs.

HERBACEOUS. Having little or no woody tissue and persisting usually for a single growing season.

HERBIVORE. An organism, which acquires life-sustaining nutrients by feeding on vegetation.

HYDROCARBONS. An organic compound containing only carbon and hydrogen and often occurring in petroleum, natural gas, and coal.

HYDROGRAPH. A graph showing fluctuations in stream flow, stream level, or water levels in wells over time.

INDIRECT IMPACTS. Effects, which are caused by the action but occur later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include reduced reproduction, population density or growth rate in wildlife. Other effects may be related to induced changes in the patterns of land use and effects on air, water, and other natural systems, including ecosystems (40 CFR 1508.8).

INDUSTRIAL WATER USE. Water used for industrial purposes such as fabrication, processing, washing, and cooling, and includes such industries as steel, chemical and allied products, paper and allied

products, mining, and petroleum refining. The water may be obtained from a public supply or may be self-supplied.

INSTREAM WATER USE. Water that is used, but not withdrawn from a groundwater or surface water source for such purposes as hydroelectric power-generation, navigations, water-quality improvement, fish propagations, and recreation. Sometimes called non-withdrawal use or in-channel use.

INTERBEDDED. Rock beds that lie within rock beds of different material.

INTERDISCIPLINARY TEAM. A group of individuals with different training, representing the physical sciences, social sciences, and environmental design arts, assembled to solve a problem or perform a task. The members of the team proceed to a solution with frequent interaction so that each discipline may provide insights to any stage of the problem and disciplines may combine to provide new solutions.

IRRETRIEVABLE. A term that applies to the loss of production, harvest, or use of natural resources. For example, some or all of the timber production from an area is lost irretrievably while an area is serving as a winter sports site. The production lost is irretrievable, but the action is not irreversible. If the use changes, it is possible to resume timber production.

IRREVERSIBLE. A term that describes the loss of future options. Applies primarily to the effects of use of nonrenewable resources, such as minerals or cultural resources, or to those factors, such as soil productivity that are renewable only over long periods of time.

INTERMITTENT. A stream that flows only part of a year along which the bed intercepts the groundwater table.

INVERTEBRATES. All animals without vertebrae.

LANDSCAPE CHARACTER. The arrangement of a particular landscape as formed by the variety and intensity of the landscape features and the four basic elements of form, line, color, and texture. These factors give the area a distinctive quality, which distinguishes it from its immediate surroundings.

LANDSCAPE FEATURES. The land and water form, vegetation, and structures which compose the characteristic landscape.

LEKS. A place where males of some species of birds, such as grouse gather and perform courtship displays in a group.

LINE. The path, real or imagined, that the eye follows when perceived abrupt differences in form, color, or texture. Within landscapes, line may be found as ridges, skylines, structures, changes in vegetative types, or individual trees and branches.

LITHOLOGY. The systematic description of rocks, in terms of mineral composition and texture.

LIMESTONE. A sedimentary rock composed principally of calcium carbonate (CaCO₂), usually as the mineral calcites, and poultry. Also included are animal specialties.

LONG TERM IMPACTS. Effects that persist beyond the construction, drilling and reclamation phases, or continue for the life of the project.

MANAGEMENT ACTIVITY. A surface disturbing activity undertaken on the landscape for the purpose of harvesting, traversing, transporting, protecting, changing, replenishing, or otherwise using resources.

MASSIVE. Sandstone rock without any distinctive bedding planes.

MITIGATION. Avoiding, minimizing, reducing, rectifying, or compensating for impacts to resources from an action. The complete definition is provided in 40 CFR 1508.8.

MITIGATION. Methods or procedures designed to reduce or lessen the adverse impacts caused by management activities.

NATIONAL AND COLORADO AMBIENT AIR QUALITY STANDARDS (NAAQS and CAAQS). The allowable concentrations of air pollutants in the air specified by the federal government (and the State of Wyoming). The air quality standards are divided into primary standards (based on the air quality criteria and allowing an adequate margin of safety and requisite to protect the public health) and secondary standards (based on the air quality criteria and allowing an adequate margin of safety and requisite to protect the public welfare from any unknown or expected adverse effects of air pollutants).

NIGHT-LIGHTING. Lights used to illuminate facilities for work or safety. These lights can be mounted on poles, buildings, other equipment and fences. The lighting can consist of two types: area and accent. Area lighting provides general illumination over a broad zone for safety, while accent lighting provides concentrated illumination for work areas, doorways, pathways, stairs and other areas that require distinction.

NON-CONSUMPTIVE USES. Recreational activities, such as wildlife observation and wildlife photography, where wild animals are not taken.

OUTCROP. Rock strata exposed at the surface.

PARTURITION AREAS. Documented birthing areas commonly used by females. These areas may be used as nursery areas by some big game species.

PERENNIAL. A stream or river that flows all year.

PERMEABILITY. The capacity of material to transmit water or other fluids. Primary permeability is the capacity of interconnected pores to transmit fluids and Secondary permeability is the capacity of interconnected fractures, bedding planes, solution voids, etc. to transmit fluids.

pH. A measure of the acidity or alkalinity of water. It is defined as the negative logarithm of the hydrogen-ion concentration. This parameter is dimensionless and generally has a range from 0 to 14, with a pH of 7 representing neutral water. A pH of greater than 7 indicates the water is alkaline, whereas a pH value of less than 7 indicates acidic water.

PHYSIOGRAPHIC PROVINCE. An extensive portion of the landscape normally encompassing many hundreds of square miles, which portrays similar qualities of soil, rock, slope, and vegetation of the same geomorphic origin (Fenneman 1946, Sahrhaftig 1975).

PHYSIOGRAPHY. The study and classification of the surface features of the Earth.

PLANT ASSOCIATION. The basic unit of vegetation classification representing a plant community containing a defined flora, composition, and uniform habitat conditions (Reid et al. 2002).

PLANT COMMUNITY. A group of plants that occupy a given locale.

POTENTIOMETRIC SURFACE. A groundwater surface that describes the static head, as related to an aquifer, it is defined by the levels to which water will rise in tightly cased wells. A water table is a particular potentiometric surface.

PREVENTION OF SIGNIFICANT DETERIORATION (PSD). A regulatory program under the Clean Air Act (Public Law 84-159, as amended) to limit degradation of air quality in areas that currently achieve the National Ambient Air Quality Standards. The PSD program established air quality classes that allow differing amounts of additional air pollution above a legally defined baseline level. Almost any additional air pollution would be considered significant in PSD Class I areas (certain large national parks and wilderness areas in existence on August 7, 1977, and specific tribal lands redesignated since then.) PSD Class II areas allow deterioration associated with moderate, well-controlled growth (most of the country).

RANGELANDS. Typically non-irrigated lands managed primarily for grazing cattle, sheep, goats, horses etc.

REHABILITATION. A management alternative and/or practice, which restores landscapes to a desired scenic quality.

RELIEF. The vertical difference in elevation between the highest and lowest points of a land surface within a specified horizontal distance or in a limited area.

SANDSTONE. A sedimentary rock composed of mineral grains from 1/16 to 2 millimeters in diameter, bound together by a cement of silica, carbonate, or other minerals or a matrix of clay minerals.

SECONDARY COVER-TYPE. Land cover type occupying the second largest area within the polygon (WYNDD 2003).

SEDIMENTARY ROCK. A rock formed by the accumulation and cementation of mineral grains transported by wind, water, or ice to the site of deposition or chemically precipitated at the depositional site.

SHALE. A fine-grained sedimentary rock formed by the consolidation (esp. by compression) of clay, silt, or mud. It is characterized by finely laminated structure, approximately parallel to the bedding, along which the rock breaks readily into thin layers.

SHORT-TERM IMPACT. Effects of short duration that occur during construction, drilling, completion and reclamation of a well.

SIDE-SLOPES. The rising area of land that forms the transition between a relatively flat condition and a hilltop, mesa top or ridgeline.

SILTSTONE. A rock composed of silt having the texture and composition of shale but lacking its fine lamination or fissility.

SPECIES. The basic category of biological classification intended to designate a single kind of animal or plant.

SPECIFIC CAPACITY. The rate of discharge of water from a well divided by the drawdown of the water level within the well.

SPECIFIC CONDUCTANCE. A measure of the water's ability to conduct an electrical current. Specific conductance is expressed in microsiemens per centimeter ($\mu\text{S}/\text{cm}$) at 25 degrees Centigrade (25°C). For water containing between 100 and 5,000 mg/L of dissolved solids, specific conductance in $\mu\text{S}/\text{cm}$ at 25°C multiplied by a factor between 0.55 and 0.71 will approximate the dissolved solids concentration in mg/L. For most water, reasonable estimates can be obtained by multiplying the specific conductance value by 0.44 to obtain dissolved solid concentrations.

STRATIGRAPHIC UNIT. A body of rocks recognized as a unit in the classification of the rocks of Earth's crust with respect to any specific rock character, property, or attribute or for any purpose such as description, mapping, and correlation.

STRATIGRAPHY. The science of the description, correlation, and classification of rock strata, including the interpretation of the depositional environments of those strata.

TEMPERATURE INVERSION. An atmospheric condition in which warmer air lies above colder air and is said to have an "inverted" temperature gradient, where temperature increases with altitude.

TERRITORY. An area defended by a male, both members of a pair or an unmated species.

TEXTURE. The visual manifestations of the interplay of light and shadow created by the variations in the surface of an object or landscape.

TOTAL DEPOSITION. Total deposition refers to the sum of airborne material transferred to the Earth's surface by both wet and dry deposition.

UNCONFINED AQUIFER. An aquifer that has a water table.

UPLAND BIRDS. Game birds such as sage grouse, chukar and partridge.

VIEWSHED. The landscape that can be directly seen under favorable atmospheric conditions, from a viewpoint or along a transportation corridor.

VISIBILITY. The ability or inability to view scenic vistas. It is usually characterized by two parameters, visual range (VR) and the light-extinction coefficient (b_{ext}). The visual range parameter represents the greatest distance that a large dark object can be seen. The light extinction coefficient represents the attenuation of light per unit distance due to scattering and absorption by gases and particulate matter in the atmosphere.

VISITOR DAY. A Standard measure of visitor use equal to one person visiting a site for 12 hours

VISUAL IMPACT. Any modification in landform, water bodies, or vegetation, or any introduction of structures, which negatively interrupts the visual character of the landscape and disrupts the harmony of the basic elements (i.e., form, line, color, and texture).

VISUAL RESOURCE. The visible physical features on a landscape (e.g., land, water, vegetation, animals, structures, and other features).

VISUAL RESOURCE MANAGEMENT (VRM). The inventory and planning actions taken to identify visual values and to establish objectives for managing those values; and the management actions taken to achieve the visual management objectives.

VISUAL RESOURCE MANAGEMENT CLASSES. Categories assigned to public lands based on scenic quality, sensitivity level, and distance zones. There are four classes. Each class has an objective, which prescribes the amount of change allowed in the characteristic landscape.

WATERS OF THE US – Includes 1) all waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide; 2) all interstate waters including wetlands; 3) all other waters, such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce.....; 4) all impoundments of waters otherwise defined as waters of the United States under the definition; 5) tributaries of waters identified in paragraphs (a) (1)-(4) of this section; 6) territorial seas; 7) Wetlands adjacent to waters (other than waters that are themselves wetlands); 8) Waters of the United States do not include prior converted cropland (33 CFR Part 328).

WATERSHED. The line of division between two adjacent rivers or lakes with respect to the flow of water by natural channels into them; the natural boundary of a basin.

WATER TABLE. The water table is that surface in an unconfined water aquifer at which the pressure is atmospheric. It is defined by the levels at which water stands in wells that penetrate the water body just far enough to hold standing water.

WETLANDS. Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas (33 CFR Part 328).

WILDLIFE. In this summary, the term "wildlife" refers to any wild plant, mammal, bird, reptile, amphibian, or other aquatic or terrestrial organism.

WINTER RANGE. The range that large game animals use in substantial numbers only during winter periods.

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